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Survey and health assessment of cosmetic products marketed as “non-preserved”

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The reports are, however, published because the Danish EPA finds that the studies represent a valuable contribution to the debate on environmental policy in Denmark.

Contents

Preface

This project ”Survey and health assessment of cosmetic products marketed as “non-preserved”” is carried out for the Danish Environmental Protection Agency by FORCE Technology. The conducted analyses are carried out by Eurofins (analyses of fragrances).

The project has been carried out by the following FORCE Technology staff members:

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The project is completed in a period of 15 months (September 2009 to November 2010). The products mentioned in this report have been purchased or found on the Internet (INCI declaration) during the period of September 2009 to December 2009.

The purpose was to map the Danish market of cosmetic products marketed as “non-preserved” or as “not preserved with artificial preservatives”. Ingredients with antimicrobial, antibacterial, antiseptic or preserving properties were identified. Of these, four ingredients were selected for further investigation, and 21 products were selected for chemical analysis, measuring the content of these. Furthermore, a short description of the health effects of the selected four ingredients was given.

Summary and conclusions

Background and purpose

In many cases, cosmetic products contain preservatives in order to ensure a long shelf life. It is typically cosmetic products with a high content of water that are preserved in order to avoid bacteria growth.

There has been information in the media about the potential adverse health effects of many added preservatives. Therefore, some consumers are interested in avoiding preservatives in their cosmetics and are deliberately buying “non-preserved” or “naturally-preserved” cosmetic products, as consumers may rank a naturally-preserved product as better than a preserved product – with respect to allergenic and other properties. Consumers may be unaware, that many naturally occurring substances may be allergenic or have other health effects.

A number of cosmetic products are marketed today as not containing preservatives or not containing specific preservatives. These types of products fall into three categories:

1) Marketed/labelled as “not containing preservatives”, “without preservatives” or similar.
2) Marketed/labelled as “not containing chemical preservatives”, “not containing synthetic preservatives”, “only containing natural preservatives” or similar.
3) Marketed/labelled as not containing a specific type of preservatives; often “not containing parabens”, “free of parabens” or similar.

This project has focused on the first two categories.

The purpose of this project was to

- Examine the constituents occurring in cosmetic products marketed/labelled as “non-preserved” or “with natural preservatives” (or similar statements).
- Determine which of these constituents that may have a preserving effect.
- Assess the potential health effects of four selected constituents (in this project fragrances were selected (citral, geraniol, limonene and linalool)) in cosmetic products marketed as “non-preserved” and “natural preserved”.

The survey

This project ”Survey and health assessment of cosmetic products marketed as “non-preserved”” was carried out by FORCE Technology. 89 different cosmetic products labelled as “non-preserved” or “naturally preserved” were located in different Danish shops or web-shops. The ingredients in the products were examined for their antimicrobial/antibacterial properties by an Internet search.

Issues that are of importance for the self-preservation of cosmetic products were discussed in the report:

- Production method. Good Manufacture Practice (GMP) covers aspects like disinfection of equipment, preparation under strictly aseptic conditions and so on.
- Container design. Appropriate packaging like use of dispensing mechanisms that make the entry of microorganisms into the product very difficult.
- Chemical composition of the product. Self-preservation of a cosmetic product can be controlled by use of e.g.
    - humectants that retains the moisture (water) in the formulation, which is needed for bacterial growth,
    - acids to lower the pH of the formulation, which slows the growth rate of bacteria,
    - alcohols, which in high concentrations can inhibit bacteria growth, but in lower concentrations also can retain the moisture in the formulation,
    - substances with antimicrobial properties, like e.g. essential oils (fragrances) or antioxidants.

In order to manage the product information from the investigated products a database, containing all information about the products, was used. Of these four fragrances (citral, geraniol, limonene, and linalool) were selected - all having antimicrobial properties described in the literature. 21 different cosmetic products were analysed quantitatively at Eurofins for the content of these four fragrances in order to learn if the content was at a level that can be preserving. Subsequently a brief health and risk assessments of the four fragrances were performed.

Project results

The investigated products

A database containing all information about the “non-preserved” and “naturally-preserved” cosmetic products available on the Danish market was prepared. An almost equal amount of “non-preserved” products (45) and “naturally-preserved” products (44) was found and entered into the database. In the 89 cosmetic products 459 different substances were found.

The survey showed that the most frequent types of cosmetic products that are either “non-preserved” or “naturally-preserved” are body lotion, day cream/facial cream, body shampoo/bath gel, cleansing lotion, shampoo and facial spray/toners.

For several products the statement of “non-preserved” or “naturally-preserved” could only be found on the website, not on the actual product itself.

Content of ingredients with antibacterial/antimicrobial properties

It was investigated whether the “non- and naturally-preserved” cosmetic properties instead of preservatives contained other ingredients with antibacterial/antimicrobial properties. The results showed that several of the “non-preserved” products contained antimicrobial ingredients, like e.g. alcohol or essential oils.

More than 60 of the 459 substances identified in the products were found to have antimicrobial, antibacterial or antiseptic properties. However as it was not possible to investigate all 459 ingredients within the frame of this project, this aspect was not thoroughly investigated and the number may very well be higher.

Four fragrances, citral, geraniol, linalool and limonene, were chosen for analysis and subsequent risk and health assessment, as they are a part of many different essential oils that are present in some of the non-preserved or naturally preserved cosmetic products investigated in this survey, and as these substances are considered to be antibacterial and with health effects.

The level of which the four fragrances seem to exhibit a preserving effect was also investigated. A literature search revealed that citral, geraniol, and linalool seem to be antibacterial at levels around 500 ppm, whereas a higher limonene concentration is needed – minimum 2000 ppm.

The container design will help in reducing bacteria growth. About 10% of the investigated "non- and naturally-preserved" products were kept in a container where the content was easily exposed to bacteria/microorganisms (like e.g. a jar/pot with a large opening/screw lid). Whether 10% is low or normal for preserved cosmetic products is not known.

The survey could indicate that both "non- and naturally-preserved" products may have a shorter shelf life than preserved cosmetic products when comparing the shelf life of the products in this survey with the shelf life of cosmetic products in general. But this aspect has not been investigated thoroughly.

Chemical analysis

For the chemical analysis, 21 different cosmetic products were selected and procured. The products were stating a content of the four fragrances or essential oils containing them on the ingredients list, were leave-on products and the type of product were represented both as non-preserved and as naturally preserved. The concentrations were measured of the four selected fragrances citral, geraniol, limonene and linalool, all with antibacterial properties.

The results from the chemical analysis showed that the highest concentration of the four fragrances, citral, geraniol, limonene and linalool found in the products, were 52 ppm, 640 ppm, 32,000 ppm and 2800 ppm respectively. Compared to former surveys for similar types of cosmetic products this content of the four fragrances seems to be somewhat at the same level.

The measured concentrations for geraniol, linalool and limonene in the cosmetic products in this survey were in 10 out of the 21 analysed cosmetic products on the same level as the concentration of which the fragrances exhibit antibacterial effects. However, this level was measured in other types of products and vehicles, and it is not known whether this concentration also is effective in cosmetic products.

Health and risk assessment

The health assessment showed that the four fragrances have sensitizing properties and further it is shown that the oxidation products of the fragrances are even strong sensitizers. It is therefore possible that the cosmetic products containing these substances can cause allergic reactions.

As the oxidation products of the four fragrances are strongly sensitizing, the risk of sensitisation may be reduced, if the following conditions are considered, however on the assumption that the oxidation process only takes place inside the product and not on the surface of the skin after application of the product:

- Oxidation products are formed by contact with the air, which means as the products are used (container opened/closed consecutively) a higher and higher concentration of oxidation products will be formed in the products. This means that a product, which the consumer uses over a period of several months/years, may have a higher potential of causing allergy.

- A proper container, that is where the container design limits the amount of air present in the container, e.g. by using a pump/dispenser or small opening, will limit the oxidation. To which extent is however unknown.

- Antioxidants added to the cosmetic products may limit the oxidation process which forms the allergenic oxidation products.

If oxidation of the products mainly takes place on the skin surface then the above will be of minor importance.

Concerning the evaluation of the sensitizing potential of the cosmetic products with a content of the investigated four fragrances, the risk assessment could not conclude that non-preserved cosmetic products have a lower (or higher) sensitizing potential compared to preserved cosmetic products.

Main conclusions

The main conclusions of the project are:

- We have identified 89 products marketed as “non-preserved” or “naturally-preserved” which are available on the Danish market.

- More than 60 of the 459 substances identified in the products were found to have antimicrobial, antibacterial or antiseptic properties.

- 2 of the 45 identified products marketed as “non-preserved” contained ingredients marked as “preservative” according to the CosIng database.

- 10 of the 44 identified products marketed as or “naturally-preserved” contained ingredients marked as “preservative” according to the CosIng database.

- 15 of the “non-preserved” products contained ingredients marked as antimicrobial in the CosIng database, like e.g. alcohol or essential oils.

- In 10 out of 21 analyzed products the concentration of the fragrances is as high as or higher than the concentration where the fragrances have shown antibacterial properties.

- The investigation does not show if the antimicrobial, antibacterial or antiseptic ingredients in the cosmetic products actually has a preserving effect in the used concentrations.

- Both “non- and naturally-preserved” products found in the survey seems to have a shorter shelf life than preserved cosmetic products, however data is limited and this aspect has not been investigated thoroughly.

- Self-preservation via production method (GMP), container design, chemical composition such as use of alcohols, humectants, pH, etc. are important for preventing contamination by microorganisms and/or preventing their growth.

Concerning the evaluation of the sensitizing potential of the cosmetic products with a content of the investigated four fragrances, it can be concluded that:

- There are fragrances in non-preserved products that may cause allergic reactions. In this survey 38 out of 89 products contain perfume, and 33 of the 89 products contain the selected four fragrances, that may cause allergic contact dermatitis.

- When comparing the contents of fragrances found in this survey with contents of fragrances in other cosmetic products in former surveys, the content seem to be somewhat on the same level in both non-preserved cosmetic products and in typically cosmetic products with preservatives. However, as there are very few products where the content has been measured making this comparison is uncertain.

- Thus it cannot be concluded that non-preserved cosmetic products have a lower (or higher) sensitizing potential compared to preserved cosmetics.

1 Introduction

1.1 Background

In many cases, cosmetic products contain preservatives in order to ensure a long shelf life. It is typically cosmetic products with a high content of water that are preserved in order to avoid bacteria growth (Kabara & Orth, 1996). According to the EU Cosmetic Directive 768 (1976), only specific preservatives (the positive list) may be used for the preservation of the cosmetic products.

Especially for creams and lotions, the necessity of preservatives has been discussed. Creams and lotions are particular exposed to bacteria growth, when we daily put our more and less contaminated fingers (with bacteria on) in the pot of cream. In general, it is as mentioned above considered necessary to preserve aqueous products in order to obtain microbiological stability (= longer shelf life). However, in August 2008 a Danish magazine published a paper with results of a test showing that even for "natural" creams free from specifically added preservatives, the shelf life of the products was not affected (TÆNK, 2008). These creams contained essential oils, alcohols and perfumes which according to the test results worked effectively as substitutes for added preservatives.

A number of cosmetic products are marketed as not containing preservatives or not containing specific preservatives. These types of products fall into three categories:

1) Marketed/labelled as "not containing preservatives", "without preservatives" or similar.
2) Marketed/labelled as "not containing chemical preservatives", "not containing synthetic preservatives", "only containing natural preservatives" or similar.
3) Marketed/labelled as not containing a specific type of preservatives; often "not containing parabens", "free of parabens" or similar.

This project will focus on the first two categories. Products that are marketed/labelled as e.g. "free of parabens" are not investigated in this project, as paraben-free products may either contain other types of added preservatives or may be entirely without added preservatives.

There has been information in the media about the potential adverse health effects of many added preservatives; therefore, consumers may rank a naturally-preserved product as better than a preserved product – with respect to allergenic and other properties, as they may be unaware of the fact that many naturally occurring substances may be allergenic or have other health effects.

The marketing statement/label may therefore falsely lead the consumers to believe that naturally-preserved or non-preserved products are superior to preserved products. Therefore, the Danish EPA wanted to examine the constituents of this type of products, as they wanted to expand their knowledge of these preservatives.

In the winter 2008/2009, the Danish EPA completed a survey of 25 products, which were marketed as "not preserved". The result of this survey is published on the website of the Danish EPA (2009a). The conclusion of this survey was that none of the 25 products being analysed contained any of the most common artificial preservatives. The Danish EPA, therefore, concluded that the consumer as a rule can trust the claims of the producers saying that the products do not contain preservatives.

The 25 examined cosmetic products in the former 2008/2009 survey were from the following 18 product categories:

- Self-tanning lotion
- Cleansing & make up remover
- Conditioner
- Day cream
- Hand lotion
- Suntan lotion
- Shower gel
- Tooth paste
- Baby lotion
- Baby ointment
- Body lotion
- Liquid handsoap
- Facial cream
- Roll-on deo
- Intimate soap
- Lip balm
- Hair wax
- Tonic

1.2 Purpose

The purpose of this project was to

- Examine the constituents occurring in cosmetic products marketed/labelled as "non-preserved" or "with natural preservatives" (or similar statements).
- Determine which of these constituents that may have a preserving effect and could be functioning as "natural preservatives".
- Assess the potential health effects of selected constituents in cosmetic products marketed as "non-preserved" and "with natural preservatives".

Cosmetic products without the content of water have not been investigated in this survey, as these products do not require preservatives because they do not have sufficient water content to support microbial growth.

2 Definitions

2.1 Cosmetic products without/with natural preservatives

The project deals with cosmetic products marketed as either without preservatives or with only natural preservatives. The cosmetic products are divided into two categories that are used throughout the project:

1. Non-preserved products = Products marketed as
    a. Not containing preservatives[1]

2. Naturally-preserved products = Products marketed as
    a. Not containing chemical preservatives
    b. Not containing synthetic preservatives
    c. Only containing natural preservatives
    d. Not containing artificial preservatives

I.e., the term ”natural preservatives” in this report, is a common designation for preservatives, marketed as ”natural”, ”non-chemical”, ”non-synthetic”, ”non-artificial”.

As mentioned earlier, products marketed as e.g. “free of parabens” etc. are not dealt with or are not a part of the investigated products.

All types of liquid cosmetic products are included in the investigation, e.g. shampoos, tooth paste, eye cream, soap etc.

2.2 Preservatives, antimicrobial, antiseptic, antibacterial

EU’s INCI list – the EU CosIng (Cosmetic Ingredients & Substances) database (INCI, EU) operates with two functions of substances that have some kind of preserving effects. These are:

- “Preservative” – defined as “Inhibits primarily the development of micro-organisms in cosmetics. All preservatives listed are substances on the positive list of preservatives (Annex VI of the Cosmetics Directive)”.
- “Antimicrobial” – defined as “Helps control the growth of micro-organisms on the skin”. (CosmeticInfo.org[2] defines antimicrobials as “materials that protect against the growth of microorganisms in personal care products, including bacteria, viruses and fungi” and describes that “antimicrobial ingredients play an important role in making sure that potential care products are free of microorganisms during storage and after they are opened. They are effective at low levels so it does not take much of the ingredient to work”).

[1] Or other similar statements like ”free from preservatives”, “without preservatives”, etc.
[2] http://www.cosmeticsinfo.org/HBI/13/

Ingredients defined as preservatives according to the EU INCI list are hence also ingredients that are listed on Annex VI of the Cosmetics Directive (Appendix 5 of Statutory Order 422, 2006), which is a list of permitted preservatives for use in cosmetic products.

Other terms used about chemical ingredients in cosmetic products are "antiseptic" and "antibacterial". These terms are defined as:

- "Antiseptic" – defined as "Something that discourages (inhibits) the growth of microorganisms" by MedicineNet.com.
- "Antibacterial" – defined as "Anything that destroys bacteria or suppresses their growth or their ability to reproduce" by MedicineNet.com. CosmeticInfo.org uses antibacterial products as a synonym with antimicrobial products.

Usually, substances that inhibit/control/prevent the growth of bacteria, i.e. they have a preserving effect, only require a low concentration to work (e.g. 0.1%), whereas substances that kill/exterminate/suppress usually require a much larger concentration to work effectively (e.g. 15% ethanol).

2.3 Preservative-free versus self-preserving

According to Varvaresou et al. (2009), the common definition for preservative-free cosmetic products is that the product does not contain substances that are defined as preservatives according to the cosmetic legislation. Therefore, the term self-preserving may be more appropriate to use, as preservative-free products therefore may contain other cosmetic ingredients with antimicrobial properties.

In self-preserving formulations, traditional preservatives have been replaced by other cosmetic ingredients with antimicrobial properties. According to Vavaresou et al. (2009), "these ingredients have not yet been recognized as preservatives by the European Scientific Committee" (and thereby not listed in the Annex VI of the EU Commission Directive with the official/traditional preservatives).

3 Self-preserving cosmetics

Self-preserving cosmetic products are discussed in Kabara & Orth (1996). Self-preserving cosmetic products are aqueous products that do not contain added preservatives, but are packaged or stored in such a manner that microbial contamination and growth are prevented. Furthermore, the physicochemical composition (low water activity and high or low pH) of the cosmetic product may be able to prevent contamination by microorganisms and/or prevent their growth.

For example, a non-preserved product in a "ordinary" container that are used multiple times would not be acceptable because it may become contaminated during use, but the same unpreserved product would be acceptable if it was manufactured, sterilized and supplied in a unit-dose container.

The term "Hurdle Technology" has been used for the control of product safety in the food industry since the 1970s, but has also been applied for the production of self-preserving formulations. The term is used to describe the combination of different preservation factors or hurdles in order to prevent the access of microorganisms into the final product and for the creation of a hostile environment within the formula which inhibits microbial growth or kills the microorganisms. (Varvaresou et al., 2009).

The principles of "Hurdle Technology" and of self-preserving technology are (Varvaresou et al., 2009):

1. Good manufacturing practice (GMP)
2. Appropriate packaging
3. Emulsion form
4. Water activity
5. pH control
6. Multifunctional antimicrobial ingredients

3.1 Good Manufacturing practice (GMP)

Preparation of the cosmetic products under strictly aseptic conditions should hinder the ingress of microorganisms. Similar water filtration, positive pressure[3], microbial testing of raw materials, disinfection of equipment and properly trained and dressed personnel can significantly reduce the risk of contamination. (Varvaresou et al., 2009)

An international standard on Good Manufacturing Practices exists for cosmetics: ISO 22716 (2007) – Cosmetics – Good Manufacturing Practices (GMP) – Guidelines on Good Manufacturing Practices. The standard sets standards for personnel, the premises, equipment, raw materials and packaging materials, production, the finished products, a quality control laboratory, and wastes. Furthermore, the standard describes what to do with deviations, complaints, recalls and treatment of products that are out of specification.

[3] Excess pressure in the room to avoid contamination from the air

In short, the Good Manufacturing Practices ensures that an adequate number of properly trained personnel are following the guidelines of the standards. The standard especially addresses the issue of personnel hygiene and health as well as the cleanliness and maintenance of the premises and equipment.

For the production, the relevant batch must be traceable by relevant documents and the batch number assigned. Transparency and documentation, also for the packaging operations, are the key words.

Finally, a quality control laboratory is required in order to ensure that raw materials, packaging materials, bulk products and finished products meet the specified requirements (ISO 22716, 2007).

3.2 Appropriate packaging

Vacuum packaging is widely used in order to protect the product from environmental contamination. Similarly, containers and bottles may be designed to make the entry of the microorganisms into the products very difficult, for example by use of dispensing mechanisms. According to Kabara & Orth (1996), a dispensing mechanism (e.g. a pump top) will ensure fewer contamination incidences compared to a screw cap or a flip cap. The most secure packing is e.g. the single-application pack, blister pack (Varvaresou et al., 2009), but it is possible to develop dispensing mechanisms that prevent the siphoning back of the product (after use of the dispenser) and that prevents the ability of microorganisms to "grow back" into the product (Kabara & Orth, 1996).

3.3 Water activity

The water activity can be used to prevent growth of microorganisms as water is a requirement for growth of all known living organisms. Different microorganisms have different minimum water requirements. The water requirements of microorganisms may be expressed in terms of available water (or the water activity). A reduction in the water activity can adversely reduce bacterial growth (Kabara & Orth, 1996).

Certain raw materials decrease the water activity of the formulation:

- Humectants (ingredients that holds and retains moisture) such as glycerol, propylene glycol, sorbitol and other water-soluble ingredients decrease the water activity and increase the stress imposed on microorganisms.
- Inorganic salts, acids, and alkalis that are used to adjust the viscosity and pH, also decrease the water activity.
- Hydrocolloids (xanthan gum, guar gum etc.) that are used for increasing viscosity may also decrease the water activity.
- Alcohols (isopropyl alcohols etc.) that are used for enhancing the penetration of specific ingredients, decreasing viscosity or solubilising ingredients may also decrease the water activity. About 15 % ethanol is effective in inhibiting bacteria (if pH < 4.5). Higher concentrations of alcohol kill microorganisms. Lower concentrations of alcohol contribute to the preservative system of the product. (Kabara & Orth, 1996)

However, low water activity by itself may not be sufficient to kill microorganisms. The survival of bacteria/microorganisms also depends on other stresses imposed by the formula (acidic pH, lack of nutrients, membrane-destabilising surfactants or chelating agents[4], etc.) and storage conditions including temperature. (Kabara & Orth, 1996)

3.4 pH control

Each organism has an optimum pH for growth. The growth rate of microorganisms is generally favoured around neutral pH 7 and decreases at acidic and alkaline conditions pH (Varvaresou et al., 2009).

The pH of a product may be lowered using inorganic or organic acids. Fatty acids as e.g. lauric acid have an antimicrobial effect, and the free fatty acids in a cosmetic product will contribute to the antimicrobial action of a formula, especially at pH values < 4.5 (Kabara & Orth, 1996).

The ability of microorganisms to grow/survive also becomes increasingly difficult as the pH increases. Products with pH values greater than pH 9 often require little or no chemical preservatives. (Kabara & Orth, 1996)

3.5 Preservation of products with antimicrobial ingredients

3.5.1 Chelating agents

Removal of substrates and essential nutrients helps prevent the growth of microorganisms. Chelating agents are used to bind metal ions that are "unwanted" as they can cause deterioration in fragrance, colour, and appearance of the cosmetic formulations. Binding of the metal ions interferes with microbial growth as metal ions required for cell growth. (Kabara & Orth, 1996)

Chelating agents commonly used in cosmetic products are tetrasodium EDTA, trisodium EDTA, and citric acid. EDTA is in itself an antimicrobial agent, but also enhances the preservative action when combined with other commonly used cosmetic preservatives such as parabens and quaternary ammonium salts (Kabara & Orth, 1996).

3.5.2 Surfactants

A number of surfactants have antimicrobial action because they reduce the surface tension and destabilise cell membranes. Different classes of microorganisms appear to be affected differently by surfactants. The following examples of surfactants have antimicrobial effects on different microorganisms:

- Anionic surfactants (like sodium lauryl sulfate, ammonium lauryl sulfate, sodium laureth sulfate).
- Nonionic surfactants (like polysorbate 80, sucrose laurate, or other nonionic esters of fatty acids).

[4] A chelating agent is defined as "Reacts and forms complexes with metal ions which could affect the stability and/or appearance of cosmetics" according to the EU CosIng database.

- Cationic surfactants (such as benzalkonium chloride, cetyl pyridinium chloride) (Kabara & Orth, 1996).

Low concentration of surfactant (1-5%) may add to the stress imposed on microorganisms when other factors in their environment are unfavourable. The antimicrobial effects of surfactants, low pH, low water activity, chelating agents etc., are additive or synergistic in some cases (Kabara & Orth, 1996).

3.5.3 Antioxidants

Antioxidants generally refer to compounds that are used to stop the free radical lipid oxidation process. The antioxidants delay or slow the rate of autooxidation by inhibiting the formation of free radicals. Several antioxidants provide appreciable antimicrobial activity. BHA (butylated hydroxyanisole), BHT (butylated hydroxytoluene), and propyl gallate (PG) are the most common phenolic antioxidants used in cosmetics (Kabara & Orth, 1996).

Furthermore, naturally occurring antioxidants like tocopherols (vitamin E), ascorbic acid, citric acid and other phenolic compounds (like phenolic acids) do also have antimicrobial activity (Kabara & Orth, 1996).

3.5.4 Essential oils

Essential oils have been used for centuries to prevent deterioration of products as a number of plant-derived essential oils and extracts possess antimicrobial activities. The active extracts typically contain alcohols, phenols, esters, acids, aldehydes and terpenes that have antimicrobial activity (Kabara & Orth, 1996), (Varvaresou et al., 2009).

Already in 1979, a comprehensive study was carried out to screen 521 fragrance raw materials for microbiological activity. 309 materials with activity against at least one of the test organisms were identified (Kabara & Orth, 1996).

Kabara & Orth (1996) states that aroma chemicals (essential oils) with antimicrobial properties may be used to reduce or replace chemical preservatives in products and may be considered to be a part of the preservative system. It is suggested that formulators consider the use of fragrance materials in a systems approach to create self-preserving products.

4 Legislation

In the following the Cosmetics Statutory Order ***(In Danish: Kosmetikbekendtgørelsen)*** is described. This legislation is the legislation relevant for cosmetic products in Denmark.

In 2009, the EU adopted a new regulation on cosmetic products (Regulation No 1223, 2009). However, this regulation does not apply before 11 July 2013, with the exception of a few articles that apply on 1 December 2010 and 11 January 2013. All the cosmetic products investigated in this project were on the market in the fall of 2009 and therefore they are not regulated under the new regulation No 1223/2009. Therefore, only the existing legislation relevant for the investigated products – The Danish Cosmetics Statutory Order, which implements the EU Cosmetic Directive No. 768 (1976), is described in details.

The Cosmetics Statutory Order is not described in details here. Instead, focus is on aspects relevant for non-preserved cosmetics like rules about the content declaration, shelf life and safety of the cosmetic products.

4.1 The Cosmetics Statutory Order

Cosmetic products are regulated in the Danish "Cosmetics Statutory Order" – Statutory Order no. 422 dated 4 May 2006 (Stat. Ord. 422, 2006) – with several later amendments (primarily to appendixes). The statutory order implements the European provisions in the cosmetics area and includes a number of provisions about the content of chemical substances in cosmetics as well as labelling of the products.

According to § 10 of the Cosmetics Statutory Order, cosmetic products that are marketed in the EU must not be harmful to human health when they are used under normal conditions or under conditions which reasonably can be foreseen. A number of restrictions for different chemicals substances as ingredients in cosmetic products are listed, i.e. only certain preservatives are allowed (positive list).

4.1.1 Labelling of cosmetic products

Cosmetic products have to be labelled with the following information on the actual product (Stat. Ord. 422, 2006):

- Company name and address of the manufacturer who within the EU is responsible for the marketing (§ 19).
- Content in weight or volume (if more than 5 g or more than 5 ml (§ 20)).
- Durability date (if the shelf life is below 30 months (§ 21)).
- Safety regulations for application (§ 22).
- The number of the production batch or the reference specification so that date and place of production can be identified (§ 23).
- The function of the agent (unless it appears from its presentation (§ 24).

- Declaration of contents, i.e. a list of the constituents of the product arranged in order after descending weight at that time the constituents are added to the cosmetic agent (§ 25).

4.1.2 Declaration of contents

The following rules apply for the declaration of contents of cosmetic products (Stat. Ord. 422 § 25, 2006):

- Impurities are not considered to be constituents.
- Scented or aromatic compounds shall only be stated by the term "perfume" or "aroma" respectively. According to appendix 3 of the statutory order, 26 fragrances which the EU regards as allergenic have to be stated in the declaration of contents irrespective of their function in the products when the concentration is higher than 0.001% in products which are not to be rinsed off and 0.01% in products which are to be rinsed off.
- Constituents in a concentration less than 1% can be mentioned in any order after the constituents with a concentration higher than 1%.
- The constituents are stated by their usual name according to the common nomenclature (INCI name) for cosmetics ingredients.
- For small cosmetic products or packaging of such a form that in practice makes it impossible to state the declaration of content clearly enough on the product, the ingredients must be stated on an enclosed notice, label, strip or card which is fastened to the cosmetics product. If it is impossible to fasten a message or similar to the products (for instance, if they are too small) the declaration of content must be stated in a notice close to the products.

INCI is an abbreviation of "International Nomenclature Cosmetic Ingredients" and is a common nomenclature for apply in declarations of contents for cosmetic products in the EU. An INCI name can cover several different chemical units. The INCI list is indicative, this means it is not a list of approved constituents in cosmetics but a list indicating the constituents that are used (Pharmacos, 2001). If an INCI name for a constituent is not available, the chemical name of the substance is to be used and an application for an INCI name for the substance shall be sent (Stat. Ord. 422, 2006).

4.1.3 Durability date/shelf life

As stated above, the durability date (shelf life) must be labelled on the cosmetic product if the shelf life is below 30 months unopened (§ 21). In this case, a statement like "use before … (date)" or "best before …(date)" must be used.

Cosmetic products that have a shelf life above 30 months unopened must be labelled with a specification of how long time after opening the cosmetic product can be used without harming the consumer. This information must be specified by using the durability symbol with an open cream box stating the durability in months or years (Stat. Ord. 422, 2006).

In order to know about the shelf life of a cosmetic product, it is necessary to carry out a so-called challenge test (i.e. stability test/preservation efficacy test). The cosmetic products to be tested are prepared with preservative and then

inoculated separately with strains of bacteria and fungi. The samples are stored, then examined for survivors and these numbers recorded[5].

4.1.4 Safety

Cosmetic products marketed within the EU must not harm human health when used under normal conditions or under normal foreseeable conditions of use. An assessment of the safety of the cosmetic products must always be available to the Danish EPA on the address that is listed on the container of the cosmetic product (production site/company address). This safety assessment must take the following aspects into account: The general toxicological profile of the ingredients, the chemical structure of the ingredients, the conditions under which the ingredients/products are used, the exposure conditions (degree and route of exposure, area of body where the cosmetic products are used) and the intended users (children/adults). A special safety assessment must be carried out if the cosmetic products are intended for use by children under the age of three (Stat. Ord. 422, 2006).

As a consequence of these rules "non-preserved" cosmetic products must be assessed for their safety for consumers with respect to their "non-preserving properties". However, if the products without preservatives result in a shorter shelf life than 30 months as described above, this should be stated on the product as a durability date to ensure that a bacteria infested cosmetic products is not used by the consumer.

[5] http://www.in-cosmetics.com/ExhibitorLibrary/820/QACS_Challenge_Testing_1.pdf

5 Survey

One of the purposes of this project was to identify cosmetic products, which are marketed as either "non-preserved" or "naturally-preserved" on the Danish market. Such a survey can be carried out by surveying the cosmetic products that are sold in Denmark. The starting point of this project was therefore to collect about 100 cosmetic products, as it was expected that such a number would cover a satisfying part of the cosmetic products which are marketed as "non-preserved" or "naturally-preserved" on the Danish market. However, no quantity considerations of the market coverage have been investigated.

Information about the cosmetic products was entered into an Access database, as the multiple information about cosmetic ingredients, product type (lotion, shampoo etc), marketing information ("non-preserved" or "naturally-preserved") is much easier to handle in a database. Furthermore, it is possible to run searches across product categories if wanted.

Below is described how information about the products was obtained and how the database of the products was constructed and which information that has been entered into the database. Finally, the results of the survey and various extractions from the database are presented.

5.1 Survey of non-preserved/natural-preserved cosmetic products

The survey of the cosmetic products marketed as "non-preserved" or as "naturally-preserved" in Denmark has taken place by use of the following sources:

- Systematic purchase of cosmetic products marketed as non-preserved" or as "naturally-preserved" in retail shops and via purchase on the Internet
- Searches on the Internet

A database of 89 products has been developed. The goal of 100 products was not reached, as it turned out to be a time consuming process to locate "non-preserved" or "naturally-preserved" products – especially in retail. Therefore the survey cannot be regarded as a complete survey of all available products marketed as "non-preserved" or as "naturally-preserved" in Denmark.

Information about the content of the chemical substances in the cosmetic products has been obtained in two different ways – either by purchasing the products or by using the declaration of the content on the web shops if available. This is one of the fastest ways to obtain the information about the content of chemical substances in the products.

The survey of the products is carried out during a period of approximately 3 months (mid-September to mid-December 2009).

The survey was carried out in three steps. First of all, a search was carried out on the Internet in order to identify products/shops/producers of "non-preserved" or "naturally-preserved" products. Key words like "cosmetics", "lotion", "shampoo", "hand creams" together with "without"/"free of preservatives" or "without synthetic"/"with natural preservatives" was used for the Internet search (in Danish in order to find products available on the Danish market). Secondly, products were bought in retail shops, perfumeries etc. Then a search on the Internet after products not already bought was carried out. Some products were purchased via web shops, but declaration of the content of chemical substances was in many cases found on the website of the web shops. In these cases, the products were not bought but the declaration on the web site was used.

We assume that the 89 products cover a large part of the products, that are marketed as non-preserved" or as "naturally-preserved", but we do not know exactly, how many of this type of products that are available on the Danish market.

5.1.1 Purchase of cosmetic products in retail shops

Purchase of cosmetic products has been one of the primary ways to obtain information about the content of chemical substances in the products. Search for cosmetic products marketed as "non-preserved" or "naturally-preserved" has taken place in different types of shops (supermarkets, perfumeries, pharmacies etc.) – mainly in the area of Copenhagen.

Table 5-1 presents an overview of the shops where we have found and bought cosmetic products as well as where we have looked for products without any result, i.e. no products marketed as "non-preserved" or "naturally-preserved" could be found, or only products already found elsewhere were available.

Table 5-1 Shops where we have bought and looked for cosmetic products

Shops where we have looked for products without any result	Shops where we have bought products
Netto (supermarket) Fakta (supermarket) Føtex (supermarket)	COOP (supermarket) SuperBest (supermarket) Urtehuset (perfumery) Magasin (perfumery) Illum (perfumery) Matas (perfumery) Pure Shop (perfumery) Pharmacies Frederiksberg Privatklinik (private alternative practice, e.g. reflexology)

The cosmetic products for this project have been found by an intense study of the list of ingredients and of the text on the packaging before purchase. Performing a search on the Internet before purchasing products in the shop may therefore save time. In this way, we had an idea of which products that were marketed as "non-preserved" or as "naturally-preserved" beforehand.

5.1.2 Purchase of cosmetic products via the Internet

After purchase of products in retail shops, a search for cosmetic products marketed as "non-preserved" or as "naturally-preserved" via the Internet was conducted. If a declaration of the chemical substances in the products was available on the Internet, this declaration was used in the database. Otherwise

the products found via the Internet were ordered. The following web pages were investigated:

- ***Shop.dk***
- ***Ren-velvaereshop.dk***
- ***Shop.duft-natur.dk***
- ***Greenskin.dk***
- ***Naturoghelse.dk***
- ***Alun.dk***
- ***Livfuld.dk***
- ***Hair247.dk/shop***
- ***Verde.dk***
- Skinperfection.dk
- Naturestore.dk
- Signatura.dk
- Jaja-helsekost.dk
- Meaningfulbeauty.dk
- Plejeprodukter.dk
- Simplyvain.dk
- Helsebasen.dk
- Puregreenshop.dk
- Med24.dk
- Pureshop.dk
- Skovhusetsnaturkosmetik.dk
- Medicteam.dk
- Urtegaarden.dk
- Anmantura.dk

For the web pages listed in italics, we found products that we entered into the database – we either purchased the products or used the available declaration of the chemical constituents directly.

5.1.3 Types of products in the survey

As described in chapter 2 "Definitions", the cosmetic products bought in this survey are products either marketed as "non-preserved" or as "naturally-preserved".

We have focused on buying products that typically may need preservation, i.e. products that contain water (the INCI name "aqua"), or products where it is necessary to put your fingers in the product in order to use it (e.g. lotion in a jar). Products that are solid in their physical presence, i.e. lip balm, non-liquid soap, make-up etc. have not been part of the investigation. Typically, such products do not need preservatives, as they do not contain water.

A few products contained water, but the water was not declared with the INCI-name "Aqua". These products were also included in the investigation (a part of the database). However, these products contain water in some of the other ingredients, like e.g. some kind of flower water or some kind of fruit extract that is water-based.

5.2 Database of the investigated cosmetic products

During this project, a database in Microsoft Access 2003 was developed containing a total of 89 cosmetic products marketed as "non-preserved" or "naturally-preserved". The purpose of the database is to create an overview of the products and their content of chemical substances in a relatively simple way. Furthermore, it is possible by use of the database to sort the information and to extract specific information of the entered data.

The database is built on a product overview where the following is recorded for each product:

- Content of chemical substances
  - Substance by INCI name
  - The total number of ingredients/substances in the product
  - The ranking order of the ingredients (e.g. if water is listed as the first ingredient)
- Various information about the product
  - Product name
  - Product type (shampoo, lotion etc.)
  - Purchase specifications (where the product has been purchased and when)
  - Batch number
  - Shelf life
  - Marketing specifications (marketing statement and marketing category)
  - Container descriptions

Appendix A (chapter 1) is an overview of the content of the database.

In the following, a more detailed description with information about the registrations in the database of each of the above points is presented.

5.2.1 Chemical substances contained in the products

According to the Cosmetics Statutory Order (Stat. Ord. 422, 2006), the ingredients of the cosmetic products have to be stated on the container with their INCI name that is a common nomenclature for use in declarations of contents of cosmetic products in the EU. An INCI name can cover several different chemical units (INCI EU).

The ingredients shall be stated in order after descending weight. The order in which the constituents are mentioned on the container is therefore an indication of the quantity of the different constituents in the product.

For each product, information was entered into the database about the ingredients of the cosmetic products but also in which order (ranking) the ingredients are listed on the product. Thus, the ranking is an indication of the relative concentration of the ingredients in the products. A low number (high ranking) expresses that the substance is a main ingredient in the products whereas a high number (low ranking) indicates that the substance is an additive, for instance a preservative.

It shall be noted that in general it is not examined whether the products in fact contain the chemical substances that are stated on the products. It is possible

that there are mistakes on the labels compared with the actual content. This may be due to the fact that ingredients below 1 % may be stated at random after the ingredients with concentration above 1 %. This aspect we cannot and have not taken into account in this project. The declaration of contents and the actual content were as a general rule expected to be identical.

5.2.2 Shelf life

Information about the shelf life of the cosmetic products has been added to the database in order to investigate whether cosmetic products with no preservatives have a shorter shelf life than other cosmetic products.

5.2.3 Marketing statement

The precise marketing statement – used either on the web page at the web shop or at the product container/product packaging – has been entered into the database in order to be able to list the different types of statements used.

5.2.4 Marketing statement on the product

During the survey, we discovered that not all of these marketing statements of "non-preserved" or "naturally-preserved" were to be found on the product itself. It turned out that we could find a product on the Internet marketed as either "non-preserved" or "naturally-preserved", but when we later went to buy the product in a shop – no such statement could be found on either the container or the packaging of the product. We decided to include such products in the survey as many consumers today may perform an Internet search before going shopping.

For this reason, a remark has been entered into the database whether the marketing statement is on the product or is found on the Internet.

5.2.5 Marketing category

The cosmetic products investigated have been divided into two categories as also described in chapter 2 "Definitions". The two categories used are:

1. Non-preserved products = Products marketed as
    a. Not containing preservatives[6]

2. Naturally-preserved products = Products marketed as
    a. Not containing chemical preservatives
    b. Not containing synthetic preservatives
    c. Only containing natural preservatives

5.2.6 Other comments

In the database, there is space to note possible comments about the product in question. The noted comments are for instance the following:

- Information about possible spelling mistakes in the INCI names of the declaration of contents as well as a note with an assumption of the INCI names which should have been stated.

[6] Or other similar statements like "free from preservatives", "without preservatives", etc.

- Information about e.g. eco-labelling or other types of labelling of the products.

5.3 Results of the survey

In the following, the data material which can be extracted from the database of the 89 identified cosmetic products is presented.

5.3.1 Product name

A total of 89 cosmetic products marketed as either "non-preserved" or "naturally-preserved" were identified. This is what we were able to find during the survey period of mid-September 2009 to mid-December 2009. Intentionally, all product names are kept out of the report, but the information is available at the Danish Environmental Protection Agency.

5.3.2 Importers/producers

The names of the importers and producers are intentionally not mentioned in this report, but the information is available at the Danish Environmental Protection Agency.

5.3.3 How are the products procured?

Table 5-2 shows that just more than half of the products (51 %) have been bought (most of these in retail shops). For the rest (49 %), the INCI declaration has been found on the Internet at web shops.

Table 5-2 Overview of the number of products in the survey

	Bought in retail shops	Bought via the Internet	Number of products in total
Products bought	38	7	45 (51 %)
Products where the declaration of contents is found on the Internet			44 (49 %)
Number of products in total	***38*** (43 %)	***7*** (8 %)	***89*** (100%)

5.3.4 Product type

Table 5-3 is an overview of the different types of cosmetic products that have been investigated in this survey. The 89 cosmetic products are divided in 25 different product type categories. Most products have been procured in the categories: body lotion, day cream/facial cream, body shampoo, cleansing lotion and shampoo.

The purchase of the products or finding of the declarations of the products on the Internet has been random, without taking into consideration that we should find a certain amount of products within each category. As lotion/cream, body shampoo, shampoo and cleansing lotion are the most common products in the retail trade[7], we assumed that the grouping of the

[7] According to statistics from the Danish trade association SPT (In English: "The Soap and Perfumery Manufacturer Association"), the product groups "haircare" and "skincare" are the largest areas constitute 33% and 21% respectively of the total sale of cosmetic products in Denmark in 2009. http://www.spt.dk/frame.cfm/cms/sprog=1/grp=19/menu=2/

cosmetic products in the different types probably represents the Danish market quite well.

Table 5-3 Overview of the type of the cosmetic products

	Bought in shop	Bought via the Internet	Declaration found via the Internet	Number of products in total
Facial mask	1			1
Facial spray/toner	4	1	1	6
Anti-ageing fluid			1	1
Anti-ageing cream			1	1
Baby ointment	1			1
Conditioner	2	1	2	5
Body lotion/cream	5		8	13
Body scrub			1	1
Body shampoo/bath gel		2	7	9
Day cream/facial cream	6		4	10
Deodorant	1		1	2
Energizer		1		1
Foundation	1			1
Hand lotion/cream	1	1	2	4
Hair styling products	1			1
Intimate soap	1			1
Make-up remover	3			3
Peeling mask			2	2
Cleansing lotion	2		6	8
Shampoo	3	1	4	8
Bobble bath			1	1
Suntan lotion	2			2
Tooth paste	2		1	3
Vitamin cream	1			1
Eye cream	1		2	3
Number of products in total	*38*	*7*	*44*	*89*

The most interesting product types from a health perspective are the so-called leave-on products which means the cosmetic products are left on the skin upon application. Leave-on products are products like “facial spray/toner”, “anti-ageing cream”, “body lotion/cream”, “day cream/facial cream”, “deodorants”, “hand lotion/cream” and “suntan lotion”. When the cosmetic products are left on the skin upon application, the cosmetic ingredients may be absorbed in the body, whereas cosmetic products that are rinsed-off short after use do not constitute the same risk of exposure.

5.3.5 Marketing category

As earlier described, the cosmetic products are divided into two large categories – marketed as “non-preserved” or as “naturally-preserved”.

In Table 5-4 the marketing category of the cosmetic products are listed within each product type. It can be seen that about 50 % of the products are marketed as “non-preserved” and the other half as “naturally-preserved”.

The intension has not been to find an equal amount of “non-preserved” and “naturally-preserved” cosmetic products. The finding of the products was carried out randomly. The equal distribution between the two marketing groups could therefore represent the actual picture on the Danish market, i.e. cosmetic products marketed as “naturally-preserved” are as common as cosmetic products marketed as “non-preserved”.

As the table below illustrates, the "non-preserved" products can be found within many types of products. The investigation does not indicate that "non-preserved products only can be found within certain product types.

Table 5-4 Overview of the marketing category of the cosmetic products

Product type	Marketed as "non-preserved"	Marketed as "naturally-preserved"	Number of products in total
Facial mask		1	1
Facial spray/toner	2	4	6
Anti-ageing fluid	1		1
Anti-ageing cream	1		1
Baby ointment	1		1
Conditioner	2	3	5
Body lotion/cream	9	4	13
Body scrub	1		1
Body shampoo/bath gel	4	5	9
Day cream/facial cream	6	4	10
Deodorant	1	1	2
Energizer	1		1
Foundation		1	1
Hand lotion/cream	1	3	4
Hair styling products		1	1
Intimate soap	1		1
Make-up remover	2	1	3
Peeling mask	1	1	2
Cleansing lotion	6	2	8
Shampoo	4	4	8
Bobble bath		1	1
Suntan lotion		2	2
Tooth paste		3	3
Vitamin cream		1	1
Eye cream	1	2	3
Number of products in total	***45***	***44***	***89***

5.3.6 Marketing statement on the product

It turned out during the investigation that the marketing statement of "non-preserved" or "naturally-preserved" may not always be found on the product itself (the packaging or the container). In some cases the marketing statement is only found on a description on a web shop page. Therefore this was noted into the database:

- For 34 products the marketing statement of either "non-preserved" or "naturally-preserved" was printed on either the product container or product packaging.
- For 11 products the marketing statement was not found on the product (container nor packaging), but only on a web shop page on the Internet.
- For the rest (44 products) – which we did not buy – we therefore only know that the marketing statement can be found on the web shop page.

5.3.7 Marketing statement

The precise marketing statement used on either the packaging, the container or on the Internet has been written down. The different statements are listed below.

Table 5-5 Overview of the different marketing statements found on the products or on the Internet

Marketing statement on the product or on the Internet	Number of this statement in total
Non-preserved products	
Without preservatives (uden konserveringsmiddel)	19
Completely without preservatives (helt uden konserveringsmidler)	1
Not added preservatives (ikke tilsat konserveringsmidler)	1
Do not contain preservatives (indeholder ikke konserveringsmidler)	4
No preservatives (ingen konserveringsmidler)	7
No preservatives present (ikke konserveringsmidler i)	3
Free of preservatives (fri for konserveringsmidler)	9
100 % free from preservatives (100 % fri for konserveringsmidler)	1
Naturally-preserved products	
Natural preservatives	2
Preservation system based on natural and organic substances from plants (konserveringssystem baseret på naturlige og økologiske plantestoffer)	2
100 % of the total ingredients are of a natural origin (100 % af indholdsstofferne er baseret på naturlige stoffer)	2
No artificial preservatives (ingen kunstige konserveringsmidler)	3
Do not contain artificial preservatives (indeholder ikke kunstige konserveringsmidler)	1
Not added artificial preservatives (ikke tilsat kunstige konserveringsmidler)	5
Free of artifical preservatives (fri for kunstige konserveringsmidler)	1
No synthetic preservatives (ingen syntetiske konserveringsmidler)	4
No synthetic ingredients of any kind (ingen syntetiske ingredienser overhovedet)	1
Without synthetic preservatives (uden syntetiske konserveringsmidler)	7
Without synthetic preservation (uden syntetisk konservering)	1
Free of synthetic preservatives (fri for syntetiske konserveringsmidler)	3
Do not contain synthetic preservatives (indeholder ingen syntetiske konserveringsmidler)	6
Do not contain chemical or synthetic substances (indeholder ikke kemiske eller syntetiske stoffer)	1
Without chemical preservation (uden kemisk konservering)	1
Without chemical preservatives (uden kemiske konserveringsmiddel)	1
No chemical preservatives (ingen kemiske konserveringsmidler)	2
Completely without chemical preservation (helt uden kemisk konservering)	1
	89

5.3.8 Chemical substances contained in the products

Appendix A contains extractions from the database regarding the 459 chemical substances being identified in the 89 cosmetic products marketed as either "non-preserved" or "naturally-preserved":

- Appendix A – chapter 2 is a list of all chemical substances being found in the 89 products in this survey. In the first list (table 2.1) the chemical substances are stated after descending frequency and thereafter (table 2.2) the same are stated in alphabetical order.
- Appendix A – chapter 3 lists all chemical substances being identified for the two different types of marketing of the products, i.e. "non-preserved" products" in table 3.1 or "naturally-preserved products" in table 3.2. The lists are only stated after descending frequency.

In total 459 different substances are found in the 89 cosmetic products which are recorded in the database. Furthermore, Appendix A (chapter 2 and 3) shows how often the different chemical substances are found and which average ranking they have. The ranking is an indication of the relative concentration of the constituents in the products. A low number (high

ranking) expresses that the substance is the main constituent in the product whereas a high number (low ranking) indicates that the substance is an additive, for instance preservatives. However, this can only be used as an indication.

Table 5-6 below shows the 25 most frequently used chemical substances in the mapped products. At the same time the table shows how many of the 89 products that contain the substances as well as with which average ranking. The following tables, Table 5-7 and Table 5-8, show the 25 most frequently used chemical substances in the 45 products marketed as "non-preserved" and the 25 most frequently used chemical substances in the 44 products marketed as "naturally-preserved". For the total list, see Appendix A (chapter 3).

Table 5-6 The 25 most frequently used constituents in the 89 cosmetic products marketed as either "non-preserved" or as "naturally-preserved"

INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
AQUA	7732-18-5	Water.	solvent	82	1,1
GLYCERIN	56-81-5	Glycerol.	denaturant / humectant / solvent	57	5,6
XANTHAN GUM	11138-66-2	Xanthan gum.	binding / emulsion stabilising / viscosity controlling / gel forming	40	12,9
TOCOPHEROL	10191-41-0	3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-ol.	antioxidant / skin conditioning	34	19,2
ALCOHOL	64-17-5	Ethanol.	antifoaming / antimicrobial / astringent / masking / solvent viscosity controling	33	4,7
LIMONENE	5989-27-5	(R)-p-Mentha-1,8-diene; (4R)-1-Methyl-4-(1-methylethenyl)cyclohexene	masking / perfuming	31	16,0
LINALOOL	78-70-6	1,6-Octadien-3-ol, 3,7-dimethyl-	deodorant	23	19,6
CITRIC ACID	77-92-9	2-Hydroxy-1,2,3-propanetricarboxylic acid	buffering / chelating	23	12,2
LECITHIN	8002-43-5	Lecithins. The complex combination of diglycerides of fatty acids linked to the choline ester of phosphoric acid.	antistatic / emollient / emulsifying / skin conditioning	20	19,4
CETEARYL ALCOHOL	67762-27-0	Alcohols, C16-18.	emollient / emulsifying / emulsion stabilising / opacifying / viscosity controlling	19	7,1
BUTYROSPERMUM PARKII BUTTER	91080-23-8	Butyrospermum Parkii Butter is the fat obtained from the fruit of the karite tree, Butyrospernum parkii, Sapotaceae	skin conditioning / emollient	19	8,1
ASCORBYL PALMITATE	137-66-6	6-O-palmitoylascorbic acid.	antioxidant	18	21,2
GERANIOL	106-24-1	2,6-Octadien-1-ol, 3,7-dimethyl-, (2E)-	tonic	18	22,2
PANTHENOL	81-13-0	Butanamide, 2,4-dihydroxy-N-(3-hydroxypropyl)-3,3-dimethyl-, (2R)-	antistatic / hair conditioning / skin conditioning	17	11,2
LACTIC ACID	50-21-5	Propanoic acid, 2-hydroxy-	buffering / humectant / skin conditioning	17	12,9
PARFUM		Perfume and aromatic compositions and their raw materials	deodorant / masking / perfuming	16	13,7
COCO-GLUCOSIDE		Alcohols, coco, reaction products with glucose	surfactant / foaming / cleansing	15	5,9
HYDROGENATED PALM GLYCERIDES CITRATE	91744-68-2	Glycerides, palm-oil mono-, di-, and tri-hydrogenated, citrates	skin conditioning / emollient	15	23,4
TOCOPHERYL ACETATE	7695-91-2	3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-	antioxidant	14	14,1

INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
		trimethyltridecyl)-2H-benzopyran-6-yl acetate.			
PENTYLENE GLYCOL	5343-92-0	1,2-Dihydroxypentane	skin conditioning / solvent	12	6,1
GLYCERYL STEARATE	31566-31-1	Stearic acid, monoester with glycerol.	emollient / emulsifying	12	8,4
LAURYL GLUCOSIDE	110615-47-9	D-Glucose homopolymer, dodecyl ether	cleansing / surfactant	12	6,0
CITRAL	5392-40-5	2,6-Octadienal, 3,7-dimethyl-	masking	12	22,5
SODIUM LACTATE	72-17-3	Sodium lactate.	buffering / humectant	12	13,0
AROMA		Flavours or aromatic compositions and their ingredients	flavouring	12	12,8

As the table above shows, almost every one of the investigated products contains water (82 of 89). As mentioned earlier we have also included a few products without declaration of "Aqua" (water) in the survey. However, these products do then contain water included in an ingredient, like e.g. some kind of flower water or some kind of fruit extract that is water based.

Table 5-7 The 25 most frequently used constituents in the 45 cosmetic products marketed as "non-preserved"

INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
AQUA	7732-18-5	Water.	solvent	40	1,1
GLYCERIN	56-81-5	Glycerol.	denaturant / humectant / solvent	25	5,2
XANTHAN GUM	11138-66-2	Xanthan gum.	binding / emulsion stabilising / viscosity controlling / gel forming	18	13,1
CITRIC ACID	77-92-9	2-Hydroxy-1,2,3-propanetricarboxylic acid	buffering / chelating	17	11,4
TOCOPHEROL	10191-41-0	3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-ol.	antioxidant / skin conditioning	16	18,8
ALCOHOL	64-17-5	Ethanol.	antifoaming / antimicrobial / astringent / masking / solvent viscosity controling	15	6,3
PENTYLENE GLYCOL	5343-92-0	1,2-Dihydroxypentane	skin conditioning / solvent	12	6,1
TOCOPHERYL ACETATE	7695-91-2	3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-yl acetate.	antioxidant	12	14,3
LECITHIN	8002-43-5	Lecithins. The complex combination of diglycerides of fatty acids linked to the choline ester of phosphoric acid.	antistatic / emollient / emulsifying / skin conditioning	10	21,4
BUTYROSPERMUM PARKII BUTTER	91080-23-8	Butyrospermum Parkii Butter is the fat obtained from the fruit of the karite tree, Butyrospernum parkii, Sapotaceae	skin conditioning / emollient	10	8,0
ASCORBYL PALMITATE	137-66-6	6-O-palmitoylascorbic acid.	antioxidant	10	20,9
HYDROGENATED PALM GLYCERIDES CITRATE	91744-68-2	Glycerides, palm-oil mono-, di-, and tri-hydrogenated, citrates	skin conditioning / emollient	9	22,1
PANTHENOL	81-13-0	Butanamide, 2,4-dihydroxy-N-(3-hydroxypropyl)-3,3-dimethyl-, (2R)-	antistatic / hair conditioning / skin conditioning	9	12,8
SORBITOL	50-70-4	D-glucitol.	humectant / plasticiser / skin conditioning	9	7,3
AROMA		Flavours or aromatic compositions and their ingredients	flavouring	9	12,1
LAURYL GLUCOSIDE	110615-47-9	D-Glucose homopolymer, dodecyl ether	cleansing / surfactant	8	4,9
CETEARYL ALCOHOL	67762-27-0	Alcohols, C16-18.	emollient / emulsifying	8	6,5

INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
			/ emulsion stabilising / opacifying / viscosity controlling		
SQUALANE	111-01-3	2,6,10,15,19,23-hexamethyltetracosane.	emollient / hair conditioning / refatting / skin conditioning	8	5,3
LIMONENE	5989-27-5	(R)-p-Mentha-1,8-diene; (4R)-1-Methyl-4-(1-methylethenyl)cyclohexene	masking / perfuming	7	12,6
SODIUM GLUCONATE	527-07-1	Sodium gluconate.	chelating	7	14,1
GLYCERYL STEARATE	31566-31-1	Stearic acid, monoester with glycerol.	emollient / emulsifying	7	8,1
POTASSIUM CETYL PHOSPHATE	84861-79-0	1-Hexadecanol, phosphate, potassium salt.	surfactant	6	13,8
GLYCERYL STEARATE CITRATE	55840-13-6	1,2,3-Propanetricarboxylic acid, 2-hydroxy-, ester with 1,2,3-propanetriol monooctadecanoate.	emollient / emulsifying / skin conditioning	6	8,8
SODIUM STEAROYL LACTYLATE	25383-99-7	Sodium 2-stearoyllactate.	emulsifying	6	8,0
SIMMONDSIA CHINENSIS OIL	61789-91-1	Simmondsia Chinensis Oil is the fixed oil expressed or extracted from seeds of the jojoba, Simmondsia chinensis, Buxaceae	emollient	5	5,4

It is striking that 15 of the investigated products marketed as “non-preserved” contain alcohol which is defined as an antimicrobial ingredient according to the CosIng database. The “non-preserved” products containing alcohol cover product groups like body lotion, anti-ageing fluid, body scrub, body shampoo, facial cream, energizer, peeling mask, cleansing lotion and conditioner. The content of preservatives and antimicrobial ingredients will be discussed later in section 5.3.9 “Content of preservatives and antimicrobial ingredients”.

Table 5-8 The 25 most frequently used constituents in the 44 cosmetic products marketed as ”naturally-preserved”

INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
AQUA	7732-18-5	Water.	solvent	42	1,2
GLYCERIN	56-81-5	Glycerol.	denaturant / humectant / solvent	32	6,0
LIMONENE	5989-27-5	(R)-p-Mentha-1,8-diene; (4R)-1-Methyl-4-(1-methylethenyl)cyclohexene	masking / perfuming	24	17,0
XANTHAN GUM	11138-66-2	Xanthan gum.	binding / emulsion stabilising / viscosity controlling / gel forming	22	12,8
LINALOOL	78-70-6	1,6-Octadien-3-ol, 3,7-dimethyl-	deodorant	19	20,7
TOCOPHEROL	10191-41-0	3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-ol.	antioxidant / skin conditioning	18	19,6
ALCOHOL	64-17-5	Ethanol.	antifoaming / antimicrobial / astringent / masking / solvent viscosity controling	18	3,4
PARFUM		Perfume and aromatic compositions and their raw materials	deodorant / masking / perfuming	16	13,7
GERANIOL	106-24-1	2,6-Octadien-1-ol, 3,7-dimethyl-, (2E)-	tonic	16	21,8
COCO-GLUCOSIDE		Alcohols, coco, reaction products with glucose	surfactant / foaming / cleansing	13	6,2
LACTIC ACID	50-21-5	Propanoic acid, 2-hydroxy-	buffering / humectant / skin conditioning	12	14,0
CITRONELLOL	106-22-9	Citronellol.	masking	11	23,5

INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
CETEARYL ALCOHOL	67762-27-0	Alcohols, C16-18.	emollient / emulsifying / emulsion stabilising / opacifying / viscosity controlling	11	7,5
LECITHIN	8002-43-5	Lecithins. The complex combination of diglycerides of fatty acids linked to the choline ester of phosphoric acid.	antistatic / emollient / emulsifying / skin conditioning	10	17,4
CITRAL	5392-40-5	2,6-Octadienal, 3,7-dimethyl-	masking	10	23,6
BUTYROSPERMUM PARKII BUTTER	91080-23-8	Butyrospermum Parkii Butter is the fat obtained from the fruit of the karite tree, Butyrospernum parkii, Sapotaceae	skin conditioning / emollient	9	8,2
STEARIC ACID	57-11-4	Stearic acid.	emulsifying / emulsion stabilising / refatting / cleansing	9	12,4
GLYCERYL OLEATE	25496-72-4	Oleic acid, monoester with glycerol.	emollient / emulsifying	9	10,9
ASCORBYL PALMITATE	137-66-6	6-O-palmitoylascorbic acid.	antioxidant	8	21,5
ALOE BARBADENSIS LEAF JUICE	85507-69-3	Aloe Barbadensis Leaf Juice is the juice expressed from the leaves of the aloe, Aloe barbadensis, Liliaceae	skin conditioning	8	4,3
PANTHENOL	81-13-0	Butanamide, 2,4-dihydroxy-N-(3-hydroxypropyl)-3,3-dimethyl-, (2R)-	antistatic / hair conditioning / skin conditioning	8	9,4
SODIUM LACTATE	72-17-3	Sodium lactate.	buffering / humectant	8	13,6
EUGENOL	97-53-0	Phenol, 2-methoxy-4-(2-propenyl)	denaturant / tonic	7	24,9
HELIANTHUS ANNUUS SEED OIL	8001-21-6	Helianthus Annuus Seed Oil is the oil expressed from the seeds of the sunflower, Helianthus annuus, Compositae	emollient / skin conditioning / masking	7	10,7
HYDROGENATED PALM GLYCERIDES CITRATE	91744-68-2	Glycerides, palm-oil mono-, di-, and tri-hydrogenated, citrates	skin conditioning / emollient	6	25,3

The three tables above show that the ingredients glycerin, tocopherol and alcohol are used in many of the products in both of the marketing categories ("non-preserved" or "naturally-preserved"). As stated in chapter 3 "Self-preserving cosmetics" glycerin (= glycerol) is one of the most common ingredients used in cosmetics. Glycerin may lower the water activity and thereby reduce bacterial growth. Tocopherol (vitamin E) is also described as having antimicrobial activity and ethanol (alcohol) is effective in inhibiting bacteria growth (Kabara & Orth, 1996).

5.3.9 Content of preservatives and antimicrobial ingredients

The 459 ingredients which are used in the 89 cosmetic products have been investigated for their preserving properties in order to check whether the two categories of products ("non-preserved" and "naturally-preserved") in fact do contain preservatives or ingredients with preservative-like properties.

For this purpose, the EU CosIng database (the INCI list) has been used. As the 2006 version of the INCI list has been used in the database, the 459 ingredients have been updated with information on their preserving properties according to the CosIng database (carried out January 2010). The INCI list operates with two functions of substances that have preserving effects. These are:

- Preservative – defined as "Inhibits primarily the development of micro-organisms in cosmetics. All preservatives listed are substances on the positive list of preservatives (Annex VI of the Cosmetics Directive)", and
- Antimicrobial – defined as "Helps control the growth of micro-organisms on the skin".

Some ingredients like e.g. Rosmarinus Officinalis Leaf Extract and Rosmarinus Officinalis Leaf Oil are ingredients based on the same CAS number. However, according to the CosIng database, Rosmarinus Officinalis Leaf Extract has an antimicrobial effect, but Rosmarinus Officinalis Leaf Oil does not, even though they are based on the same CAS number. Therefore the function of Rosmarinus Officinalis Leaf Oil has been marked with "antimicrobial?" in the database as the same CAS number has an antimicrobial effect.

All in all 12 of the 89 products contain preservatives, i.e. ingredients that are marked with the function "preservative" according to the CosIng database, and 15 products contain ingredients that are marked with the function "antimicrobial" according to the CosIng database.

Table 5-9 and Table 5-10 show the ingredients in the cosmetic products that are listed with a function of either "preservative" or "antimicrobial" according to the CosIng database (of January 2010). The first table shows the ingredients with preserving effects for cosmetic products marketed as "non-preserved" and the second table for the products marketed as "naturally-preserved".

Table 5-9 Ingredients listed with the function "preservative" or "antimicrobial" according to the CosIng database. The ingredients are only present in cosmetic products marketed as "non-preserved"

INCI Name	CAS No	Number of products	Function	Restriction
BENZYL ALCOHOL	100-51-6	1	perfuming / **preservative** / solvent / viscosity controlling	III/1,45 - VI/1,34
CETRIMONIUM CHLORIDE	112-02-7	1	**antimicrobial** / antistatic / emulsifying / **preservative** / surfactant	VI/1,44
ALCOHOL	64-17-5	15	antifoaming / **antimicrobial** / astringent / masking / solvent viscosity controlling	
ALCOHOL DENAT.	64-17-5	1	antifoaming / **antimicrobial** / astringent / masking / solvent / viscosity controlling	
BENZYL BENZOATE	120-51-4	1	**antimicrobial** / perfuming / solvent	III/1,85
CHAMOMILLA RECUTITA EXTRACT	84082-60-0	2	emollient / **antimicrobial?**	
CHAMOMILLA RECUTITA FLOWER EXTRACT	84082-60-0	2	masking / skin conditioning /**antimicrobial ?**	
HYPERICUM PERFORATUM EXTRACT	84082-80-4	2	**antimicrobial** / astringent / masking / skin conditioning / skin protection / soothing / tonic	
ORYZA SATIVA POWDER	68553-81-7	1	bulking /**antimicrobial ?**	
SALVIA OFFICINALIS EXTRACT	84082-79-1	1	tonic / cleansing / antidandruff / antioxidant / antiperspirant / deodorant / skin protecting / astringent / **antimicrobial** / skin conditioning / soothing	
SALVIA OFFICINALIS LEAF EXTRACT	84082-79-1	1	antidandruff / cleansing / oral care / skin conditioning / tonic / **antimicrobial ?**	
ZINC SULFATE	7733-02-0	1	**antimicrobial** / oral care / antiplaque / anticaking	III/1,24

Table 5-9 shows that even though the cosmetic products are marketed as "non-preserved" they contain ingredients with a preserving effect. One

product contains benzyl alcohol (product ID 330). This product is marketed "without preservatives" ("Indeholder ikke konserveringsmidler") on the packaging. However, benzyl alcohol has a double effect as it also has a perfuming effect (is one of the 26 fragrances which should be labelled when present above certain concentrations).

Another product contains cetrimonium chloride (product ID 332). The substance is apart from being a tenside and to function as a hair conditioner also on the list of preservatives. Marketing of the product as being "without preservatives" on a web shop site is therefore not correct. On the product itself, there is only a statement of "no parabens". Parabens seem to have been mistaken for being the only preservatives in the web shop.

It is striking that 15 of the investigated products marketed as "non-preserved" contain alcohol, which is defined as an antimicrobial ingredient according to the CosIng database. However, several sources on the Internet describe alcohol as a preservative (e.g. www.Soorganic.com/glossary, www.thefreedictionary.com). The "non-preserved" products containing alcohol cover product groups like body lotion (several products), anti-ageing fluid, body scrub, body shampoo, facial cream, energizer, peeling mask, cleansing lotion and conditioner.

Table 5-10 Ingredients listed with the function "preservative" or "antimicrobial" according to the CosIng database. The ingredients are only present in cosmetic products marketed as "naturally-preserved"

INCI Name	CAS No	Number of products	Function	Restriction
BENZYL ALCOHOL	100-51-6	1	perfuming / **preservative** / solvent / viscosity controlling	III/1,45 - VI/1,34
METHYLCHLOROISOTHIA-ZOLINONE	26172-55-4	1	**preservative**	VI/1,39
METHYLISOTHIAZOLINONE	2682-20-4	2	**preservative**	VI/1,39
PHENOXYETHANOL	122-99-6	2	**preservative**	VI/1,29
POTASSIUM SORBATE	24634-61-5	4	**preservative**	VI/1,4
SODIUM BENZOATE	532-32-1	5	**preservative**	VI/1,1
SODIUM DEHYDROACETATE	4418-26-2	1	**preservative**	VI/1,13
SODIUM HYDROXYMETHYLGLYCINATE	70161-44-3	1	**preservative**	VI/1,51
SORBIC ACID	110-44-1	1	**preservative**	VI/1,4
ALCOHOL	64-17-5	18	antifoaming / **antimicrobial** / astringent / masking / solvent viscosity controling	
ALCOHOL DENAT.	64-17-5	3	antifoaming / **antimicrobial** / astringent / masking / solvent / viscosity controlling	
BENZYL BENZOATE	120-51-4	2	**antimicrobial** / perfuming / solvent	III/1,85
C12-15 ALKYL BENZOATE	68411-27-8	1	**antimicrobial** / emollient / skin conditioning	
CAMELIA SINENSIS LEAF EXTRACT	84650-60-2	5	**antimicrobial** / antioxidant / astringent / emollient / humectant / masking / oral care / skin conditioning / skin protection / tonic / UV-absorber	
CHAMOMILLA RECUTITA EXTRACT	84082-60-0	3	emollient / **antimicrobial?**	
CHAMOMILLA RECUTITA FLOWER EXTRACT	84082-60-0	1	masking / skin conditioning /**antimicrobial ?**	
CINNAMOMUM ZEYLANICUM EXTRACT	84649-98-9	1	tonic / deodorant / cleansing / refreshing /**antimicrobial?**	
EUPHRASIA OFFICINALIS EXTRACT	84625-36-5	1	tonic / soothing / astringent / **antimicrobial** / skin conditioning	
HYPERICUM PERFORATUM EXTRACT	84082-80-4	1	**antimicrobial** / astringent / masking / skin conditioning / skin protection / soothing / tonic	

INCI Name	CAS No	Number of products	Function	Restriction
JUNIPERUS COMMUNIS EXTRACT	84603-69-0	1	tonic / deodorant / masking / **antimicrobial ?**	
MELALEUCA ALTERNIFOLIA OIL	85085-48-9	1	**antimicrobial ?**	
POGOSTEMON CABLIN OIL	8014-09-3	3	masking / **antimicrobial ?**	
PUNICA GRANATUM SEED OIL	84961-57-9	2	emollient / **antimicrobial ?**	
ROSMARINUS OFFICINALIS EXTRACT	84604-14-8	1	tonic / refreshing / **antimicrobial**	
ROSMARINUS OFFICINALIS LEAF EXTRACT	84604-14-8	3	**antimicrobial** / masking / skin conditioning	
ROSMARINUS OFFICINALIS LEAF OIL	84604-14-8	1	masking / skin conditioning / **antimicrobial ?**	
SALVIA OFFICINALIS LEAF EXTRACT	84082-79-1	1	antidandruff / cleansing / oral care / skin conditioning / tonic / **antimicrobial ?**	
VITIS VINIFERA FRUIT EXTRACT	84929-27-1	1	skin conditioning / **antimicrobial ?**	

"antimicrobial ?" – the question mark means that the ingredient is not in itself listed as antimicrobial in the CosIng database. However, the ingredient has the same CAS number as an ingredient listed as "antimicrobial" in the CosIng database.

Table 5-10 shows that more products marketed as "naturally-preserved" contains preservatives and ingredients with an antimicrobial function compared to the products marketed as "non-preserved". In total these substances were found in 10 out of 44 "naturally preserved" products. The products in the category "naturally preserved" also cover products with marketing claims as "non-artificial", "non-synthetic", "non-chemical" preservatives. Furthermore, it turned out that for some of the products (especially those bought via the internet) that the marketing claims of "naturally preserved" only could be found on the homepage of the specific web-shop and not on the product itself. Thus in some cases it is the web-shop's assessment of the ingredients and not the manufacturer's, that appears.

5.3.9.1 A check for other typical preservatives

It has been checked whether some of the 459 ingredients, which are used in the 89 products, have a preserving, antimicrobial, antibacterial or antiseptic effect even though the ingredients are not stated in the CosIng database as preservatives or having an antimicrobial effect.

For this purpose an Internet search has been performed on ingredients used in cosmetics that have antibacterial, antimicrobial or antiseptic effects. These ingredients have been cross-checked with the database of the 89 products with the 459 ingredients. Furthermore, the producers of the cosmetic products were contacted, but only a few replied.

Two producers listed the ingredients they use for antimicrobial properties (included in the table below). Another producer explained that they by use of a high hygienic standard, heating of raw materials, and convenient packaging together with a small amount of alcohol or essential oils ensured a longer shelf life.

Many different sources – some more serious than others – are referring to, that more than 80 of the ingredients have some kind of antibacterial, antimicrobial or antiseptic effect. However, if only the more serious sources are used this results in more than 60 ingredients (listed in Table 5-11). The list is not exhaustive, as it has not been possible to check all 459 ingredients in this project. However, the search performed shows that many of the other ingredients seem to have some kind of antibacterial, antimicrobial or antiseptic effect even though it is not stated in the CosIng database for these ingredients.

Even though these ingredients are found on the Internet to have an antimicrobial, antiseptic or antibacterial effect, it does not necessarily mean that they are effective as preservatives in the concentrations they are present in the cosmetic products. Citric acid is for example described as having an antimicrobial effect, but according to Georgopoulou et al. (1994) the antimicrobial effect of 25 % of citric acid is less effective than 2.5 % sodium hypochlorite. As described earlier in chapter 3 Self-preserving cosmetics there are many other ways to ensure a low growth of microorganisms without using the "standard" preservatives.

Table 5-11 List of other ingredients with an antimicrobial, antibacterial or antiseptic effect

INCI name	Effect	Source*	No of products**
Glycerin	antibacterial	http://www.gaiagarden.com/pdf/glycerite.pdf	57
Tocopherol	antioxidant	Alander et al., 2006 and http://www.aubrey-organics.com/custom.aspx?id=61	34
Limonene	antiseptic	Inouye et al., 2001 and http://www.faceboutique.com/face_boutique_ingredients.asp	31
Linalool	antimicrobial	Inouye et al., 2001 and Kabara & Orth, 1996 and http://www.faceboutique.com/face_boutique_ingredients.asp	23
Citric acid	antimicrobial, chelating agent	http://www.ncbi.nlm.nih.gov/pubmed/7995646 and Varvaresou et al., 2009	23
Geraniol	antimicrobial	Inouye et al., 2001 and Kabara & Orth, 1996 and http://ora.kku.ac.th/Res_kku/Journal/AttachFile/7682.pdf	18
Lactic acid	antimicrobial	Varvaresou et al., 2009 and http://www.ijdvl.com/article.asp?issn=0378-6323;year=1979;volume=45;issue=2;spage=149;epage=161;aulast=Pasricha;type=0	17
Panthenol	anitmicrobial	http://www.livestrong.com/article/21904-panthenol/	17
Citral	antimicrobial	Billerbeck et al., 2001 and Inouye et al., 2001 and Kabara & Orth, 1996 and http://www3.interscience.wiley.com/journal/120006390/abstract	12
Sodium lactate	antimicrobial	Wit & Rombouts, 1990	12
Citronellol	antimicrobial antiseptic	Billerbeck et al., 2001 and Kabara & Orth, 1996 and http://www.faceboutique.com/face_boutique_ingredients.asp	11
Simmondsia chinensis seed oil	antimicrobial	Contains according to http://www.skinfo.com/pages/jojoba_seed_oil__simmondsia_chinensis_seed_oil_/66.php tocopherols that have preserving effects.	11
Sorbitol	antimicrobial	http://www.freepatentsonline.com/4464469.html	11
Squalane	antibacterial	http://www.trulyageless.com/pages/Ingredients.php	10
Helianthus annuus seed oil	antibacterial	http://www.koei-pcf.co.jp/english/products/cosme/cosme04.html	8
Sodium stearoyl lactylate	antibacterial	http://www.freepatentsonline.com/6878757.html	8
Eugenol	antimicrobial	Kabara & Orth, 1996	7
Lavandula augustifolia oil	antiseptic	http://www.aubrey-organics.com/custom.aspx?id=61 and Council of Europe Publishing, Vol I, 2002 and Inouye et al., 2001	7
Propylene glycol	antimicrobial	Kabara & Orth, 1996	7
Sodium chloride	antiseptic, antimicrobial	Burt, 2004 and Kurita & Koike, 1982	5
Daucus carota sativa root extract	antimicrobial	Council of Europe Publishing, Vol I, 2002	4
Achillea millefolium extract	antiseptic	Council of Europe Publishing, Vol I, 2002	3
Citrus aurantifolia oil	antimicrobial	Oussalah et al., 2006	3
Citrus grandis extract	antibacterial	Inouye et al., 2001	3
Disodium EDTA	antimicrobial	Kabra & Orth, 1996	3
Glyceryl caprylate	antimicrobial	Personal information from producer during this survey	3
Mentha piperita oil	antiseptic	http://www.aubrey-organics.com/custom.aspx?id=61 and	3

INCI name	Effect	Source*	No of products**
		Council of Europe Publishing, Vol I, 2002 and Inouye et al., 2001	
Rosmarinus officinalis leaf extract	antimicrobial	Personal information from producer during this survey	3
Calendula officinalis flower extract	antiseptic	http://www.pureblissonline.co.uk/ingredients-i-77.html and Council of Europe Publishing, Vol I, 2002	2
Citrus aurantium dulcis extract	antibacterial, antimicrobial	http://www.aubrey-organics.com/custom.aspx?id=61 and Council of Europe Publishing, Vol II, 2001	2
Citrus grandis seed extract	antibacterial	Inouye et al., 2001	2
Citrus medica limonium peel extract	antibacterial	http://www.aubrey-organics.com/custom.aspx?id=61 and Council of Europe Publishing, Vol II, 2001	2
Citrus sinensis oil	antimicrobial	Oussalah et al., 2006	2
Eucalyptus globulus leaf extract	antiseptic, antibacterial	http://www.aubrey-organics.com/custom.aspx?id=61 and Council of Europe Publishing, Vol I, 2002 and Inouye et al., 2001	2
Foeniculum vulgare oil	antiseptic, antibacterial	http://www.soapandmore.com/cart/pages.php?pageid=21 and Council of Europe Publishing, Vol II, 2001	2
Lonicera caprifolium flower extract	antibacterial	Personal information from producer during this survey	2
Thymus serpillum extract	antiseptic	Council of Europe Publishing, Vol I, 2002	2
Achillea millefolium oil	antiseptic	Council of Europe Publishing, Vol I, 2002	1
Benzyl salicylate	antimicrobial	Kabra & Orth, 1996	1
Betula alba leaf extract	antiseptic	Council of Europe Publishing, Vol I, 2002	1
Cedrus atlantica oil	antimicrobial	Kabra & Orth, 1996	1
Citrus aurantium amara flower oil	antimicrobial	Council of Europe Publishing, Vol II, 2001	1
Citrus aurantium amara leaf oil	antimicrobial	Council of Europe Publishing, Vol II, 2001	1
Citrus aurantium bergamia fruit oil	antimicrobial	Oussalah et al., 2006	1
Citrus aurantium dulcis flower water	antimicrobial	Council of Europe Publishing, Vol II, 2001	1
Citrus aurantium dulcis peel oil	antimicrobial	Council of Europe Publishing, Vol II, 2001	1
Citrus limonum leaf extract	antimicrobial	Council of Europe Publishing, Vol II, 2001	1
Citrus medica limonum oil	antibacterial	http://www.aubrey-organics.com/custom.aspx?id=61 and Council of Europe Publishing, Vol II, 2001	1
Commiphora myrrha extract	antiseptic	http://sheallnaturalskincare.com/index_files/Page298.htm and Council of Europe Publishing, Vol II, 2001	1
Daucus carota oil	antimicrobial	Council of Europe Publishing, Vol I, 2002	1
Eugenia caryophyllata	antiseptic, antimicrobial	http://www.aubrey-organics.com/custom.aspx?id=61 and Council of Europe Publishing, Vol II, 2001	1
Eugenia caryophyllus bud oil	antiseptic, antimicrobial	http://www.soapandmore.com/cart/pages.php?pageid=21 and Council of Europe Publishing, Vol II, 2001	1
Eugenia caryophyllus oil	antimicrobial	Oussalah et al., 2006	1
Lavandula angustifolia extract	antiseptic	Council of Europe Publishing, Vol I, 2002 and Inouye et al., 2001	1
Lavandula augustifolia flower water	antiseptic	http://www.aubrey-organics.com/custom.aspx?id=61 and Council of Europe Publishing, Vol I, 2002 and Inouye et al., 2001	1
Lavandula angustifolia herb oil	antiseptic	Council of Europe Publishing, Vol I, 2002 and Inouye et al., 2001	1
Magnesium chloride	antiseptic	http://health-information-magnesium-hydrogen-peroxide.info/	1
Melaleuca alternifolia oil	Antibacterial	Inouye et al., 2001	1
Melilotus officinalis	antimicrobial	Council of Europe Publishing, Vol II, 2001	1

INCI name	Effect	Source*	No of products**
extract			
Melissa officinalis extract	antiseptic	Council of Europe Publishing, Vol I, 2002	1
Melissa officinalis leaf extract	antiseptic	Council of Europe Publishing, Vol I, 2002	1
Plantago major extract	antibacterial	Council of Europe Publishing, Vol II, 2001	1
Populus tremouloides bark extract	antibacterial	Personal information from producer during this survey	1
Rosa centifolia extract	antimicrobial, antiseptic	Council of Europe Publishing, Vol II, 2001	1
Rosa centifolia flower water	antimicrobial, antiseptic	Council of Europe Publishing, Vol II, 2001	1
Salix alba bark extract	antimicrobial	Council of Europe Publishing, Vol II, 2001	1
Thymus vulgaris extract	antiseptic	Council of Europe Publishing, Vol I, 2002 and Inouye et al., 2001 and Oussalah et al., 2006	1

* The source indicating that the ingredient has a preserving, antimicrobial, antibacterial or antiseptic effect is listed
** Number of products that contain the specific ingredient

5.3.10 Container design

As described in chapter 3, Self-preserving cosmetics, one way to prevent bacteria growth in the cosmetic products is to design the containers in a way that makes the entry of microorganisms into the products very difficult.

The 89 "non-preserved" or "naturally-preserved" products in this survey have been studied for their container design as well. They are grouped as follows:

- 39 products are in a tube with a screw cap or a cap where the cap can be clicked on/off. Either the screw cap must be screwed off or the cap must be clicked open in order to press out the content.
- 23 products are in a bottle with a screw cap or a cap where the cap can be clicked on/off. Either the screw cap must be screwed off or the cap must be clicked open in order to press out the content.
- 14 products are in a bottle with some kind of dispenser/pump. The pump must be pushed down in order to pump out the content.
- 9 products are in a jar/pot with a large opening/large screw lid. You take out the content by putting your fingers directly into the pot.
- 2 products are roll-on deo products where the content is "rolled out".
- 2 products are products where only information about the ingredients is found on the Internet, but no picture of the product was found.

This means that 9 products out of 87 (about 10 %) of the "non-preserved" or "naturally-preserved" cosmetic products are in a container where the content is easily exposed to bacteria/microorganisms. Whether 10 % is low or normal for (preserved) cosmetic products is not known.

5.3.11 Information about shelf life

The shelf life of the products has been investigated in order to learn if a lack of preservatives in the products will result in a short shelf life.

For 47 of the 89 products information about the product shelf-life was found (mainly from the products that were bought (45 in total)). The shelf-life of the products is listed below.

The shelf-life of the products marketed as ”non-preserved” varies from 3 to 24 months after opening, whereas the products marketed as “naturally-preserved” varies from 6 months to 12 months after opening. In some cases, a date is reported instead of the “shelf-life after opening”. This probably means that the cosmetic products have a shelf life below 30 months unopened, as the durability date must be labelled on the cosmetic product if the shelf life is below 30 months unopened according to the Cosmetics Directive.

Table 5-12 The shelf-life as listed on the products

Marketed as	Product type	Shelf life
Marketed as ”non-preserved”	Facial spray/toner	Jul 10, 3-6 months
	Facial spray/toner	4-5 months
	Baby ointment	3M
	Conditioner	6M
	Conditioner	12M (042010)
	Body lotion/cream	12M
	Body lotion/cream	12M (032011)
	Body lotion/cream	12M (06-2012)
	Body lotion/cream	12M (032012)
	Day cream/facial cream	12M
	Day cream/facial cream	4-5 months
	Day cream/facial cream	12M
	Day cream/facial cream	12M 11-2011
	Day cream/facial cream	12M
	Energizer	24M
	Hand lotion	12M
	Intimate soap	03-2011
	Make-up remover	12M
	Make-up remover	12M
	Cleansing lotion	6M (03/12)
	Cleansing lotion	4-5 months
	Shampoo	12M (09-2011)
	Shampoo	12M
Marketed as ”naturally-preserved”	Facial mask	7M
	Facial spray/toner	6M
	Facial spray/toner	06-2010
	Facial spray/toner	6M
	Facial spray/toner	05-2011
	Body lotion/cream	06-2010
	Body lotion/cream	05-2011
	Body shampoo/bath gel	9M
	Day cream/facial cream	7M
	Day cream/facial cream	JUN 10
	Deodorant	10-2011
	Foundation	12M
	Hand lotion	9M
	Hair styling products	6M
	Make-up remover	06-2010
	Cleansing lotion	03-2010
	Shampoo	6M
	Shampoo	No info
	Sun tan lotion	03/2010
	Sun tan lotion	08-2010
	Tooth paste	03/2010
	Tooth paste	03-2011
	Vitamin cream	7M

Marketed as	Product type	Shelf life
	Eye cream	11-2010

The shelf-life after opening for the investigated products does not show a clear picture, but some of the products have a shelf-life after opening which is shorter than 12 months. As the "typical" shelf life after opening of a segment of cosmetic products in ***one*** cosmetics shop is 12 months, this could indicate that both "non-preserved" and "naturally-preserved" products may have a shorter shelf life than preserved cosmetic products. This statement is, however, ***not*** based on a thorough survey, and based on this survey it is not possible to say for certain whether the shelf life of this type of cosmetic products is shorter than "normally" (for products containing preservatives).

As described in chapter 3 Self-preserving cosmetics, the growth of microorganisms and thereby the shelf life of the cosmetics is not only dependant on the content of preservatives. Many other factors can influence the shelf life. For example different vegetable oils do themselves have different shelf lives, because the different degree of saturation of the oils. Polyunsaturated oils are more sensitive to oxidation and thereby have a limited shelf life. Therefore, the shelf life of a cosmetic product is a result of the combination of the different ingredients (=the formulation used) in the products.

This survey could indicate that both "non-preserved" and "naturally-preserved" products may have a shorter shelf life than preserved cosmetic products, but this aspect has not been investigated thoroughly in this survey. In general, the shelf-life after opening for the investigated products does not show a clear picture.

5.4 Products/ingredients selected for analysis

In all four ingredients were chosen as a focus for the chemical analysis and the subsequent risk and health assessment. The choice of ingredients was made in cooperation with the Danish EPA. The four ingredients chosen were:

- Limonene
- Linalool
- Geraniol
- Citral

These four fragrances are part of the 26 fragrances that must be declared on the cosmetic product if they are present above a specific percentage in the product (0.01% in rinse-off products and 0.001% in leave-on products).

These fragrances were chosen for analysis and subsequent risk and health assessment, as they are a part of many different essential oils that are present in the non-preserved or naturally preserved cosmetic products investigated in this survey, and as these substances are considered to be antibacterial at a certain concentration level (Inouye et al., 2001), (Kabara & Orth, 1996).

5.4.1 Content of the fragrances

There is a declared content of fragrances (the word "parfum" listed on the product) in 16 of the 89 products, i.e. 18 % of the products. However, 22 products do for some reason not declare a content of perfume even though

they contain one or more of the 26 fragrances mandatory to declare on the cosmetic products if they are present above certain concentrations. (Stat. Ord. 422, 2006).

In total, 38 of the 89 non-preserved cosmetic products, i.e. 43 % of the products, contain fragrances. Concerning the specific four fragrances listed above the number of products is 33, which means that 37 % of the investigated products contain one or more of these four fragrances.

5.4.2 Frequent ingredients

In table 5-13 below the most frequent ingredients (in the investigated 89 cosmetic products) that have some kind of antibacterial, antimicrobial or antiseptic effect are listed. The list also shows:

- in which type of cosmetic products the ingredients are present,
- if the ingredients are present in both non-preserved and naturally preserved products,
- in how many products the ingredients are present, and
- if the ingredients are classified as hazardous.

The four ingredients chosen as a focus for the chemical analysis and the subsequent risk and health assessment are marked with gray shading.

It seems that these listed frequent ingredients are "typical" ingredients that can be found in general in cosmetic products. However, this has not been investigated in details. Most of these frequent ingredients are equally frequent in non-preserved products and in naturally preserved products. However, it seems that the fragrances are more frequently used in the naturally preserved products than the non-preserved products.

Table 5-13 The most frequent ingredients in the 89 investigated cosmetic products. The listed ingredients have some kind of preserving, antimicrobial, antibacterial or antiseptic effect (see Table 5-11 for details/references).

INCI name	Function	Marketing description	No.	Product types	Classification as hazardous
Glycerin	antibacterial	25 – non-preserved, 32 – naturally preserved	57	Day cream/facial cream, Hand cream, Cleansing lotion, Facial spray/toner, Anti-ageing Fluid, Baby ointment, Conditioner, Body lotion/cream, Body shampoo, Day cream/facial cream, Deodorant, Energizer, Foundation, Hand cream, Make-up remover, Peeling mask, Cleansing lotion, Shampoo, Suntan lotion, Tooth paste, Vitamin cream, Eye cream	No
Tocopherol	antioxidant	16 – non-preserved, 18 – naturally preserved	34	Facial mask, Anti-ageing Fluid, Conditioner, Body lotion/cream, Day cream/facial cream, Energizer, Hand cream, Make-up remover, Peeling mask, Cleansing lotion, Shampoo, Bubble bath, Suntan lotion, Vitamin cream, Eye cream	No
Alcohol	antimicrobial	15 – non-preserved, 18 – naturally preserved	33	Facial spray/toner, Anti-ageing Fluid, Conditioner, Body lotion/cream, Body scrub, Body shampoo, Day cream/facial cream, Deodorant, Energizer, Foundation, Hand cream, Peeling mask, Cleansing lotion, Suntan lotion, Vitamin cream, Eye cream	F; R11
Limonene	antiseptic	7 – non-preserved, 24 – naturally preserved	31	**Facial spray/toner**, Anti-ageing cream, **Conditioner**, **Body**	R10 Xi;R38 R43 N;R50/53

INCI name	Function	Marketing description	No.	Product types	Classification as hazardous
				lotion/cream, Body shampoo, **Day cream/facial cream**, **Deodorant**, Energizer, Foundation, **Hand cream**, Peeling mask, Cleansing lotion, Bubble bath, Suntan lotion, Tooth paste	
Linalool	antimicrobial	4 – non-preserved, 19 – naturally preserved	23	**Facial spray/toner**, **Conditioner**, **Body lotion/cream**, Body shampoo, **Day cream/facial cream**, **Deodorant**, Foundation, **Hand cream**, Peeling mask, Cleansing lotion, Shampoo, Suntan lotion	No
Citric acid	antimicrobial	17 – non-preserved, 6 – naturally preserved	23	Facial spray/toner, Baby ointment, Conditioner, Body lotion/cream, Body scrub, Body shampoo, Energizer, Make-up remover, Peeling mask, Cleansing lotion, Shampoo, Vitamin cream	No
Geraniol	antimicrobial	2 – non-preserved, 16 – naturally preserved	18	**Conditioner**, **Body lotion/cream**, Body shampoo, **Day cream/facial cream**, **Deodorant**, Energizer, Foundation, **Hand cream**, Cleansing lotion, Suntan lotion	MST N;R50
Lactic acid	antimicrobial	5 – non-preserved, 12 – naturally preserved	17	Anti-ageing fluid, conditioner, body lotion/cream, body shampoo, day cream/facial cream, deodorant, hand cream, intimate soap, peeling mask, shampoo, bubble bath	No
Panthenol	anitmicrobial	9 – non-preserved, 8 – naturally preserved	17	Facial spray/toner, anti-ageing fluid, baby ointment, conditioner, body lotion/cream, day cream/facial cream, energizer, hand cream, hair styling products, cleansing lotion, shampoo, vitamin cream, eye cream	No
Sodium lactate	anitmicrobial	4 – non-preserved, 8 – naturally preserved	12	Facial mask, anti-ageing fluid, conditioner, body lotion/cream, day cream/facial cream, hand cream, suntan lotion, vitamin cream	No
Citral	antimicrobial	2 – non-preserved, 10 – naturally preserved	12	**Conditioner**, **Body lotion/cream**, Body shampoo, **Day cream/facial cream**, **Deodorant**, Foundation, **Hand cream**, Suntan lotion	Xi; R38 R43
Citronellol	antimicrobial antiseptic	0 – non-preserved, 11 – naturally preserved	11	Conditioner, Body shampoo, Day cream/facial cream, Deodorant, Foundation, Hand cream, Cleansing lotion, Suntan lotion	No
Squalane	antibacterial	8 – non-preserved, 2 – naturally preserved	10	Anti-ageing Fluid, Body lotion/cream, Day cream/facial cream, Cleansing lotion, Eye cream	No

5.4.3 Frequent product types and leave-on product types

Table 5-4 in section 5.3.4 Product type shows an overview of the marketing category and the product type of the cosmetic products. The most abundant product types are highlighted in Table 5-14 below. The table shows that the product types "body lotion/cream" and "day cream/facial cream" are the most frequent product types in the investigation. This could indicate that these types of products are the most abundant types of products on the Danish market, when it comes to "non-preserved" and/or "naturally-preserved" products.

Of the product types listed below, "body lotion/cream", "day cream/facial cream", "facial spray/toner", "hand cream" and "deodorant" are leave-on product types, which means the cosmetic products are left on the skin upon

application. The product types “make-up remover” and “conditioner” are both leave-on and rinse-off products (e.g. one of the conditioner is a leave-in conditioner). The rest is products that are rinsed-off after use.

The product types listed above (marked with grey shading in the table below) have a longer skin contact and are therefore investigated further with respect to the content of preservatives and/or ingredients with antimicrobial or antiseptic effects.

Table 5-14 Overview of the marketing category and product type of the cosmetic products – selected product types (more than 1 products in total). For all product categories see section 5.3.4 Product type.

Product type	“Leave-on” or “rinse-off” product	Marketed as "non-preserved”	Marketed as "naturally-preserved”	Number of products in total
Body lotion/cream	Leave-on	9	4	13
Day cream/facial cream	Leave-on	6	4	10
Body shampoo/bath gel	Rinse-off	4	5	9
Cleansing lotion	Rinse-off	6	2	8
Shampoo	Rinse-off	4	4	8
Facial spray/toner	Leave-on	2	4	6
Conditioner	Both	2	3	5
Hand cream	Leave-on	1	3	4
Make-up remover	Both	2	1	3
Eye cream	Leave-on	1	2	3
Tooth paste	Rinse-off	3	0	3
Deodorant	Leave-on	1	1	2
Suntan lotion	Leave-on	2	0	2

When these product types (marked with grey shading in the table) are combined with the information about the most frequent ingredients with some kind of antimicrobial, antibacterial effect etc., it was concluded that the four fragrances chosen for the chemical analysis and the subsequent risk and health assessment were present in many of these leave-on products.

5.4.4 Products selected for analysis

Table 5-13 shows that the four chosen ingredients, limonene, linalool, geraniol and citral, are present in 31, 23, 18 and 12 products respectively. However, as these fragrances not necessarily are declared on the cosmetic products (only have to be declared if above 0.001 % or 10 ppm), products that contain e.g. thyme oil (thymus vulgaris), lavender oil (lavandula angustifolia), and different citrus oils (citrus aurantium, citrus aurantifolia, citrus grandis, citrus paradise, citrus sinensis, citrus medica) have therefore also been selected for analysis as these essential oils also may contain the fragrances in question.

When selecting which products that should be analysed for the content of limonene, linalool, geraniol and citral, the database was used to find the cosmetic products where the following was true:

- The cosmetic products contain limonene, linalool, geraniol and citral – or some kind of essential oil that typically contains these fragrances.
- The cosmetic products are leave-on products, i.e. the seven product types listed above.
- The product type is represented by both non-preserved and naturally preserved products. This requirement was chosen in order to be able to compare differences in concentrations of the two product groups.

This cross-examination of the information in the database resulted in 22 products. As it turned out that one of the products was in back order and could not be purchased for the analysis, 21 products in total were analysed for the content of the fragrances limonene, linalool, geraniol and citral. The result of the analyses is presented in chapter 6 Analysis results.

The 21 products that were analysed for the content of the four fragrances were:

- 4 body lotions/creams
- 5 day creams/facial creams
- 4 facial sprays/toners
- 3 hand creams
- 3 conditioners
- 2 deodorants

None of the make-up removers contained any of the four selected fragrances or essential oils with a content of the four fragrances.

6 Analysis results

The purpose of the analysis of the 21 cosmetic products was to measure the concentration of the four fragrances limonene, linalool, geraniol and citral.

6.1 Analysis for selected constituents

6.1.1 Analysis method for fragrances

A partial sample of the product is extracted by water and tert-butylmethylether by means of suspending, heating, cooling and standing during about 16 hours. A partial sample of the extract is extracted and analyzed directly via combined gas chromatography and mass spectrometry (GC/MS). The analyses are conducted as real repeat determination.

The detection limit is 1 mg/kg and the analysis error is 35 % RSD.

6.1.2 Analysis results

21 cosmetic products were analysed for the total content of the four specific fragrances (citral, geraniol, linalool and limonene) in repeat determination. The content of the four single fragrances varied from < 1 mg/kg to 32,000 mg/kg corresponding to from 0.0001 % (w/w) to 3.2 % (w/w). The results are stated in the table in the unit mg/kg (ppm).

As described in chapter 4 “Legislation”, and according to Appendix 3 of the statutory order, the 26 fragrances mandatory to declare must be stated in the declaration of content, no matter their function in the products when the concentration is higher than 0.001% (i.e. 10 mg/kg) in leave-on products and 0.01% (i.e. 100 mg/kg) in rinse-off products (Stat. Ord. 422 §25, 2006).

Table 6-1 Measured content of the four fragrances in hand lotion

Unit: mg/kg	334 naturally preserved			344 naturally preserved			362 naturally preserved		
Parameter	1.	2.	Average	1.	2.	Average	1.	2.	Average
Citral	28	26	27	51	52	52	3	3	3
Geraniol	590	640	620	110	100	110	10	10	10
Limonene	720	780	750	7700	5300	6500	1400	870	1100
Linalool	2700	2800	2800	160	140	150	58	44	50

Table 6-2 Measured content of the four fragrances in deodorants (roll-on)

Unit: mg/kg	275 naturally preserved			322 non-preserved		
Parameter	1.	2.	Average	1.	2.	Average
Citral	27	27	27	< 1	< 1	< 1
Geraniol	590	600	600	15	15	15
Limonene	1400	1600	1500	1	2	2
Linalool	1300	1400	1400	83	82	83

Table 6-3 Measured content of the four fragrances in day creams/facial creams

Unit: mg/kg	294 non-preserved			297 naturally preserved			309 non-preserved		
Parameter	1.	2.	Average	1.	2.	Average	1.	2.	Average
Citral	< 1	< 1	< 1	< 1	< 1	< 1	35	30	33
Geraniol	3	3	3	< 1	< 1	< 1	460	410	440
Limonene	< 1	< 1	< 1	< 1	< 1	< 1	9	7	8
Linalool	< 1	< 1	< 1	< 1	< 1	< 1	680	620	650

Table 6-4 Measured content of the four fragrances in day creams/facial creams - continued

Unit: mg/kg	358 naturally preserved			361 naturally preserved		
Parameter	1.	2.	Average	1.	2.	Average
Citral	4	2	3	5	6	6
Geraniol	3	4	4	8	8	8
Limonene	310	430	370	270	280	280
Linalool	16	18	17	500	510	510

Table 6-5 Measured content of the four fragrances in body lotion/creams

Unit: mg/kg	316 non-preserved			321 non-preserved		
Parameter	1.	2.	Average	1.	2.	Average
Citral	41	47	44	< 1	< 1	< 1
Geraniol	4	4	4	< 1	< 1	< 1
Limonene	2200	2300	2300	< 1	< 1	< 1
Linalool	140	170	160	< 1	< 1	< 1

Table 6-6 Measured content of the four fragrances in body lotion/creams - continued

Unit: mg/kg	274 naturally preserved			355 naturally preserved		
Parameter	1.	2.	Average	1.	2.	Average
Citral	7	6	7	< 1	< 1	< 1
Geraniol	4	4	4	< 1	< 1	< 1
Limonene	2100	2600	2400	24	15	20
Linalool	120	140	130	61	51	56

Table 6-7 Measured content of the four fragrances in conditioners

Unit: mg/kg	332 non-preserved			350 (for kids/leave in product) naturally preserved			351 (for kids) naturally preserved		
Parameter	1.	2.	Average	1.	2.	Average	1.	2.	Average
Citral	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Geraniol	51	40	46	9	10	10	8	9	9
Limonene	72	67	70	2500	2300	2400	26000	32000	29000
Linalool	580	520	550	41	35	38	160	180	170

Table 6-8 Measured content of the four fragrances in facial sprays/toners

Unit: mg/kg	295 naturally preserved			301 naturally preserved		
Parameter	1.	2.	Average	1.	2.	Average
Citral	2	1	2	< 1	< 1	< 1
Geraniol	1	1	1	3	2	3
Limonene	< 1	< 1	< 1	18	16	17
Linalool	6	5	6	25	22	24

Table 6-9 Measured content of the four fragrances in facial sprays/toners - continued

Unit: mg/kg	311 non-preserved			336 non-preserved		
Parameter	1.	2.	Average	1.	2.	Average
Citral	< 1	< 1	< 1	< 1	< 1	< 1
Geraniol	16	13	15	5	5	5
Limonene	< 1	< 1	< 1	< 1	< 1	< 1
Linalool	66	70	68	23	23	23

6.1.3 Comparison with contents in other cosmetic products

The content of fragrances has been measured in two former projects under the consumer product programme "Survey on chemicals in consumer products" of the Danish EPA; survey No. 86 (Deodorants) and survey No. 88 (Cosmetic products for children), (Danish EPA, 2007a and Danish EPA, 2007b). In the latter project many different type of cosmetic products were investigated as well.

Unfortunately, the former surveys as well as this survey have not investigated many of the same types of cosmetic products. Only roll-on deodorants and body lotion are product types that have been analysed in the former surveys as well as in the present survey.

Table 6-10 Measured content of the four fragrances in deodorants (roll-on) in this project (Two products) and in a former survey (two products) from the Danish EPA.

Unit: mg/kg	This survey naturally preserved		This survey non-preserved		Former survey No. 86	
Parameter	Min	Max	Min	Max	Min	Max
Citral	27	27	< 1	< 1	-	44
Geraniol	590	600	15	15	1	48,6
Limonene	1400	1600	1	2	-	5489
Linalool	1300	1400	83	82	-	377

In survey No. 86 two roll-on deodorants were analysed for the content of citral, geraniol, limonene, and linalool. The content measured were 0-44 ppm, 1-49 ppm, 0-5489 ppm, and 0-377 ppm respectively.

Table 6-11 Measured content of the four fragrances in body lotion/creams in this project (three products) and in a former survey (one product) from the Danish EPA.

Unit: mg/kg	This survey naturally preserved		This survey non-preserved		Former survey No. 88	
Parameter	Min	Max	Min	Max	Min	Max
Citral	6	7	< 1	47	-	-
Geraniol	4	4	< 1	4	-	-
Limonene	2100	2600	< 1	2300	350	400
Linalool	120	140	< 1	170	26	31

In survey No. 88 one body lotion was analysed for the content of citral, geraniol, limonene, and linalool. The content measured was 0 ppm, 0 ppm, 400 ppm, and 31 ppm respectively.

When comparing this data to the contents listed above for the products investigated in this survey, no clear picture is seen – other than the content of the fragrances seems to be somewhat on the same level in both this survey and the former surveys. However, as there are very few products where the content has been measured, the comparison is uncertain.

7 Antibacterial effects of the selected substances

Many of the 459 different ingredients found in the investigated "non-preserved" or "naturally-preserved" cosmetic products have some kind of antibacterial, antimicrobial or antiseptic effect (as described in chapter 5.3.9 Content of preservatives and antimicrobial ingredients). Four of the most common used ingredients – four fragrances – were chosen for chemical analysis and further assessment: citral, geraniol, limonene and linalool. These fragrances were listed on the ingredients list of 13%, 20%, 35%, and 26% of the investigated products respectively, and in concentrations of up to 52 ppm, 640 ppm, 32,000 ppm (3.2%) and 2800 ppm (0.3%) respectively.

In this chapter, the antimicrobial, antibacterial and/or preserving effect of these four fragrances is described in more details.

A literature search has been performed which resulted in primarily articles of the antimicrobial activities of essential oils within the area of food preservation. Some articles list the minimum inhibitory concentration (MIC) for specific essential oils in ***in vitro*** tests. However, it is suggested that a higher concentration is needed to achieve the same effect in foods (Burt, 2004). Whether this is applicable for cosmetics as well is unknown.

According to Burt (2004), a few preservatives containing essential oils (EOs) are commercially available. These probably contain one or more essential oils and are dispersed in solutions of sodium citrate or sodium chloride.

7.1 Antibacterial effects of essential oils

The four selected fragrances are all part of essential oils. An essential oil (EO) is a concentrated hydrophobic (water-repelling) liquid containing volatile aroma compounds from plants. Essential oils contain a mixture of different compounds where the selected four fragrances in this project may constitute a varying percentage.

- Citral is present in the oils of several plants including lemon myrtle, lemon grass, lemon tea-tree, lemon verbena, lemon, orange etc.
- Geraniol is the primary part of rose oil, palmarosa oil and citronella oil, and is also a part of many other essential oils such as lemon.
- Limonene is commonly found in citrus plants.
- Linalool is present in over 200 different plants, e.g. lavender, cinnamon, rosewood, and sweet basil.

In vitro studies have demonstrated that a number of essential oils and several of their individual components exhibit antibacterial activity against six different food borne pathogens at levels between 0.2 and 10 µl/ml, i.e.

between 200 and 10,000 ppm (Burt, 2004). The pathogens[8] mentioned by Burt (2004) are Listeria monocytogenes, Salmonella typhimurium, Escherichia coli O157:H7 (commonly abbreviated E. Coli), Shigella dysenteria, Bacillus cereus and Staphylococcus aureus.

Some studies have concluded that whole essential oils have a greater antibacterial activity than a mix of the major components. This suggests that the minor components are critical to the activity and may have a synergistic effect (Burt, 2004). This means that even though geraniol for example constitutes 80% of palmarosa, which has a minimum inhibitory concentration (MIC) of 0.2 % (wt/vol) (Oussalah et al., 2006), it does not necessarily mean that the MIC of geraniol alone is correspondingly low. A recent article confirms this aspect by showing that the antimicrobial potential of three different essential oil components alone can be strengthened by combining the appropriate concentrations of each of them (Belletti et al., 2010).

The mechanism of the antibacterial action for the essential oils is not well known. However, as there is a large number of different groups of chemical compounds present in essential oils, it is most likely that their antibacterial activity is not attributable to one specific mechanism, but that there are several mechanisms in action. An important characteristic of the essential oils and their components is their hydrophobicity which enables them to partition in the lipids of the bacterial cell membrane and mitochondria, disturbing the structures and rendering them more permeable which can result in leakage of ions and other cell contents. Extensive loss of cell contents will lead to cell death (Burt, 2004).

A number of potential factors have been suggested for having a synergistic effect on the antibacterial activity of essential oils (Burt, 2004):

- Low pH
- Low water activity
- Chelators
- Low oxygen tenstion
- Mild heat
- Raised pressure

Furthermore, sodium chloride has been shown to work as a synergist with essential oils and/or their components (Burt, 2004). This is also confirmed by Kurita & Koike (1982) who showed that in the presence of salt certain essential oils are useful to effectively preserve foods containing more than 7% NaCl.

As described above, the antibacterial effects of essential oils are still an area that is being investigated. There is no doubt that essential oils have an antibacterial effect, the mechanisms behind is, however, not yet fully understood.

[8] A pathogen, also called an infectious agent or more commonly germ, is a biological agent that causes disease to its host.

7.2 Antibacterial effects of the four selected fragrances

A recent article shows that the antimicrobial potential of citral, linalool and β-pinene alone can be strengthened by combining the appropriate concentrations of each of them (Belletti et al., 2010).

The following minimum inhibitory concentrations (MIC) have been found for the four fragrances in the literature (see Table 7-1 below).

Table 7-1 Minimum inhibitory concentrations (MIC) for essential oils containing the four fragrances

Essential oil or essential oil component	Fragrance concentration	Species of bacteria	MIC	Reference
Citral	Citral (100%)	E. coli, S. typhimurium, Staph. Aureus, L. monocytogenes	0.5 µl/ml (500 ppm) 0.5 µl/ml (500 ppm) 0.5 µl/ml (500 ppm) 0.5 µl/ml (500 ppm)	Onawunmi, 1989 and Kim et al., 1995 in Burt, 2004
Citral	Citral (100%)	A number of fungal food pathogens	3 µl/ml (3000 ppm)	Linde et al., 2010
Citral	Citral (100%)	H. influenzae, S. pyogenes, S. pneumonaiae, S. aureus, E. coli	3.13 mg/L air (MID*) 3.13 mg/L air (MID*) 6.25 mg/L air (MID*) 12.5 mg/L air (MID*) > 12.5 mg/L air (MID*)	Inouye et al., 2001
Geraniol	Geraniol (100%)	E. coli, S. typhimurium, L. monocytogenes	0.5 µl/ml (500 ppm) 0.5 µl/ml (500 ppm) 1.0 µl/ml (500 ppm)	Kim et al., 1995 in Burt, 2004
Geraniol	Geraniol (100%)	H. influenzae, S. pyogenes, S. pneumonaiae, S. aureus, E. coli	6.25 mg/L air (MID*) 12.5 mg/L air (MID*) 6.25 mg/L air (MID*) > 25 mg/L air (MID*) > 25 mg/L air (MID*)	Inouye et al., 2001
Indian palmarosa (Cymbopogon flexousus)	Geraniol (80.14%)	Pseudomonas putida	0.2 wt/vl (200 ppm)	Oussalah et al., 2006
Ceylon citronella (Cymbopogon nardus)	Geraniol (19.11%), limonene (9.92%)	Pseudomonas putida	0.4 wt/vl (400 ppm)	Oussalah et al., 2006
Limonene	Limonene (100%)	H. influenzae, S. pyogenes, S. pneumonaiae, S. aureus, E. coli	200 mg/L air (MID*) 400 mg/L air (MID*) 200 - 400 mg/L air (MID*) 800 mg/L air (MID*) > 800 mg/L air (MID*)	Inouye et al., 2001
Bitter orange (Citrus aurantium)	Limonene (94,66%)	Pseudomonas putida	> 0.8 wt/vl (> 800 ppm)	Oussalah et al., 2006
Chaerophyllum libanoticum Boiss.	Limonene (15.9%)	A number of human	0.25 – 0.5 mg/ml (250,000 –	Demirci et al., 22007

Essential oil or essential oil component	Fragrance concentration	Species of bacteria	MIC	Reference
et Kothschy		pathogenic bacteria, e.g. staphylococcus aureus	500,000 ppm)	
Citrus reticulata Blanco	Limonene (46.7%)	Plant pathogens: Alternaria alternate, Rhizoctonia solani, Curvularia lunata	0.2 ml/100 ml (2000 ppm)	Chutia et al., 2009
Linalool	Linallol (100%)	H. influenzae, S. pyogenes, S. pneumonaiae, S. aureus, E. coli	12.5 mg/L air (MID*) 25 mg/L air (MID*) 25 mg/L air (MID*) 50 mg/L air (MID*) 50 mg/L air (MID*)	Inouye et al., 2001
Coriander (Coriandrum sativum)	Linalool (70.29%)	Pseudomonas putida	0.8 wt/vl (800 ppm)	Oussalah et al., 2006
Reydovan lavandin (Lavandula hybrid reydovan)	Linalool (50.58%	Pseudomonas putida	0.8 wt/vl (800 ppm)	Oussalah et al., 2006
Common linalool thyme (Thymus vulgaris linaloliferum)	Linalool (59.72%)	Pseudomonas putida	0.8 wt/vl (800 ppm)	Oussalah et al., 2006
Thymus algeriensis	Linalool (47.3%)	Bacillus subtilis, different yeasts, different filamentous fungi	0.5 µl/ml (500 ppm) 0.5 µl/ml (500 ppm) 1.0 µl/ml (1000 ppm)	Dob et al., 2006

* MID = Minimal Inhibitory Dose. For these data the inhibitory dose is reported as an airborne concentration. The article investigates the antibacterial activity of essential oils and their major constituents against respiratory tract pathogens by gaseous contact (Inouye et al., 2001).

From the table, it can be seen that citral, geraniol, and linalool seem to be antibacterial already at levels around 500 ppm, whereas a higher limonene concentration is needed – minimum 2000 ppm. This corresponds to the minimal inhibitory dose found in airborne tests, where a higher concentration of limonene also is needed compared to citral, geraniol and linalool (between 8 to 40 times higher).

7.3 Comparison of antibacterial effect levels with measured content of fragrances in the studied products

When the limits of which the fragrances exhibit antibacterial effects are compared with the content concentrations measured by chemical analysis of the 21 examined products, the following can be seen:

- None of the analyzed products contains citral in a concentration that seems to be antibacterial.
- Two of the analyzed products contain geraniol in a concentration that seems to be antibacterial.
- Five of the analyzed products contain limonene in a concentration that seems to be antibacterial.

- Five of the analyzed products contain linalool in a concentration that seems to be antibacterial.
- In total, 10 of the analyzed products contain geraniol, linalool and/or limonene in a concentration as high as or higher than the concentrations listed above (500 or 2000 ppm) where the fragrances (alone) have antibacterial properties.

This means that for 10 of the 21 analyzed products the concentration of the fragrances is high enough to exhibit antibacterial properties, and the fragrances could therefore be working as antibacterials. It is, however, not known whether this minimum inhibitory concentration found in vitro also is effective in different formulations of cosmetic products, i.e. if the concentration of 500 and 2000 ppm respectively is the necessary concentration for exhibiting antibacterial properties in cosmetic products.

8 Health assessment

In collaboration with the Danish EPA it was decided to make a health assessment of the following four fragrance substances occurring in non-preserved or naturally-preserved cosmetic products:

- Geraniol
- Citral
- Linalool
- Limonene

Citral, linalool and limonene have been described and assessed in previous Danish EPA project under the programme "Survey of chemical substances in consumer products". For this reason the assessments of these substances below are to a large extend based on the previous reports.

The description of the four fragrances below shows that for all four fragrances the critical effect is allergic contact dermatitis.

Hagvell (2009) has shown that for many fragrance terpenes (the type of which citral, geraniol, linalool and limonene belongs to), it is not the fragrance itself, but the oxidation products that are the sensitizers. Hagvell (2009) states that limonene, linalool, geraniol and citral have all been proven to autoxidize to form sensitizing oxidation products. Actually, the oxidation products can be very strong sensitizers. Therefore, the degree of the sensitizing effect is a result of the degree of the (auto)oxidation. Hagvell (2009) shows that in a period of about 20-35 weeks the concentration of linalool and geraniol is reduced to one half because of autoxidation, whereas geranial (isomer (ingredient) of citral) is reduced to one half by autoxidation in only 8 weeks, when exposed to air.

Since allergic contact dermatitis is judged to be the critical effect related to the four substances, no efforts have been made to identify oral or dermal uptake rates, as well as no information regarding background exposures has been gathered. This information is only relevant when the risk assessment is based on uptake of the substance ***into*** the body and not merely causing an allergic reaction on the skin.

Data on the skin sensitizing potential of the fragrances is, however, presented. In a recent report by RIVM (2008), the National Institute for Public Health and the Environment in the Netherlands, the newest data on the potency of allergens present in consumer products is listed. In Appendix 6 of the report the potency of the fragrances is listed as LLNA EC3 values – the concentration that ***induces*** a reaction in mice when applied on the ears of the mice three days in a row (ICCVAM IWG LLNA Protocol, 2001). Substances that elicit a 3-fold or greater proliferative activity compared to the controls are considered to be sensitizers. The amount of chemical required to induce this 3-fold activity is the EC3-value.

Only information about the sensitizing properties of the four fragrances by skin exposure is described. No information has been found on the allergenic

effects by inhalation of the four fragrances and therefore contribution by inhalation is not described in this report.

8.1 Citral

The health aspects related to citral have been described in the Danish EPA report “Survey and health assessment of chemical substances in massage oils” (Danish EPA, 2006). The majority of the information presented below is derived from this report, supplied with newer information regarding sensitisation.

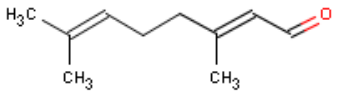
8.1.1 Occurrence and application

Citral is an important fragrance ingredient appreciated for its powerful lemon-aroma. It is widely used in fragrance formulations and added to numerous consumer products (Lalko and Api, 2008). Citral is also applied as flavour additive in foodstuffs (Danish EPA, 2006).

In this project, citral has been found in 12 of 89 investigated products, i.e. in 13% of the products.

8.1.2 Identification and physical and chemical properties

Citral is a pale yellow, water-insoluble, liquid terpenealdehyde. In natural form citral consists of a mixture of two isomers: 1) the trans-isomer citral a or geranial (55-70%) and 2) the cis-isomer citral b or neral (35-45%) (Danish EPA, 2006).

Chemical name	3,7-Dimethylocta-2,6-dienal
Synonyms	Citral a (*trans-*) = Geranial Citral b (*cis-)* = Neral
INCI name	Citral
CAS No.	5392-40-5
EINECS No.	226-394-6
Emperical formula	$C_{10}H_{16}O$
Molecular structure	
Legislation: Classified in accordance with the list of harmonized classification and labelling of certain hazardous substances. Annex VI of Regulation No 1272/2008 on classification, labelling and packaging of substances and mixtures (Regulation 1272, 2008). List of Undesirable Substances 2010. Cosmetics	 Xi; R38 Irritatitng to skin, R43: May cause sensitisation by skin contact. Listed, as the substance is assessed to be allergenic at skin contact, and is one of the 26 fragrance allergens assessed by SCCNFP. Fragrances are to be declared in cosmetics if applied in quantities above 0.01% in products which are meant to be cleansed off, and 0.001% in products which are meant to stay on the skin.
International Fragrance Association (IFRA)	An IFRA standard on this substance does exist and is reviewed in 2006 (IFRA Citral, 2009).

Reference: Danish EPA (2006)

Physical form	Liquid
Mol weight	152.24 g/mol
Melting point	< 10 °C
Boiling point	226-228 °C
Vapour pressure	< 130 Pa at 100 °C
Octanol/water partition coefficient (log Kow)	2.8 for neral and 3.0 for geranial at 25 °C
Water solubility	590 mg/L at 25 °C

Reference: Danish EPA (2006)

8.1.3 Acute and chronic effects - in short

As described in Danish EPA (2006) WHO found that citral metabolises to harmless substances that are quickly excreted through the kidneys. The acute toxicity is low. The dermal LD_{50}-value for rabbits was found to be 2250 mg/kg bw, and the LD_{50}-value in rats for oral exposure was 4960 mg/kg bw, i.e. resulting in no classification as harmful to health[9]. In addition rat/mouse inhalation studies determined a LC_{50} value of 12.500 ppm, and the substance was evaluated as moderately toxic (Luo et al. 2005).

Long-term studies of citral exposure to rats showed effects on kidneys in male rats and low increase and reduction of the bone marrow in female rats.

[9] Citral is classified as harmful because of its irritating and sensitising effect.

Another long-term study showed a dose-dependent increase of the mineralization of the kidneys. No indication of carcinogenic effects was observed. Studies testing for genotoxic properties also showed no effects (Danish EPA, 2006). The lowest experimental oral NOAEL value was 200 mg/kg/day in rats exposed for 46 days.

In a developmental toxicity study with female rats exposed to citral by inhalation for 6 hours/day during the 6-15 days of gestation significant maternal toxicity such as reduction of body weight, abortion (one female, on day 10 of gestation) and death (one female, on day 17 of gestation) were observed at 68 ppm. However, no significant teratogenicity was noted at 68 ppm. A NOAEL of teratogenicity was established at 68 ppm (423 mg/m^3) or equivalent to 77 mg/kg/day (Danish EPA, 2006).

Testing in rabbits showed that citral was skin irritating but not eye irritating (Danish EPA, 2006).

8.1.4 Allergy

Many cases of allergic reactions in consumers caused by citral have been reported. In fact, citral is in an Opinion by SCCNFP (The Scientific Committee on Cosmetic Products and Non-Food Products intended for Consumers) listed as one of the fragrance chemicals most frequently reported as contact allergens (SCCNFP, 1999).

In the same opinion, several studies are described in which people developed allergenic reactions after exposure to citral. One study exposed 2455 eczema patients with two separate mixes: one standard fragrance mix and a new mix containing dihydrocoumarine and citral instead of oak moss and amyl cinnamic aldehyde. 6.7% of the patiens reacted to the new mix. 78 patients positive to either of the mixes were patch tested with the individual ingredients. Isoeugenol gave most reactions followed by citral (2% in pet) giving reactions in 13 individuals (Wilkinson et al., 1989 in Danish EPA, 2006).

Two other studies are described in which 4 out of 228 patients (1.7%) reacted to citral (1% in pet) (Michell et al., 1982) and 19 out of 1855 patients (1%) respectively showed allergenic reactions to citral (reference not reported).

Another study describes tests performed with patients who were suspected of having contact allergy to cosmetics. A patch test applying a series of 22 fragrances were used with 182 patients. 2.6% showed a positive reaction to citral (2% in pet) (Malten et al., 1984).

According to the opinion by SCCNFP (1999) citral was found in 4/79 cosmetic products sent in for analysis by the patients or their physicians (Malten et al., 1984).

Using 2% citral in petrolatum is the recommended concentration for testing. No data on µg citral/cm^2 necessary for elicitating allergic reactions were reported in the Opinion from SCCNFP (1999).

According to IFRA Code of Practice (1999) citral belongs to fragrances which should not be used separately but only in mixtures with substances depressing the sensitizing effect of the substance. IFRA recommends that citral is only applied in products together with substances preventing a

sensitizing effect, for example 25% ***d***-limonene, mixed citrus terpenes or α-pinenes (IFRA Code of Practice, 1999). However, in a position paper from SCCNFP (2000) they state that even though the fragrance industry claims that the quenching phenomenon exists (the presence of a distinct chemical substances, also used as an ingredient of a fragrance compound, will inhibit the sensitising capacity of another substance), this phenomenon should only be regarded as a hypothesis as there is no evidence of quenching in animal models of sensitization.

According to RIVM (2008) citral is considered a weak sensitizer with an LLNA EC3 value of 5.6% equivalent to an LLNA EC3 value of 1400 µg/cm^2. This conversion is performed by multiplication with a factor of 250 – see REACH Guidance Document R.8 (ECHA R.8, 2008).

The above information indicates that citral (which is a mixture of geranial and neral) in itself is a sensitizing substances. However, according to Hagvell (2009), citral has previously been found to be an important sensitizer – and is even included in the baseline series for testing in dermatitis patients. However, as geranial autoxidises to a strong sensitizer by contact with the air, it is in fact the air-exposed geranial (i.e. the oxidation products of geranial) that might be an important sensitizer in the population. Hagvell (2009) states that citral has been proven to autoxidize to form sensitizing oxidation products.

8.1.5 Critical impact

As described above a number of studies have demonstrated the allergenic properties related to citral. According to the IFRA standard on citral as well as the Danish EPA report no. 78, the critical effect related to citral has also been stated as “allergic contact dermatitis”.

8.2 Linalool

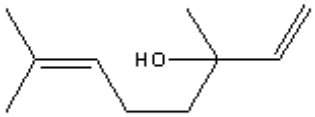
The health aspects related to linalool have been discussed in Danish EPA (2006b) and Danish EPA (2005). The majority of the information presented below is derived from these reports, supported by recent information regarding allergenic properties.

8.2.1 Occurrence and application

Linalool is used as a fragrance in perfumes, most often as a substitute for bergamot or lavender oil. Linalool occurs naturally in e.g. orange juice, peach and tomatoes, as well as in a number of flower oils such as orange flower. Linalool is the main component of rosewood oil (Gangolli, 1999). Flavour characterization of linalool is fruity, citrus-like and woody (IUCLID, 2000). According to RIVM (2008) linalool is one of the most used fragrances in consumer products. Linalool has in this project been found in 23 of 89 investigated products, i.e. in 26% of the products.

8.2.2 Identification and physical and chemical properties

Linalool is a naturally occurring acyclic terpene alcohol with two enantiomers: Licareaol (R-(-)-linalool) and coriandrol (S-(+)-linalool), with different smell.

Chemical name	3,7-Dimethylocta-1,6-dien-3-ol
Synonyms	*(R,S)*-Linalool Linalyl alcohol Licareol, coriandrol
INCI name	Linalool
CAS No.	78-70-6
EINECS No.	201-134-4
Emperical formula	$C_{10}H_{18}O$
Molecular structure	
Legislation: Classified in accordance with the list of harmonized classification and labelling of certain hazardous substances. Annex VI of Regulation No 1272/2008 on classification, labelling and packaging of substances and mixtures (Regulation 1272, 2008). List of Undesireable Substances 2010. Cosmetics	 Not classified In the list as the substance is considered to be dangerous to the health and the environment. As of 11 March 2005, the fragrance must be declared in cosmetics if it is used in amounts above 0.01% in products that are rinsed off and 0.001% in products that are not rinsed off.
International Fragrance Association (IFRA)	An IFRA standard on this substance does exist and is reviewd in 2006.

Reference: Danish EPA (2005)

Physical form	Liquid
Mol weight (g/mol)	154.25 g/mol
Melting point	<-20 ºC
Boiling point	195-199 °C
Vapour pressure	0.16 mmHg (21Pa) at 22-25 °C
Octanol/water partition coefficient (log Kow)	2.97
Water solubility	1.45 g/l at 25 °C

Reference: Danish EPA (2005)

8.2.3 Acute and chronic effects – in short

The acute toxicity of linalool in experimental animals is very low with LD_{50} (o.r) of 2790 mg/kg and LD_{50}(d,r) of 5610 mg/kg (HSDB 2010), i.e. resulting in no classification as a hazardous substance.

Several long-term oral high-dose experiments with rats have been performed, discovering effects like enzyme changes in peroxisomes, increased liver weight and enzyme changes in the liver (IUCLID, 2000 in Danish EPA, 2005). Other studies show momentary blushing and reduced activity as well as

reduced growth. Linalool has been suspected having effects on the liver in humans at long-term repeated exposure (Gangolli, 1999 in Danish EPA, 2005).

8.2.4 Allergy

Only a few reports have been found concerning allergy in consumers. 1 and 3 cases respectively of contact allergy have been reported from two examinations of 119 and 75 patients respectively corresponding to 0.8 and 5% of the patients with cosmetic eczema in the study (SCCNFP, 1999b). However, an article published in iHealthBulletin News on March 2009, stated that considerably more people than previously believed are allergic to linalool. In the article, it is estimated that around 2% of the Swedish population is allergic to linalool[10].

According to a study by Sköld et al. (2004) pure linalool showed no sensitizing potential (with an EC3 value of 46.2%, i.e. 11,550 µg/cm^2). They had exposed pure linalool to air in order to investigate the autooxidation process. The study showed that the amount of linalool started to decrease immediately when poured into a flask. The flask (covered with aluminium foil to prevent contamination) was then stirred for 1 hour, four times a day for 80 weeks. After 30 weeks, 50% of the original compound (linalool) was oxidized, and after 80 weeks only about 4% remained. Air-exposed samples of linalool clearly produced positive allergenic responses and the hydroperoxides were the strongest allergens of the tested oxidation products (with an EC3 value of 1.6%, i.e. 400 µg/cm^2). The study demonstrated the importance of autooxidation on the sensitizing potential of linalool (as the oxidized samples gave EC3 values of 9.4% (i.e. 2,350 µg/cm2) for linalool air-exposed for 10 weeks, and of 4.8% (i.e. 1,200 µg/cm2) for linalool air-exposed for 45 weeks). Sköld et al. also concluded that the sensitizing potential differs with the composition of the oxidation mixture and thus with the air exposure time. Finally, they made a patch test study in six European dermatological clinics, where patients were exposed to the 45 weeks oxidized samples revealing that 1.2% of the patients tested reacted to oxidized linalool. Sköld et al. (2004) concludes therefore that oxidized linalool is a common allergen in Europe.

An assessment by RIVM (2008) confirms that it is the oxidation products of linalool which cause the allergenic reaction.

8.2.5 Critical impact

Both of the Danish EPA surveys (Danish EPA, 2006b and Danish EPA, 2005) state that linalool cause allergenic reactions. The IFRA standard on linalool states that the critical effect of linalool is sensitization, however, with the note that “pure linalool is not a sensitizer while hydroperoxides and other oxidation products have shown sensitizing properties”.

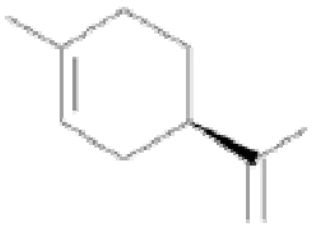
[10] http://ihealthbulletin.com/blog/2009/03/28/fragrance-linalool-shampoos-causes-rash-eczema/

8.3 Limonene

8.3.1 Occurrence and application

Limonene occurs naturally in certain trees and bushes. Limonene and other monoterpenes are released in large amounts mainly to the atmosphere, from both biogenic and anthropogenic sources. Limonene is used as a solvent in degreasing metals prior to industrial painting, for cleaning in the electronic and printing industries, and in paint as a solvent. Limonene is also used as a flavour and fragrance additive in food, household cleaning products, and perfumes (Filipsson et al., 1998). According to RIVM (2008) limonene is by far the most used fragrance in consumer products followed by linalool. In this project, limonene has also been found in 31 of 89 investigated products, i.e. in 35% of the products.

8.3.2 Identification and physical and chemical properties

Chemical name	(*R,S*)-*p*-mentha-1,8-diene
Synonyms	Dipentene (±)-1-methyl-4-(1-methylvinyl)cyclohexene Limonene *d,l*-limonene
INCI name	Limonene
CAS No.	5989-27-5
EINECS No.	227-813-5
Emperical formula	$C_{10}H_{16}$
Molecular structure	
Legislation: Classified in accordance with the list of harmonized classification and labelling of certain hazardous substances. Annex VI of Regulation No 1272/2008 on classification, labelling and packaging of substances and mixtures (Regulation 1272, 2008).	 R10; Flammable Xi;R38: Irritating to skin R43 : May cause sensitisation by skin contact N;R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
List of Undesireable Substances 2010. Cosmetics	In the list as the substance has been assessed as allergenic by skin contact and is one of the 26 allergenic fragrances assessed by SCCNFP. The fragrance must be declared in cosmetics if it is used in amounts above 0.01% in products that are rinsed off and 0.001% in products that are not rinsed off.
International Fragrance Association (IFRA)	An IFRA standard does exist for limonene.

Reference: Danish EPA (2008).

Physical form	Liquid
Mol weight	136.23 g/mol
Melting point	-74.35 °C
Boling point	176 °C
Vapour pressure	192 Pa at 25 °C. (1.44 mmHg)
Octanol/water partition coefficient	Log Kow = 4.57
Water solubility	13.8 mg/l at 25 °C

Reference: Danish EPA (2006e).

Limonene is a cyclic compound with an asymmetric carbon atom, and the synthetic limonene consists of a mixture of two enantiomers (***dl***-limonene). The natural form ***d***-limonene is more biological active and smells as citrus and the other isomer smells as oranges. Limonene is a colourless and flammable liquid insoluble in water. It oxidizes by the air and develops a yellow colour by time (Jensen, 2003).

8.3.3 Acute and chronic effects – in short

When humans inhale limonene a stimulation of the autonomic nervous system is observed with increased blood pressure, subjective alertness and restlessness as well as subjective mental and emotional reactions (Heuberger et al., 2001 in Danish EPA, 2008). Human exposure by inhalation to 450 mg/m³ ***d***-limonene resulted in a significant reduction of lung capacity but not of other respiratory functions (Danish EPA, 2008).

Effects caused by oral exposure of limonene comprise changes in the kidneys, increased liver and kidney weight as well as decreased body weight (Danish EPA, 2006e). Limonene is a skin irritant in both experimental animals and humans.

8.3.4 Allergy

Limonene is not in itself an allergen, but allergens are created by auto-oxidation of limonene (Karlberg et al., 1992 in Danish EPA, 2008).

d-Limonene was once considered the main allergen in citrus fruits. Data from recent studies in animals have revealed air-oxidized ***d***-limonene rather than unoxidized ***d***-limonene as the sensitizing agent. When limonene (unspecified form and unknown purity of the test material) was tested in four different sensitization assays (guinea-pigs), sensitization was seen in all but one of the tests. Hydroperoxides and other oxidation products of ***d***-limonene formed on exposure to the air have proved to be potent contact allergens when tested with Freund's Complete Adjuvant in guinea-pigs, whereas unoxidized ***d***-limonene did not cause sensitization (WHO, 1998).

In rabbits, ***d***-limonene was found to be an eye irritant. Studies in guinea-pigs revealed that air-oxidized ***d***-limonene, but not ***d***-limonene itself, induced contact allergy. Because ***d***- and ***l***-limonene are enantiomers, this could also be true for ***l***-limonene and dipentene (the mixture). Storage, handling and purity of the chemical and possibly addition of antioxidants may be crucial for the allergenic capacity of limonene (Filipsson et al., 1998).

According to RIVM (2008) ***d***-limonene is considered a weak sensitizer with an LLNA EC3 value of 69% (corresponding to an LLNA EC3 value of 17,250 µg/cm^2. This conversion is performed by multiplication with a factor of 250 – see REACH Guidance Document R.8 (ECHA R.8, 2008)).

Cross sensitization between geraniol and limonene, and between farnesol and santalol have been reported (Audicana and Bernaola, 1994; Hausen et al., 1989 in Borzelleca and Boobis, 2008).

8.3.5 Critical impact

As mentioned above, there is sufficient evidence that autoxidized limonene is allergenic. However, in the case of limonene, the IFRA standard does not state sensitization as the critical effect (as in the case of geraniol, linalool and citral). Yet, the standard bases the recommendations on content of peroxides on published literature mentioning sensitizing properties. According to WHO (1998) ***d***-limonene could be considered as a chemical with fairly low toxicity besides its irritative and ***sensitizing*** properties.

Based on the information above it is in this study assumed that the critical effect of limonene is allergenic contact dermatitis.

8.4 Geraniol

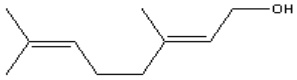
8.4.1 Occurrence and application

Geraniol occurs in many ethereal oils like geranium oil, palmarosa oil, rose oil, lemon grass and it is the main component in citronella oil. Geraniol is used as fragrance in perfumes as well as in cosmetics, cleaning and washing agents and perfumed air fresheners and insect lure. Geraniol smells like roses or flowers and can bring out lemon scents (Danish EPA, 2005).

In this project, geraniol has been found in 18 of 89 investigated products, i.e. in 20% of the products.

8.4.2 Identification and physical and chemical properties

Geraniol is an acyclic terpenealcohol.

Chemical name	3,7-Dimethylocta-2,6-dien-1-ol
Synonyms	(E)-3,7-dimethyl-2,6-octadien-1-ol; 2,6-dimethyl-2,6-ectadien-8-ol
INCI name	Geraniol
CAS No.	106-24-1
EINECS No.	203-377-1
Emprical formula	$C_{10}H_{18}O$
Molecular structure	
Legislation: Classified in accordance with the list of harmonized classification and labelling of certain hazardous substances. Annex VI of Regulation No 1272/2008 on classification, labelling and packaging of substances and mixtures (Regulation 1272, 2008). List of Undesireable Substances 2010. Cosmetics	Not classified In the list as the substance is considered to be dangerous to the health and the environment. As of 11 March 2005, the fragrance must be declared in cosmetics if it is used in amounts above 0.01% in products that are rinsed off and 0.001% in products that are not rinsed off.
International Fragrance Association (IFRA)	There is an IFRA standard on geraniol.

Reference: Danish EPA, 2005

Physical form	Oily liquid
Molar weight	154.24 g/mol
Melting point	< -15 °C
Boling point	230 °C
Vapour pressure	< 1 hPa at 20°C (22). A more specific specification of evaporation has not been found.
Octanol/water partition coefficient	Log K_{ow} = 3,56
Water solubility	Slightly soluble. 100 mg/l at 25°C and 686 mg/l at 20°C

Reference: Danish EPA, 2005

8.4.3 Acute and chronic effects – in short

Geraniol is stated as moderately toxic to humans with an estimated deadly dose of 0.5-5 g/kg bw. The unintentional ingestion by a child of an unknown amount of citronella oil containing 93% geraniol lead to vomiting, shock, seizures and death. The mucous membrane of the stomach was severely damaged (Danish EPA, 2005). Chronic, repeated exposure studies have revealed a NOAEL of 1000 ppm corresponding to 78.3 mg/kg bw/day. However, the critical effect has not been stated (Danish EPA, 2005). In vitro tests with mammalian cells have shown chromosome changes (hamster cells). No data on inhalation of geraniol have been found.

According to a United States Patent Application Publication (US 2007/0190191 A1, 2007) geraniol can be used to block the development of tumor cells.

8.4.4 Allergy

SCCNFP has included geraniol in the list of fragrances that are known allergens. Geraniol is also found in the list of well-known and often reported consumer allergens (Danish EPA, 2005).

To be more precise, geraniol itself is considered a weak contact allergen. However, analogous to other monoterpenes such as limonene and linalool, geraniol has the potential to autoxidize on air exposure and form highly allergenic compounds (Hagvall, et al., 2007). The study by Hagvall et al. (2007) showed that geraniol follows an oxidation pattern different from those of linalool and limonene, which autoxidize forming hydroperoxides as the only primary oxidation products. Geraniol forms besides hydroperoxide also the aldehyde geranial and neral (the contents of citral), which all are major contributors to the allergenic reactions. On the basis of their study and previous experiences, Hagvall et al. (2007) recommends that the possibility of autooxidation and the subsequent formation of contact allergenic oxidation products are considered in risk assessments performed on fragrance terpenes.

According to RIVM (2008) geraniol is considered a weak sensitizer with an LLNA EC3 value of 22.4% (corresponding to an LLNA EC3 value of 5,600 $\mu g/cm^2$. This conversion is performed by multiplication with a factor of 250 – see REACH Guidance Document R.8 (ECHA R.8, 2008)).

8.4.5 Critical impact

According to Danish EPA (2005) the critical effect for geraniol is estimated to be the extensive sensitizing effect. The IFRA standard on geraniol also states sensitization as the critical effect.

9 Risk assessment

Risk assessment methods for skin sensitization are traditionally aimed at hazard identification with the simple goal of classifying and labelling chemicals as either sensitizers or non-sensitizers, i.e. no “in-between” (RIVM, 2008).

Sensitisation usually refers to the induction of an immunological (hypersensitive) state following exposure to a chemical, such that subsequent exposure to that chemical (or cross-reactive chemicals) will cause an allergic reaction (elicitation). Both induction and elicitation display a dose-response relationship and have a threshold. The threshold for induction can be defined as the highest level of exposure that fails to induce sensitisation. The threshold for elicitation can be defined as the highest level of exposure that fails to elicit a reaction in a previously sensitised subject (ECHA R.8, 2008).

Limit values have been set in chemical legislation for a number of allergenic substances contained in products but these have not been based on a quantitative risk assessment. To be able to do this, it must be possible to determine which dosage level that can induce an allergic reaction. Knowledge of this critical dosage level is essential in order to set safe limit values of allergens in a particular product (RIVM, 2008).

As seen in chapter 8 the assessed commonly used fragrances in cosmetic products are well known for their potential to cause skin sensitisation. In vivo animal tests (LLNA) show that the fragrances give weak sensitisation reactions (in reality it is the oxidation products that are moderate to strong sensitizers), and the four fragrances are all on the list of the 26 fragrances that are considered sensitizers and therefore are to be labelled on the ingredients list if contained in the cosmetic products.

9.1 Quantitative risk assessment for sensitizers

In 2006 the industry proposed a dermal sensitization quantitative risk assessment (QRA) method for fragrance ingredients. This method is based on animal assays (in vivo LLNA – Local Lymph Node Assay) in mice or human data, if available (HRIPT – Human Repeat Insult Patch Test). Based on such information, a threshold of induction for skin sensitization or acceptable levels of fragrances in cosmetic ingredients (No Expected Sensitizing Induction Level - NESIL) can be derived by use of Sensitization Assessment Factors (SAFs) which typically lie between 100 and 300, (QRA Expert Group, 2006).

In an opinion from 2008, SCCP was asked to critically review the QRA methodology and to inform whether they consider the QRA approach appropriate for assessing the sensitisation potential of fragrance substances (e.g. citral) in cosmetic products and set use restrictions based on the information achieved. The answer from SCCP in short was, that they consider test on humans to be unethical, aggregated exposure was not considered and there was no consensus achieved concerning the choice of safety factors (assessment factors in ECHA). Further the method has not been

validated and there was no confidence that the levels of skin sensitising substances identified by the method would be safe for the consumer. SCCP could therefore not endorse the QRA method (SCCP 2008).

Thus, the QRA method is not used in this project for risk assessment of the ingredients in the cosmetic products. The SCCP risk assessment method for cosmetic products is used in stead.

9.2 Risk assessment according to SCCP for cosmetic products

The risk assessment method for cosmetic products is based on the SCCP´s Notes of guidance for the testing of cosmetic ingredients and their safety evaluation (SCCP 2006). The safety evaluation of the finished product is based upon the toxicological profile of the ingredients and their chemical structure (see previous chapter 8) as well as their exposure level.

During the risk assessment of a finished cosmetic product, or as it is called for cosmetic products: ***the safety evaluation***, the available toxicological data for all ingredients should be taken into consideration. This means that all toxicological data available on the individual ingredients and the end product (favourable and unfavourable), all chemical and/or biological interactions and human exposure via intended and likely routes must be taken into account. Whenever a NO(A)EL value is available for a specific ingredient, its Margin of Safety (MoS) should be calculated and taken into account. Particular ingredients of special concern must receive special attention (e.g. perfume, UV filters, hair dyes, etc.).

Concerning fragrances, generally reference should be made to the concentration of the ingredients in the fragrance compound and consideration taken as to the toxic potential of the ingredients considered singularly or in combination and with relevance to the finished cosmetic product considered as a whole.

With respect to skin sensitisation, which is the critical effect for all the four selected fragrances evaluated, the Local Lymph Note Assay (LLNA) is one of the in vivo animal tests that are accepted as producing a value that can be used in the evaluation of the potential for skin sensitisation. No NOEL values are available for the fragrance with respect to their critical effect (skin sensitisation), hence no Margin of Safety can be calculated (SCCP 2006).

9.3 Risk assessment of the four fragrances

In chapter 8 “Health assessment” the sensitizing potential of all the selceted fragrances was described. The sensitizing effect was supported by LLNA EC3 values of the four selected fragrances, and can be summarised as follows:

- Citral: 5.6% (1400 µg/cm^2)
- Geraniol: 22.4% (5,600 µg/cm^2)
- Linalool: 46.2% (11,550 µg/cm^2)
- Limonene: 69% (17,250 µg/cm^2)

This means that citral is considered to be the strongest sensitizer of the four fragrances as citral has the lowest LLNA EC3 value, i.e. the lowest concentration necessary to induce an allergic response. The LLNA EC3 test is carried out on the ears of mice for three consecutive days and thus the

results represents some unknown level of oxidation – and thereby an unknown level/concentration of the oxidation products. The sensitizing potential (the LLNA EC3 value) thus illustrates both the sensitizing potential of the oxidation products and the rate of oxidation during the three days.

All four fragrances are thus sensitizing. It is however described in the literature, that it may actually not be the compounds themselves that are sensitizing, but rather their oxidation products having a moderate to strong sensitizing potential.

When looking at the fact that the fragrances can be oxidised to compounds that are moderate to strong sensitizers and the fact that the analysed products contain the fragrances in amounts up to 0.005% (citral), 0.3% (linalool), 3.2% (limonene) and 0.06% (geraniol) respectively, it indicates that the cosmetic products containing these substances can cause allergic reactions.

However, the concentrations of the fragrances in the cosmetic products measured by chemical analysis in this project are uncertain, and as it is unknown to which degree an oxidation has already occurred in the analysed products, this result in a lower measured citral/geraniol/limonene/linalool concentration. If some oxidation already has taken place, the cosmetic products will have a higher sensitizing potential, as the concentration of the strongly sensitizing oxidation products then will be higher.

As it is the oxidation products of the four fragrances that are most sensitizing, the risk of sensitisation may be reduced if

- the cosmetic product contains antioxidants that hinders or slow down the oxidation process, or
- the cosmetic product is kept in a container that restrict the access to air (oxygen) – e.g. by using a pump/dispenser or small opening.

A search for antioxidants has been performed in the EU CosIng database, resulting in 782 different cosmetic ingredients. Some of them, which were also found present in some of the cosmetic products investigated in this survey, are listed below:

- Tocopherol (Vitamin E) – found in 34 products
- Citric acid – found in 23 products
- Ascorbyl palmitate – found in 18 products
- Tocopheryl acetate – found in 14 products
- Sodium ascorbyl phosphate – found in 4 products

This quick search on only a few of the 782 antioxidants shows that antioxidants are present in cosmetic products. The use of antioxidants in the cosmetic products may have an impact on the oxidation of the fragrances and may therefore influence the concentration of the sensitizing oxidation products in the cosmetic products.

In fact, only two of the investigated products did not contain antioxidants. The two products in question are two hand lotions that are contained in a tube with a cap. However, the container design of these products limits the amount of air present and thus lowers the risk of these products causing allergy.

Yet, the precise degree of oxidation is unknown and the fact that oxidation occurs over a long period (months), may on the other hand indicate that if

sensitization occurs, it will probably be in products, where the packaging has been opened for a long time.

10 Conclusion

Preservatives are generally considered to have sensitizing properties. Therefore some consumers may assume that “non-preserved” cosmetic products are not considered to cause sensitization. This report has therefore identified and investigated 89 “non-preserved” cosmetic products marketed as “non-preserved” or “naturally-preserved” on the Danish market to learn more about these products.

Concerning preservation of cosmetic products, issues that are of importance for this, were outlined in the report:

- Production method. Good Manufacture Practice (GMP) covers aspects like disinfection of equipment, preparation under strictly aseptic conditions and so on.
- Container design. Appropriate packaging like use of dispensing mechanisms that make the entry of microorganisms into the product very difficult.
- Chemical composition of the product. Self-preservation of a cosmetic product can be controlled by use of e.g.
    - humectants that retains the moisture (water) in the formulation, which is needed for bacterial growth,
    - acids to lower the pH of the formulation, which slows the growth rate of bacteria,
    - alcohols, which in high concentrations can inhibit bacteria growth, but in lower concentrations also can retain the moisture in the formulation,
    - substances with antimicrobial properties, like e.g. essential oils (fragrances) or antioxidants.

In the survey we have identified 459 different ingredients that occur in the products. The investigation shows that 2 of the 45 identified products marketed as “non-preserved” and 10 of the 44 identified products marketed as “naturally-preserved” contained ingredients marked as “preservative” according to EU’s CosIng database. 15 of the “non-preserved” products contained ingredients marked as antimicrobial in the CosIng database, like e.g. alcohol or essential oils.

The investigation of the 89 products shows that the “non-preserved” cosmetic products typically contain other ingredients that also may have a preserving effect and identified 60 ingredients with antimicrobial, antibacterial, antiseptic or preserving effects.

Among these ingredients with antimicrobial, antibacterial, antiseptic or preserving effects four fragrances with a sensitizing potential were identified. The fragrances were identified as such or in form of an essential oil, that may contain the fragrance as one of their constituents. (e.g. citrus oils, lavender oil, thyme oil), and 21 of the 89 cosmetic products were selected for chemical analysis of the content of these.

In 10 out of 21 analyzed products the concentration of the fragrances is as high as or higher than the concentration where the fragrances have shown

antibacterial properties. The investigation does, however, not show if the antimicrobial, antibacterial or antiseptic ingredients in the cosmetic products actually has a preserving effect in the used concentrations.

When comparing the contents of fragrances found in this survey with contents of fragrances in other cosmetic products in former surveys , no clear picture is seen – the content seem to be somewhat on the same level in both "non-preserved" cosmetic products and in cosmetic products with preservatives. However, as there are very few products where the content has been measured this comparison is uncertain.

Hence, based on this investigation it is not possible to conclude in a risk assessment that the "non-preserved" cosmetic products containing fragrances have a lower (or higher) sensitizing potential compared to preserved cosmetic products.

Both "non- and naturally-preserved" products found in the survey seems to have a shorter shelf life than preserved cosmetic products, however data is limited and this aspect has not been investigated thoroughly.

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Appendix A: Extractions from the database of non-preserved or naturally-preserved cosmetics

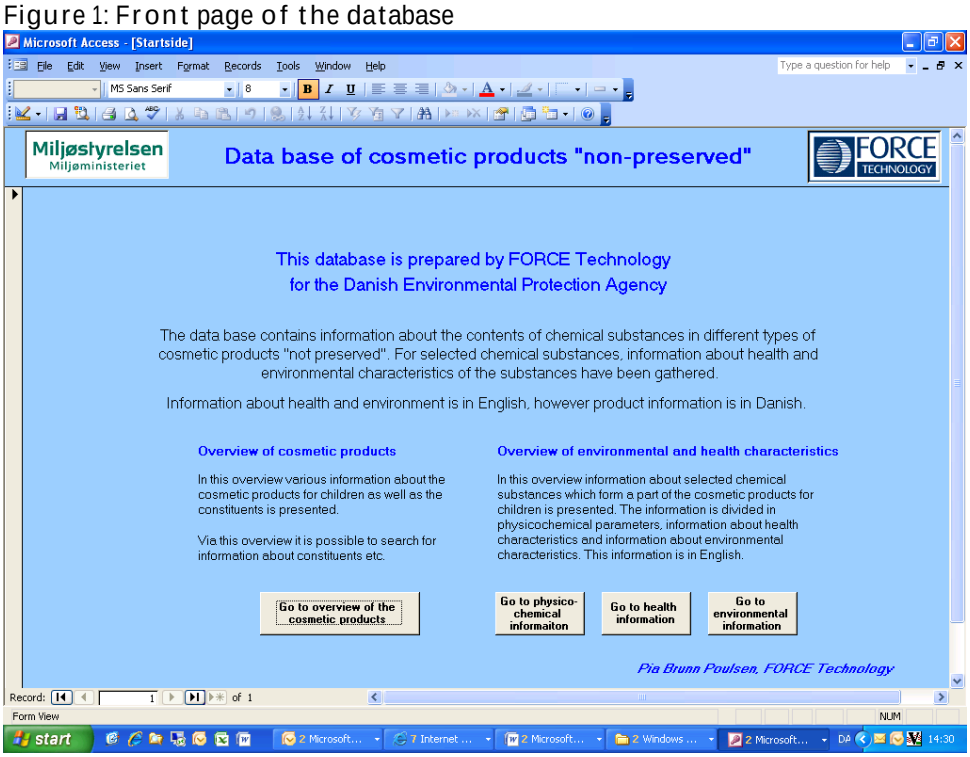
1 Overview of the content of the database

This appendix contains a description of the content of the created database of the non-preserved and naturally-preserved cosmetics.

1.1 The database

A database in Microsoft Access 2003 has been created for the Danish Environmental Protection Agency covering the in total 89 cosmetics products identified in this survey. The database is shortly presented when it is opened (see figure 1).

Figure 1: Front page of the database



The database is based on a product overview where the following is recorded for each product:

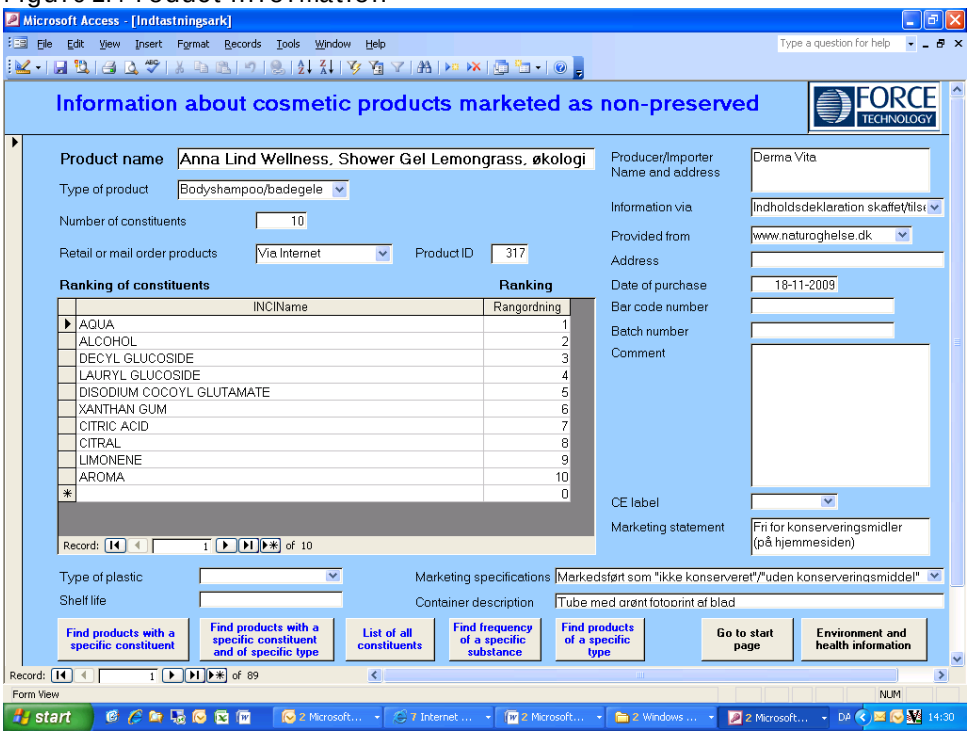
- Content of chemical substances
- Various information about the products (type, place of purchase etc.)

1.2 Product overview

For each product information has been keyed into the database about which ingredients the products contain but also which ranking the ingredients is listed on the product. Thus, the ranking is an indication of the relative concentration of the ingredients in the products. A low number (high

Furthermore, the database contains a wide range of other information about the products.

Figure 2: Product information



The following information is recorded in the database for all the purchased products (see figure 2):

Type information	Remarks
Product name	
Product type	The database operates with the following product types: Shampoo, balsam, body shampoo/bath gel, bobble bath, soap solid or liquid, bath confetti/bath caviar/fizzle salt, tooth paste, eau de toilette/perfume, deodorant, body lotion/cream, hair dyes (rinsing colours), hair styling products, massage oil, bath oil or other things
The chemical substances contained in the products including ranking order	The ranking order states the order of the substances in the list of ingredients
Number of chemical substances (ingredients) contained in the product in total	
Specification of how the product is procured	That means whether the product is bought or the declaration of contents is sent (or downloaded via the Internet)
Specification of where the product is bought or procured	The name of the convenience store chain and in which town
Specification whether the product is bought in a shop, at a hair dresser	

Type information	Remarks
or via the Internet	
The name of the producer or importer	
When the product is bought or received	Stated by date. For products bought on the Internet the recorded date is the date when the products are ordered. Regarding declarations of contents the recorded date is the date where the declarations either are received or printed from the Internet
The bar code on the product	If available
Batch number	If available
Specifications of packaging material	That means a description of the type of packaging in question – for instance whether it is neutral or designed as a special figure
Description of the packaging material	For instance, whether the bottle is a pot with a large lit or a tube with a screw cap. The colour of the packaging material is written down. This description makes it much more easier to identify the products
Shelf life	
Marketingstatement	Precise statement as listed on the product, e.g. ”non-preserved” or ”naturally preserved”
Description of the marketing category	If the product is of the category ”non-preserved” or ”naturally-preserved”
Marketing statement on the product	If the marketing statement is available on the product it self or only on the website
Possible comments	For instance, whether products are sold in twin pack or notes about clarification of INCI names

1.3 Use of the INCI list in the database

The database used for this project is the same database used for a former similar project carried out for the Danish EPA. The database therefore contains the English edition of the EU INCI list (24.2.2006) containing about 7,600 constituents applied in cosmetic products as a table.

Using the INCI list as a table in the database makes the keying in of the constituents in the database much easier, as it in this way is possible to select the constituents from a list defined in advance. In the second place, it means that the risk of mistakes when keying in is reduced, as it is only possible to key in constituents which already are on this INCI list. Finally, it also means that it is possible to control whether all constituents can be found on the INCI list.

During the keying in it turned out that several products contained constituents that are not in the latest INCI list (dated 24.2.2006). In these cases the constituents in question have manually been added to the EU INCI list of the database using the online EU CosIng (Cosmetic Ingredients & Substances) database (INCI, EU), i.e. new INCI names have been added to the existing INCI table in the database.

The explanations below may be the reason for substances not being a part of the INCI list dated 24.2.2006:

- The substance is a new INCI substance and has been added as an INCI name after 24.2.2006.

- It is not the INCI name that is stated on the products as required and it has not been possible to find or guess the “correct” INCI name.
- There are spelling mistakes in the declaration of the product where it has not been possible to conclude the “correct” INCI name that should be stated on the packing. (All assumptions about spelling mistakes are noted in the database).

2 All chemical substances found in the cosmetic products in this survey

This chapter is an overview of all chemical substances found in the cosmetics products identified in this survey. In total 459 different substances are found in the 89 cosmetic products in this survey.

Furtheremore, the chapter shows how often the different chemical substances are found and with which average ranking they are found (that means in which ranking the substances are listed on the products). The ranking is an indication of the relative concentration of the ingredients in the products. A low number (high ranking) indicates that the substance is a main ingredient in the product whereas a high number (low ranking) indicates that the substance is an additive, for instance a preservative.

At the same time the table shows how often a specific ingredients is found (in how many of the 89 products the substances is found) as well as which average ranking they have in the cosmetic products.

2.1 Listed after falling frequency

Table 2.1 All 459 ingredients listed after falling frequency

INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
AQUA	7732-18-5	Water.	solvent	82	1,1
GLYCERIN	56-81-5	Glycerol.	denaturant / humectant / solvent	57	5,6
XANTHAN GUM	11138-66-2	Xanthan gum.	binding / emulsion stabilising / viscosity controlling / gel forming	40	12,9
TOCOPHEROL	10191-41-0	3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-ol.	antioxidant / skin conditioning	34	19,2
ALCOHOL	64-17-5	Ethanol.	antifoaming / antimicrobial / astringent / masking / solvent viscosity controling	33	4,7
LIMONENE	5989-27-5	(R)-p-Mentha-1,8-diene; (4R)-1-Methyl-4-(1-methylethenyl)cyclohexene	masking / perfuming	31	16,0
LINALOOL	78-70-6	1,6-Octadien-3-ol, 3,7-dimethyl-	deodorant	23	19,6
CITRIC ACID	77-92-9	2-Hydroxy-1,2,3-propanetricarboxylic acid	buffering / chelating	23	12,2
LECITHIN	8002-43-5	Lecithins. The complex combination of diglycerides of fatty acids linked to the choline ester of phosphoric acid.	antistatic / emollient / emulsifying / skin conditioning	20	19,4

Table 2.1 All 459 ingredients listed after falling frequency					
INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
BUTYROSPERMUM PARKII BUTTER	91080-23-8	Butyrospermum Parkii Butter is the fat obtained from the fruit of the karite tree, Butyrospernum parkii, Sapotaceae	skin conditioning / emollient	19	8,1
CETEARYL ALCOHOL	67762-27-0	Alcohols, C16-18.	emollient / emulsifying / emulsion stabilising / opacifying / viscosity controlling	19	7,1
GERANIOL	106-24-1	2,6-Octadien-1-ol, 3,7-dimethyl-, (2E)-	tonic	18	22,2
ASCORBYL PALMITATE	137-66-6	6-O-palmitoylascorbic acid.	antioxidant	18	21,2
LACTIC ACID	50-21-5	Propanoic acid, 2-hydroxy-	buffering / humectant / skin conditioning	17	12,9
PANTHENOL	81-13-0	Butanamide, 2,4-dihydroxy-N-(3-hydroxypropyl)-3,3-dimethyl-, (2R)-	antistatic / hair conditioning / skin conditioning	17	11,2
PARFUM		Perfume and aromatic compositions and their raw materials	deodorant / masking / perfuming	16	13,7
COCO-GLUCOSIDE		Alcohols, coco, reaction products with glucose	surfactant / foaming / cleansing	15	5,9
HYDROGENATED PALM GLYCERIDES CITRATE	91744-68-2	Glycerides, palm-oil mono-, di-, and tri- hydrogenated, citrates	skin conditioning / emollient	15	23,4
TOCOPHERYL ACETATE	7695-91-2	3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-yl acetate.	antioxidant	14	14,1
SODIUM LACTATE	72-17-3	Sodium lactate.	buffering / humectant	12	13,0
LAURYL GLUCOSIDE	110615-47-9	D-Glucose homopolymer, dodecyl ether	cleansing / surfactant	12	6,0
AROMA		Flavours or aromatic compositions and their ingredients	flavouring	12	12,8
CITRAL	5392-40-5	2,6-Octadienal, 3,7-dimethyl-	masking	12	22,5
GLYCERYL STEARATE	31566-31-1	Stearic acid, monoester with glycerol.	emollient / emulsifying	12	8,4
PENTYLENE GLYCOL	5343-92-0	1,2-Dihydroxypentane	skin conditioning / solvent	12	6,1
CITRONELLOL	106-22-9	Citronellol.	masking	11	23,5
SORBITOL	50-70-4	D-glucitol.	humectant / plasticiser / skin conditioning	11	7,5
SIMMONDSIA CHINENSIS SEED OIL	90045-98-0	Simmondsia Chinensis Seed Oil is the fixed oil expressed or extracted from seeds of the desert shrub, Jojoba, Simmondsia chinensis, Buxaceae	emollient / hair conditioning / skin conditioning	11	8,1
SQUALANE	111-01-3	2,6,10,15,19,23-hexamethyltetracosane.	emollient / hair conditioning / refatting / skin conditioning	10	5,2
GLYCERYL OLEATE	25496-72-4	Oleic acid, monoester with glycerol.	emollient / emulsifying	9	10,9
PRUNUS AMYGDALUS DULCIS OIL	8007-69-0	Prunus Amygdalus Dulcis Oil is the fixed oil obtained from the ripe seeds of the sweet almond, Prunus amygdalus dulcis, Rosaceae. It consist primarily of the glycerides of the fatty acids.	emollient / skin conditioning	9	9,8
STEARIC ACID	57-11-4	Stearic acid.	emulsifying / emulsion stabilising / refatting / cleansing	9	12,4

Table 2.1 All 459 ingredients listed after falling frequency					
INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
COCOS NUCIFERA OIL	8001-31-8	Cocos Nucifera Oil is the fixed oil extracted from the dried endosperm of Cocos nucifera, Palmae.	emollient / solvent	8	5,9
HELIANTHUS ANNUUS SEED OIL	8001-21-6	Helianthus Annuus Seed Oil is the oil expressed from the seeds of the sunflower, Helianthus annuus, Compositae	emollient / skin conditioning / masking	8	10,0
SODIUM STEAROYL LACTYLATE	25383-99-7	Sodium 2-stearoyllactate.	emulsifying	8	6,8
CERA ALBA	8012-89-3	Beeswax. The wax obtained from the honeycomb of the bee. It consists primarily of myricyl palmitate, cerotic acid and esters and some high-carbon paraffins.	emollient / emulsifying / film forming / perfuming	8	10,3
ALOE BARBADENSIS LEAF JUICE	85507-69-3	Aloe Barbadensis Leaf Juice is the juice expressed from the leaves of the aloe, Aloe barbadensis, Liliaceae	skin conditioning	8	4,3
EUGENOL	97-53-0	Phenol, 2-methoxy-4-(2-propenyl)	denaturant / tonic	7	24,9
ALLANTOIN	97-59-6	Urea, (2,5-dioxo-4-imidazolidinyl)	soothing	7	14,9
TRITICUM VULGARE GERM OIL	68917-73-7	Triticum Vulgare Germ Oil is the oil obtained from the expression or extraction of wheat germ (Triticum vulgare, Graminae). It consists primarily of the glycerides of the fatty acids	emollient	7	7,7
SIMMONDSIA CHINENSIS OIL	61789-91-1	Simmondsia Chinensis Oil is the fixed oil expressed or extracted from seeds of the jojoba, Simmondsia chinensis, Buxaceae	emollient	7	5,7
LAVANDULA ANGUSTIFOLIA OIL	8000-28-0	Lavandula Angustifolia Oil is the volatile oil obtained from the flowers of Lavandula officinalis, Labiatae.	tonic / masking	7	9,6
GLYCERYL STEARATE CITRATE	55840-13-6	1,2,3-Propanetricarboxylic acid, 2-hydroxy-, ester with 1,2,3-propanetriol monooctadecanoate.	emollient / emulsifying / skin conditioning	7	8,6
PROPYLENE GLYCOL	57-55-6	Propane-1,2-diol.	humectant / solvent / skin conditioning / viscosity controlling	7	5,6
SODIUM COCOYL GLUTAMATE	68187-32-6	L-Glutamic acid, N-coco acyl derivs., monosodium salts.	surfactant / cleansing	7	7,4
BRASSICA CAMPESTRIS STEROLS	90989-79-0	Brassica Campestris Sterols is a mixture of sterols obtained from the Cabbage, Brassica campestris L., Brassicaceae	emollient / skin conditioning	7	13,3
COCAMIDOPROPYL BETAINE	61789-40-0	1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-coco acyl derivs., hydroxides, inner salts.	surfactant / cleansing / foam boosting	7	4,3
SODIUM GLUCONATE	527-07-1	Sodium gluconate.	chelating	7	14,1
CAPRYLIC/CAPRIC TRIGLYCERIDE	73398-61-5	Triglycerides, mixed decanoyl and octanoyl.	emollient / solvent	6	8,0
ZEA MAYS OIL	8001-30-7	Zea Mays Oil is the refined fixed oil obtained from wet milling of corn, Zea mays, Gramineae. It consists primarily of the glycerides of the fatty acids linoleic, oleic, palmitic and stearic	antistatic / emollient / solvent	6	5,0
POTASSIUM CETYL PHOSPHATE	84861-79-0	1-Hexadecanol, phosphate, potassium salt.	surfactant	6	13,8

Table 2.1 All 459 ingredients listed after falling frequency					
INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
CETYL ALCOHOL	36653-82-4	Hexadecan-1-ol.	emollient / emulsifying / opacifying / viscosity controlling	6	11,8
PALMITIC ACID	57-10-3	Hexadecanoic acid	emollient / emulsifying	6	7,8
DISODIUM COCOYL GLUTAMATE	68187-30-4	L-Glutamic acid, N-coco acyl derivs., disodium salts.	surfactant	6	5,3
SODIUM COCOAMPHOACETATE	68390-66-9	Imidazolium compounds, 1-(carboxymethyl)-4,5-dihydro-1-(hydroxyethyl)-2-norcoco alkyl, hydroxides, monosodium salts.	surfactant / foaming / cleansing / hair conditioning	6	4,2
SESAMUM INDICUM SEED OIL	8008-74-0	Sesamum Indicum Seed Oil is the oil obtained from the seed of the Sesame, Sesamum indicum L., Pedaliaceae	emollient / hair conditioning / masking / skin conditioning	6	4,2
DECYL GLUCOSIDE	54549-25-6	Decyl D-glucoside.	surfactant / emulsion stabilising	6	3,2
MELALEUCA QUINQUENERVIA OIL	132940-73-9	Melaleuca Quinquenervia Oil is an essential oil hydrodistilled from the leaves of the plant, Melaleuca quinquenervia, Myrtaceae. Syn. Niaouli oil	perfuming	5	23,0
SODIUM BENZOATE	532-32-1	Sodium benzoate.	preservative	5	15,0
SODIUM CHLORIDE	7647-14-5	Sodium chloride.	viscosity controlling / bulking	5	8,0
COUMARIN	91-64-5	Coumarin.	masking	5	22,8
MAGNESIUM ALUMINUM SILICATE	1327-43-1	Silicic acid, aluminum magnesium salt.	absorbent / opacifying / viscosity controlling / anticaking	5	9,8
POLYGLYCERYL-3 METHYLGLUCOSE DISTEARATE		Methyl-D-glucopyranoside, ethers with 1,2,3-propanetriol homopolymer, octadecanoates (1:1:2) (3 mol glycerol average molar ratio)	emulsifying	5	7,8
UREA	57-13-6	Urea.	antistatic / humectant / skin conditioning	5	5,8
GLYCERYL STEARATE SE	11099-07-3	Octadecanoic acid, reaction products with 1,2,3-propanetriol (1:1), neutralized	emulsifying	5	4,8
FARNESOL	4602-84-0	2,6,10-Dodecatrien-1-ol, 3,7,11-trimethyl-	soothing / solvent / deodorant	5	23,6
DICAPRYLYL CARBONATE	1680-31-5	Carbonic Acid, Dicaprylyl Ester	emollient / skin conditioning	5	7,6
ETHYLHEXYL STEARATE	22047-49-0	2-ethylhexyl stearate.	emollient	5	3,6
CAMELIA SINENSIS LEAF EXTRACT	84650-60-2	Camelia Sinensis Extract is an extract of the leaves of the tea plant, Camelia sinensis, Theaceae	antimicrobial / antioxidant / astringent / emollient / humectant / masking / oral care / skin conditioning / skin protection / tonic / UV-absorber	5	12,4
GLYCINE SOJA OIL	8001-22-7	Glycine Soja Oil is the oil obtained from the beans of soy, Glycine soja, Leguminosae, by extraction or expression. It consists esentially of triglycerides of oleic, linoleic and saturated acids	emollient / skin conditioning	5	9,4

Table 2.1 All 459 ingredients listed after falling frequency					
INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
ROSA DAMASCENA FLOWER OIL	8007-01-0	Rosa Damascena Flower Oil is the volatile oil obtained from the flowers of the Damask Rose, Rosa damascena, Rosaceae	masking / skin conditioning	5	8,4
MARIS SAL		Naturally occurring substances, inorganic salts derived from sea water	skin conditioning	5	7,4
CHONDRUS CRISPUS	9000-07-1	Chondrus Crispus (Carrageenan) is the plant material obtained from various members of the Gigartinaceae or Solieriaceae families of the Red Seaweed, Rodophyceae	hair conditioning / masking	5	6,4
GUAR HYDROXYPROPYLTRIMONIUM CHLORIDE	65497-29-2	Guar gum, 2-hydroxy-3-(trimethylammonio)propyl ether, chloride	antistatic / film forming / viscosity controlling / skin conditioning	5	19,2
BISABOLOL	515-69-5	(R*,R*)-.alpha.,4-dimethyl-.alpha.-(4-methyl-3-pentenyl)cyclohex-3-ene-1-methanol.	soothing	5	16,2
MAGNESIUM SULFATE	7487-88-9	Magnesium sulphate.	viscosity controlling / hair conditioning / bulking	5	13,2
CHAMOMILLA RECUTITA EXTRACT	84082-60-0	Chamomilla Recutita Extract is an extract of the flowerheads of the matricaria, Chamomilla recutita, Compositae	emollient / antimicrobial?	5	10,2
SODIUM HYDROXIDE	1310-73-2	Sodium hydroxide.	buffering / denaturant	4	15,0
POLYGLYCERYL-3 POLYRICINOLEATE	235783-76-3	9-Octadecanoic acid, 12-hydroxy-(9Z, 12R)-, homopolymer, ester with triglycerol	emulsifying / viscosity controlling	4	11,0
ALCOHOL DENAT.	64-17-5	Ethanol denatured in accordance with Customs and Excise regulations	antifoaming / antimicrobial / astringent / masking / solvent / viscosity controlling	4	3,0
DAUCUS CAROTA SATIVA ROOT EXTRACT	84929-61-3	Daucus Carota Sativa Root Extract is an extract of the roots of the Carrot, Daucus carota L. var. sativa, Umbelliferae	skin conditioning	4	11,8
CERAMIDE 3	100403-19-8	Octadecanamide, N-(1,3,4-trihydroxy-2-octadecyl)	skin conditioning / skin protecting	4	16,5
CHONDRUS CRISPUS EXTRACT	244023-79-8	Chondrus Crispus Extract is an extract of the carrageenan, Chondrus crispus, Gigartinaceae	viscosity controlling	4	12,5
CHOLESTEROL	57-88-5	Cholest-5-en-3-ol (beta)-	emollient / emulsifying / stabilising	4	10,5
SODIUM PCA	28874-51-3	Sodium 5-oxo-2-pyrrolidinecarboxylate	antistatic / humectant / skin conditioning	4	9,5
SODIUM LAURETH SULFATE	9004-82-4	Poly(oxy-1,2-ethanediyl), .alpha.-sulfo-.omega.-(dodecyloxy)-, sodium salt	surfactant / cleansing / foaming	4	2,5
SODIUM ASCORBYL PHOSHATE	66170-10-3	L-Ascorbic acid, 2-(dihydrogen phosphate), trisodium salt	antioxidant	4	16,3
SUCROSE COCOATE	91031-88-8	Fatty acids, coco, esters with sucrose.	antistatic / emulsifying / skin conditioning	4	16,3
POTASSIUM SORBATE	24634-61-5	Potassium (E,E)-hexa-2,4-dienoate.	preservative	4	14,3

Table 2.1 All 459 ingredients listed after falling frequency					
INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
HYDROLYZED WHEAT PROTEIN	94350-06-8	Protein hydrolyzates, wheat germ. Substance obtained by acidic, alkaline, or enzymatic hydrolysis of wheat germ composed primarily of amino acids, peptides, and proteins. It may contain impurities consisting chiefly of carbohydrates and lipids along with	antistatic / hair conditioning / skin conditioning	4	12,3
SESAMUM INDICUM OIL	8008-74-0	Sesamum Indicum Oil is the oil obtained from the seed of sesame, Sesamum indicum, Pedaliaceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic, palmitic and stearic	emollient / hair conditioning / skin conditioning	4	10,3
SILICA	7631-86-9	Silicon dioxide.	abrasive / absorbent / opacifying / viscosity controlling / anticaking / bulking	4	4,3
ROSA DAMASCENA DISTILLATE	90106-38-0	Rosa Damascena Distillate is an aqueous solution containing volatile oils obtained by the distillation of the flowers of Rosa damascena, Rosaceae	skin protecting	4	1,3
HYPERICUM PERFORATUM EXTRACT	84082-80-4	Hypericum Perforatum Extract is an extract of the capsules, flowers, leaves and stem heads of the St. John's wort, Hypericum perforatum, Hypericaceae	antimicrobial / astringent / masking / skin conditioning / skin protection / soothing / tonic	3	20,0
CHAMOMILLA RECUTITA FLOWER EXTRACT	84082-60-0	Chamomilla Recutita Flower Extract is an extract of the flowerheads of the matricaria, Chamomilla recutita (L.), Compositae	masking / skin conditioning /antimicrobial ?	3	18,0
ACHILLEA MILLEFOLIUM EXTRACT	84082-83-7	Achillea Millefolium Extract is an extract of the leaves and flowers of the yarrow, Achillea millefolium, Asteraceae	soothing / antidandruff / refreshing / cleansing / tonic	3	18,0
RETINYL PALMITATE	79-81-2	Retinyl palmitate.	skin conditioning	3	17,0
CITRUS PARADISI OIL	8016-20-4		masking	3	16,0
EQUISETUM ARVENSE EXTRACT	71011-23-9	Equisetum Arvense Extract is an extract of the sterile caules of the horsetail, Equisetum arvense, Equisetaceae	emollient / astringent / tonic / soothing	3	16,0
POGOSTEMON CABLIN OIL	8014-09-3	Pogostemon Cablin Oil is the volatile oil obtained from the patchouli, Pogostemon cablin, Labiatae	masking / antimicrobial ?	3	15,0
MENTHA PIPERITA OIL	8006-90-4	Mentha Piperita Oil is the volatile oil obtained from the leaves of the peppermint, Mentha piperita, Labiatae	tonic / refreshing / deodorant / masking	3	14,0
HYDROGENATED LECITHIN	92128-87-5	Lecithins, hydrogenated.	emulsifying / skin conditioning	3	14,0
ZINC OXIDE	1314-13-2	Zinc oxide (CI 77947).	bulking / uv absorber / skin protecting	3	14,0
PERSEA GRATISSIMA OIL UNSAPONIFIABLES	91770-40-0	Persea Gratissima Oil Unsaponifiables is the fraction of Persea gratissima (Persea gratissima, Lauraceae) oil which has not been transformed into soaps during the process of saponification	emollient	3	13,0
GLYCERYL	26402-26-6	Octanoic acid, monoester with	emollient / emulsifying	3	9,0

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INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
CAPRYLATE		glycerol.			
LEVULINIC ACID	123-76-2	4-oxovaleric acid.	skin conditioning	3	9,0
CETEARYL GLUCOSIDE	246159-33-1	D-Glucopyranose, C16-C18 alkyl glycosides	emulsifying	3	8,0
BEHENYL ALCOHOL	661-19-8	Docosan-1-ol.	emollient	3	7,0
TITANIUM DIOXIDE	13463-67-7	Titanium dioxide (CI 77891).	opacifying / uv absorber	3	6,0
OLEA EUROPAEA FRUIT OIL	8001-25-0	fixed oil obtained from the ripe fruit of the Olive, Olea europaea L., Oleaceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic and palmitic	emollient / perfuming / solvent	3	4,0
ELAEIS GUINEENSIS KERNEL OIL	8023-79-8	Elaeis Guineensis Kernel Oil is the oil obtained from the seeds of the palm, Elaeis guineensis, Palmae	emollient	3	2,0
BENZYL BENZOATE	120-51-4	Benzyl benzoate.	antimicrobial / perfuming / solvent	3	22,7
ETHYLHEXYLGLYCERIN	70445-33-9	1,2-propanediol, 3-(2-ethylhexyloxy)	skin conditioning	3	15,7
PELARGONIUM GRAVEOLENS OIL	90082-51-2	Pelargonium Graveolens Oil is the volatile oil obtained from the flowers of Pelargonium graveolens, Geraniaceae	tonic	3	14,7
BORAGO OFFICINALIS SEED OIL	225234-12-8	Borago Officinalis Seed Oil is the fixed oil obtained from the seeds of Borago officinalis, Boraginaceae	emollient	3	12,7
GLYCINE	56-40-6	Glycine.	antistatic / buffering / skin conditioning / hair conditioning	3	10,7
CARBOMER	9007-20-9	2-Propenoic acid, polymer with 2,2-bis(hydroxymethyl)propane-1,3-diol 2-propenyl ether	emulsion stabilising / viscosity controlling / gel forming	3	9,7
ROSMARINUS OFFICINALIS LEAF EXTRACT	84604-14-8	Rosmarinus Officinalis Leaf Extract is an extract of the leaves of the Rosemary, Rosmarinus officinalis L., Lamiaceae	antimicrobial / masking / skin conditioning	3	9,7
BETAINE	107-43-7	Methanaminium, 1-carboxy-N,N,N-trimethyl-, hydroxide, inner salt	antistatic / viscosity controlling	3	8,7
OENOTHERA BIENNIS OIL	90028-66-3	Oenothera Biennis Oil is the fixed oil derived from the seeds of the evening primrose, Oenothera biennis, Onagraceae. It consists primarily of the glycerides of the fatty acids	emollient	3	7,7
HYDROGENATED PALM GLYCERIDES	91744-66-0	Glycerides, palm-oil mono-, di- and tri-, hydrogenated.	emollient / emulsifying / skin conditioning / viscosity controlling	3	7,7
MACADAMIA TERNIFOLIA SEED OIL	128497-20-1	Macadamia Ternifolia Seed Oil is the fixed oil obtained from the nuts of the macadamia tree, Macadamia ternifolia, Proteaceae. It consists primarily of the glycerides of the fatty acids	emollient	3	6,7
OLEA EUROPAEA OIL	8001-25-0	Olea Europaea Oil is the fixed oil obtained from the ripe fruit of the olive tree, Olea europaea, Oleaceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic and palmitic	emollient / solvent	3	5,7
CETEARYL	111937-03-2	Isononanoic acid, C16-18-alkyl	emollient	3	4,7

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INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
ISONONANOATE		esters			
SODIUM LAURYL SULFOACETATE	1847-58-1	Sodium 2-(dodecyloxy)-2-oxoethane-1-sulphonate.	surfactant / cleansing / foaming	3	3,7
PARAFFINUM LIQUIDUM	8012-95-1	Paraffin oils. Liquid hydrocarbons from petroleum.	antistatic / emollient / solvent / skin protecting	3	2,7
ARGININE	74-79-3	L-Arginine.	antistatic	3	16,3
DISODIUM EDTA	139-33-3	Disodium dihydrogen ethylenediaminetetraacetate.	chelating / viscosity controlling	3	15,3
CITRUS AURANTIFOLIA OIL	8008-26-2	Citrus Aurantifolia Oil is the volatile oil obtained from the fruits of Citrus aurantifolia, Rutaceae.	skin conditioning / hair conditioning / tonic / cleansing	3	14,3
CYMBOPOGON MARTINI OIL	84649-81-0	Cymbopogon Martini Oil is the volatile oil expressed from the herb palmarosa, Cymbopogon martini, Gramineae	tonic	3	13,3
CANANGA ODORATA OIL	8006-81-3	Cananga Odorata Oil is the oil obtained from the flower of the ylang-ylang, Cananga odorata, Annonaceae.	solvent	3	13,3
ARACHIS HYPOGAEA OIL	2228-77-7	Arachis Hypogaea Oil is the refined fixed oil obtained from the seed kernels of one or more of the cultivated varieties of the peanut, Arachis hypogaea, Leguminosae	emollient / solvent	3	7,3
GLYCOL DISTEARATE	627-83-8	Ethylene distearate.	emollient / emulsifying / opacifying / viscosity controlling / skin conditioning	3	7,3
PRUNUS ARMENIACA KERNEL OIL	72869-69-3	Prunus Armeniaca Kernel Oil is the fixed oil expressed from the kernels of the apricot, Prunus armeniaca, Rosaceae. It consists primarily of the glycerides of the fatty acids	emollient / skin conditioning	3	6,3
CITRUS GRANDIS EXTRACT	90045-43-5	Citrus Grandis Extract is an extract of the fruit of the grapefruit, Citrus grandis, Rutaceae	skin conditioning / astringent / tonic	3	5,3
BUTYLENE GLYCOL	107-88-0	Butane-1,3-diol.	humectant / solvent	3	4,3
METHYLISOTHIAZOLINONE	2682-20-4	2-methyl-2H-isothiazol-3-one.	preservative	2	22,0
HYDROGENATED VEGETABLE OIL	68334-28-1	Oils, vegetable, hydrogenated.	emollient / skin conditioning	2	20,0
CI 77491	1309-37-1	Diiron trioxide.	cosmetic colorant	2	20,0
CALLITRIS INTROTROPICA WOOD OIL	180287-43-8	Callitris Intratropica Wood Oil is the volatile oil obtained from the wood of Callitris intratropica, Cupressaceae	masking / tonic	2	19,0
SANTALUM SPICATA WOOD OIL	8024-35-9	Santalum Spicata Wood Oil is an essential oil obtained from the wood of the Australian Sandalwood, Santalum spicata, Santalaceae. It contains 75% santalols and 10% farnesol	perfuming	2	18,0
SODIUM CETEARYL SULFATE	59186-41-3	Sulfuric acid, mixed cetyl and stearyl esters, sodium salts	surfactant / cleansing / foaming	2	18,0
SANTALUM ALBUM OIL	8006-87-9	Santalum Album Oil is the volatile oil obtained from the heartwood of the sandalwood, Santalum album, Santalaceae	masking	2	17,0

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INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
CITRUS MEDICA LIMONUM PEEL EXTRACT	84929-31-7	Citrus Medica Limonum Peel Extract is an extract of the peel of the lemon, Citrus medica limonum, Rutaceae.	tonic	2	16,0
EUCALYPTUS RADIATA FLOWER/LEAF/STEM OIL	92201-64-4	Eucalyptus Radiata Flower/Leaf/Stem Oil is the volatile oil obtained from the flowers, leaves and stems of Eucalyptus, Eucalyptus radiata var. Australiana, Myrtaceae	masking	2	15,0
OLEA EUROPAEA OIL UNSAPONIFIABLES	8001-25-0	Olea Europaea Oil Unsaponifiables is the fraction of olive (Olea europaea, Oleaceae) oil which has not been transformed into soaps during the process of saponification	emollient	2	14,0
RICINUS COMMUNIS OIL	8001-79-4	Ricinus Communis Oil is the fixed oil obtained from the seeds of Ricinus communis, Euphorbiaceae. It consists primarily of the glycerides of the fatty acid ricinoleic	emollient / skin conditioning / moisturising / smoothing / solvent	2	14,0
PIMPINELLA ANISUM EXTRACT	84775-42-8	Pimpinella Anisum Extract is an extract of the dried ripe fruit of the anise, Pimpinella anisum, Umbelliferae	oral care / masking	2	14,0
CITRUS SINENSIS OIL	95327-98-3			2	13,0
BACKHOUSIA ANISATA LEAF EXTRACT		Backhousia Anisata Leaf Extract is an extract of the leaves of Backhousia anisata, Myrtaceae	emollient / hair conditioning / humectant / skin conditioning	2	13,0
HIPPOPHAE RHAMNOIDES EXTRACT	90106-68-6	Hippophae Rhamnoides Extract is an extract of the fruit of the seabuckthorn, Hippophae rhamnoides, Elaeagnaceae	skin conditioning / masking	2	12,0
BACKHOUSIA CITRIODORA LEAF OIL	84775-80-4	Backhousia Citriodora Leaf Oil is the volatile oil obtained from the leaves of Backhousia citriodora, Myrtaceae	masking / perfuming	2	12,0
LEPTOSPERMUM PETERSONII OIL	85085-43-4	Leptospermum Petersonii Oil is an essential oil obtained from hydrodistillation of the leaves of the plant, Leptospermum petersonii, Myrtaceae. Syn. Lemon scented Tea tree oil	masking / perfuming	2	11,0
STEARYL ALCOHOL	112-92-5	Octadecan-1-ol.	emollient / emulsion stabilising / opacifying / viscosity controlling / foam boosting / refatting	2	11,0
NIGELLA SATIVA SEED EXTRACT	90064-32-7	Nigella Sativa Seed Extract is an extract of the seeds of the Black Caraway, Nigella sativa L., Ranunculaceae	perfuming / skin conditioning	2	11,0
PANICUM MILIACEUM SEED EXTRACT	90082-36-3	Panicum Miliaceum Seed Extract is an extract of the seeds of the Millet, Panicum miliaceum L., Gramineae	skin conditioning / smoothing	2	11,0
CAPRYLOYL GLYCINE	14246-53-8	N-(1-oxooctyl)glycine.	cleansing	2	10,0
LAVANDULA ANGUSTIFOLIA EXTRACT	90063-37-9	Lavandula Angustifolia Extract is an extract of the flowers of the lavender, Lavandula angustifolia, Labiatae	tonic / refreshing / cleansing / deodorant / masking	2	10,0
PEG-100 STEARATE	9004-99-3	Poly(oxy-1,2-ethanediyl), .alpha.-(1-oxooctadecyl)-.omega.-hydroxy-	surfactant	2	10,0

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INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
PUNICA GRANATUM SEED OIL	84961-57-9	Punica Granatum Seed Oil is the oil expressed from the seeds of the Pomegranate, Punica granatum L., Punicaceae	emollient / antimicrobial ?	2	10,0
CAPRYLYL GLYCOL	1117-86-8	Octane-1,2-diol.	emollient / humectant / hair conditioning	2	9,0
RUSCUS ACULEATUS EXTRACT	84012-38-4	Ruscus Aculeatus Extract is an extract of the rhizomes of the butcherbroom, Ruscus aculeatus, Liliaceae	tonic / soothing / refreshing / astringent / skin conditioning / stabilising	2	9,0
TRIBEHENIN	18641-57-1	Propane-1,2,3-triyl tridocosanoate.	emollient / skin conditioning	2	9,0
BEHENIC ACID	112-85-6	Docosanoic acid.	emulsifying	2	9,0
GLYCERYL CAPRATE	26402-22-2	Decanoic acid, monoester with glycerol.	emollient	2	8,0
ROSA DAMASCENA FLOWER EXTRACT	90106-38-0	Rosa Damascena Flower Extract is an extract of the flowers of the Damask Rose, Rosa damascena, Rosaceae	masking / tonic	2	8,0
SORBITAN OLEATE	1338-43-8	Sorbitan oleate.	emulsifying	2	8,0
ROSA MOSCHATA SEED OIL		Rosa Moschata Seed Oil is the oil expressed from the seeds of the musk rose, Rosa moschata, Rosaceae	skin conditioning / emollient	2	7,0
PERSEA GRATISSIMA OIL	8024-32-6	Persea Gratissima Oil is the fixed oil obtained by pressing the dehydrated sliced flesh of the avocado pear, Persea gratissima, Lauraceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic, and palmitic	emollient	2	7,0
CHITOSAN LACTATE	66267-50-6	Chitosan, 2-hydroxypropanoate salt	film forming	2	6,0
EUCALYPTUS GLOBULUS LEAF EXTRACT	84625-32-1	Eucalyptus Globulus Leaf Extract is an extract of the fresh leaves of the Eucalyptus, Eucalyptus globulus, Myrtaceae	perfuming / skin conditioning	2	6,0
POLYGLYCERYL-3 OLEATE	33940-98-6	Oleic acid, monoester with triglycerol.	emulsifying	2	6,0
HYDROXYETHYLCELLULOSE	9004-62-0	Cellulose, 2-hydroxyethyl ether	binding / emulsion stabilising / film forming / viscosity controlling / stabilising	2	4,0
COCO-CAPRYLATE/CAPRATE		Alcohols, coco, mixed esters with octanoic and decanoic acids	emollient	2	4,0
SODIUM LAURYL GLUCOSE CARBOXYLATE		Sodium carboxymethyl ether of Lauryl Glucoside	cleansing / surfactant	2	4,0
BEESWAX ACID	135457-95-3	Fatty acids, beeswax	stabilising	2	4,0
ELAEIS GUINEENSIS OIL	8002-75-3	Elaeis Guineensis Oil is a natural oil obtained from the fruits of the palm, Elaeis guineensis, Palmae	emollient	2	3,0
CYCLOPENTASILOXANE	541-02-6	Decamethylcyclopentasiloxane	hair conditioning / emollient / solvent	2	2,0
ARGANIA SPINOSA OIL	223747-87-3	Argania Spinosa Oil is the fixed oil expressed from the kernels of the African tree, Argania spinosa, Sapotaceae	skin conditioning	2	2,0

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PRUNUS PERSICA KERNEL OIL	8002-78-6	Prunus Persica Kernel Oil is the oil expressed from the kernels of the peach, Prunus persica, Rosaceae. It consists primarily of the glycerides of the fatty acids	emollient / skin conditioning	2	2,0
ORYZANOL	11042-64-1	gamma-Oryzanol	antistatic / skin conditioning	2	24,5
BIOTIN	58-85-5	1H-Thieno[3,4-d]imidazole-4-pentanoic acid, hexahydro-2-oxo-,[3aS-(3a.alpha.,4.beta.,6a.alpha.)]-	hair conditioning / skin conditioning / antiseborrhoeic	2	21,5
LAURYL ALCOHOL	112-53-8	Dodecan-1-ol.	emollient / emulsion stabilising / viscosity controlling / emulsifying	2	20,5
SALVIA OFFICINALIS LEAF EXTRACT	84082-79-1	Salvia Officinalis Leaf Extract is an extract of the leaves of the Sage, Salvia officinalis L., Lamiaceae	antidandruff / cleansing / oral care / skin conditioning / tonic / antimicrobial ?	2	19,5
DICAPRYLYL ETHER	629-82-3	Dioctyl ether.	solvent	2	19,5
ESCULIN	531-75-9	2H-1-Benzopyran-2-one, 6-(beta-D-glucopyranosyloxy)-7-hydroxy-	tonic	2	19,5
PROPOLIS CERA	85665-41-4	Propolis, ext.	antiseborrhoeic / moisturising / smoothing	2	19,5
PHENOXYETHANOL	122-99-6	2-phenoxyethanol.	preservative	2	18,5
CITRUS AURANTIUM DULCIS EXTRACT	8028-48-6	Citrus Aurantium Dulcis Extract is an extract of the fruit of the orange, Citrus aurantium dulcis, Rutaceae	skin conditioning	2	17,5
ASCORBIC ACID	50-81-7	Ascorbic acid.	antioxidant / buffering	2	17,5
DENATONIUM BENZOATE	3734-33-6	Denatonium benzoate.	denaturant	2	16,5
HYALURONIC ACID	9004-61-9	Hyaluronic acid.	antistatic / humectant / skin conditioning / moisturising	2	15,5
CAPRYLYL/CAPRYL GLUCOSIDE		D-glucoside, mixed octyl and decyl	surfactant / cleansing / foaming	2	15,5
ISOCETYL ALCOHOL	36311-34-9	Isohexadecanol.	emollient / viscosity controlling / skin conditioning	2	15,5
ALOE BARBADENSIS LEAF EXTRACT	85507-69-3	Aloe Barbadensis Leaf Extract is an extract of the leaves of the aloe, Aloe barbadensis, Liliaceae	emollient / humectant / oral care / skin conditioning	2	14,5
HELIANTHUS ANNUUS FLOWER EXTRACT	84776-03-4	Helianthus Annuus Flower Extract is the extract of the flowers of the Sunflower, Helianthus annuus L., Compositae	skin conditioning	2	12,5
LANOLIN	8006-54-0	Lanolin. Fat-like substance derived from sheep wool. Contains a complex combination of esters and polyesters, consisting chiefly of cholesteryl and isocholesteryl esters of the higher fatty acids.	antistatic / emollient / emulsifying / skin conditioning / hair conditioning / surfactant	2	12,5
ECTOIN	96702-03-3	2-methyl-1,4,5,6,-tetrahydropyrimidin-4-carboxylic acid		2	12,5

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CITRUS GRANDIS SEED EXTRACT	90045-43-5	Citrus Grandis Seed Extract is an extract of the seeds of the grapefruit, Citrus grandis, Rutaceae.	skin conditioning / astringent / tonic	2	12,5
SORBITAN STEARATE	1338-41-6	Sorbitan stearate.	emulsifying	2	12,5
p-ANISIC ACID	100-09-4	Benzoic acid, 4-methoxy-	masking	2	12,5
CARTHAMUS TINCTORIUS SEED OIL	8001-23-8	Carthamus Tinctorius Seed Oil is the oily liquid obtained from the seeds of Safflower, Carthamus tinctorius L., Compositae. It consists principally of the triglycerides of linoleic acid	masking / skin conditioning	2	11,5
D-ALPHA TOCOPHERYL ACETATE	1406-70-8	Vitamin E	antioxidant / masking / skin conditioning	2	8,5
CETEARETH-20	68439-49-6	C16-18 alcohols, ethoxylated (20 mol EO average molar ratio)	emulsifying / surfactant	2	7,5
ALGIN	9005-38-3	Alginic acid, sodium salt	binding / viscosity controlling	2	7,5
CAPRYL/CAPRAMIDO PROPYL BETAINE		N-(3-Decanoyl(or octanoyl)aminopropyl)-N-carboxymethyl-N,N-dimethyl-1-propanaminium inner salts	antistatic / hair conditioning / skin conditioning / surfactant / cleansing / foam boosting / viscosity controlling	2	6,5
DIPROPYLENE GLYCOL	110-98-5	1,1'-oxydipropan-2-ol.	solvent	2	6,5
CALENDULA OFFICINALIS FLOWER EXTRACT	84776-23-8	Calendula Officinalis Flower Extract is an extract obrained from the flowers of the Calendula, Calendula officinalis L., Compositae	masking / perfuming / skin conditioning	2	6,5
COCOGLYCERIDES	92045-31-3	Glycerides, coco.	emollient / emulsifying	2	5,5
FOENICULUM VULGARE OIL	8006-84-6	Foeniculum Vulgare Oil is the volatile oil obtained from the seeds of the fennel, Foeniculum vulgare, Umbelliferae.	tonic / emollient / soothing / skin conditioning	2	5,5
EMULSIFYING WAX				2	4,5
OLEUM SIMMONDSIAE CALIFORNICAE				2	4,5
POLYGLYCERYL-10 LAURATE	34406-66-1	1,2,3-Propanetriol, homopolymer, dodecanoates (1:1) (10 mol glycerol average molar ratio)	skin conditioning	2	3,5
PETROLATUM	2231-33-5	Petrolatum. A complex combination of hydrocarbons obtained as a semi-solid from dewaxing paraffinic residual oil. It consists predominantly of saturated crystalline and liquid hydrocarbons having carbon numbers predominantly greater than C25.	antistatic / emollient	2	2,5
CALCIUM CARBONATE	471-34-1	Calcium carbonate. CI 77220	buffering / opacifying / oral care / abrasive	2	1,5
BENZYL ALCOHOL	100-51-6	Benzyl alcohol.	perfuming / preservative / solvent / viscosity controlling	2	24,0
THYMUS SERPILLUM EXTRACT	84776-98-7	Thymus Serpyllum Extract is an extract of the herb of the wild thyme, Thymus serpyllum, Labiatae	tonic / deodorant / cleansing / masking	2	26,0

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INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
ONONIS SPINOSA ROOT EXTRACT	84775-89-3	Ononis Spinosa Root Extract is an extract of the roots of the Restharrow, Ononis spinosa L., Leguminosae	antiseborrhoeic / soothing	1	23,0
MELISSA OFFICINALIS LEAF EXTRACT	84082-61-1	Melissa Officinalis Leaf Extract is an extract of the leaves of the Balmint, Melissa officinalis L., Labiatae	skin conditioning	1	22,0
STYRAX BENZOIN GUM	2593-35-2	Styrax Benzoin Gum is a balsamic resin obtained from Styrax benzoin, Styracaceae. It is a product which may contain resin acids and their esters, terpenes, and oxidation or polymerisation products of these terpenes	film forming	1	21,0
LONICERA CAPRIFOLIUM FLOWER EXTRACT	84603-62-3	Lonicera Caprifolium Flower Extract is an extract of the flowers of the Honeysuckle, Lonicera caprifolium L., Caprifoliaceae	perfuming / skin conditioning	1	21,0
CRITHMUM MARITIMUM EXTRACT	89997-98-8	Crithmum Maritimum Extract is an extract of the whole plant of Crithmum maritimum, Apiaceae	tonic	1	21,0
ALTHAEA OFFICINALIS EXTRACT	73049-65-7	Althaea Officinalis Extract is an extract of the roots of the marshmallow, Althaea officinalis, Malvaceae	emollient	1	20,0
TAGETES MINUTA FLOWER OIL	91770-75-1	Tagetes Minuta Flower Oil is the essential oil obtained from the flowers of the Tagetes, Tagetes minuta L., Compositae	masking / skin conditioning	1	20,0
SALIX ALBA BARK EXTRACT	84082-82-6	Salix Alba Bark Extract is and extract of the bark of the white willow, Salix alba, Salicaceae	astringent / tonic / skin conditioning / soothing	1	20,0
ALUMINA	1344-28-1	Aluminium oxide.	abrasive / opacifying / viscosity controlling	1	19,0
ACHILLEA MILLEFOLIUM OIL	2236-20-6	Achillea Millefolium Oil is the oil obtained from the flowering herb of the yarrow, Achillea millefolium, Asteraceae.	soothing / antidandruff / refreshing / cleansing / tonic	1	19,0
ANIBA ROSAEODORA OIL	8015-77-8	Aniba Rosaeodora Oil is the volatile oil obtained from the wood of the tree, Aniba rosaeodora, Lauraceae	tonic	1	19,0
BENZYL SALICYLATE	118-58-1	Benzyl salicylate.	uv absorber	1	19,0
POLYGLYCERYL-2 DIPOLYHYDROXYSTEARATE	137398-08-4	Octadecanoic acid, 12-hydroxy-, homopolymer, ester with oxybis(propanediol)	skin conditioning	1	19,0
SMITHSONITE EXTRACT		Smithsonite Extract is an extract of Smithsonite	antioxidant / skin conditioning	1	19,0
GLYCINE SOJA GERM EXTRACT	84776-91-0	Glycine Soja Germ Extract is an extract of the germ of the soy, Glycine soja, Leguminosae.	skin conditioning / emollient	1	19,0
EUCALYPTUS STAIGERIANA		Essential eucalyptus oil		1	19,0
ALTHAEA OFFICINALIS ROOT EXTRACT	73049-65-7	Althaea Officinalis Root Extract is an extract of the roots of the Marsh Mallow, Althaea officinalis L., Malvaceae	skin conditioning	1	18,0
CITRUS BERGAMIA LEAF OIL	89957-91-5	Citrus Bergamia Leaf Oil is an essential oil obtained from the leaves of the Bergamot, Citrus bergamia risso, Rutaceae (not officially an INCI name but perfuming)	perfuming	1	18,0

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RHIZOBIAN GUM		Rhizobian Gum is the polysaccharide gum produced by the fermentation by Rhizobian	film forming / hair fixing / plasticiser / viscosity controling	1	17,0
MELALEUCA ERICIFOLIA LEAF OIL	85085-48-9	Melaleuca Ericifolia Leaf Oil is the volatile oil distilled from the leaves of the Tea Tree, Melaleuca ericifolia, Myrtaceae	masking / tonic	1	17,0
MAGNESIUM NITRATE	10377-60-3	Magnesium nitrate.	hair conditioning	1	17,0
ROSA CANINA SEED EXTRACT	84696-47-9	Rosa Canina Seed Extract is an extract of the seeds of the dog rose, Rosa canina, Rosaceae	skin conditioning	1	17,0
MYRISTYL ALCOHOL	112-72-1	Tetradecanol.	emollient / emulsion stabilising / viscosity controlling / skin conditioning / foam boosting	1	17,0
OLEUM CHAMAEMELUM ORMENSIS			skin conditioning	1	17,0
EQUISETUM HIEMALE LEAF/STEM EXTRACT	90028-32-3	Equisetum Hiemale Leaf/Stem Extract is the extract of the leaves and stems of Horsetail, Equisetum hiemale L., Equisetaceae	skin conditioning	1	17,0
HIPPOPHAE RHAMNOIDES OIL	225234-03-7	Hippophae Rhamnoides Oil is the fixed oil obtained from the fruits of the seabuckthorn, Hippophae rhmanoides, Elagnaceae	emollient / skin conditioning	1	17,0
BETAGLUCAN	26874-89-5	Beta-d-glucose homopolymer	skin conditioning / bulking	1	16,0
URTICA DIOICA ROOT EXTRACT	84012-40-8	Urtica Dioica Root Extract is an extract of the roots of the Nettle, Urtica dioica L., Urticaceae	skin conditioning	1	16,0
CANDELILLA CERA	8006-44-8	Candelilla Cera is the candelilla wax obtained from Euphorbia cerifera, Euphorbiaceae	emollient / film forming	1	16,0
METHYLCHLOROISOTHIAZOLINONE	26172-55-4	5-chloro-2-methyl-2H-isothiazol-3-one.	preservative	1	16,0
CHOLESTERYL HYDROXYSTEARATE	40445-72-5	Cholest-5-en-3-ol (3.beta.)-, 12-hydroxyoctadecanoate	emollient / viscosity controlling	1	15,0
STEARYL GLYCYRRHETINATE	13832-70-7	Olean-12-en-29-oic acid, 3-hydroxy-11-oxo-, octadecyl ester, (3.beta.,20.beta.)	skin conditioning / soothing	1	15,0
ACRYLATES/C10-30 ALKYL ACRYLATE CROSSPOLYMER		C10-C30 alkyl propenoate, polymer with propenoic acid, butenoic acidand/or alkyl propenoates, product with propenyl sucrose ether or propenyl 2,2-dihydroxymethyl-1,3-propanediol	emulsion stabilising / film forming / viscosity controlling	1	15,0
CANANGA ODORATA FLOWER OIL	83863-30-3	Cananga Odorata Flower Oil is the oil obtained from the flower, Cananga odorata, Anonaceae. Definitions in ISO 3063	masking / perfuming	1	15,0
MAGNESIUM CHLORIDE	7786-30-3	Magnesium chloride.	viscosity controlling	1	15,0
PHYTOSTERYL MACADAMIATE		Fatty acids, macadamia nut-oil, esters with (3-.beta.)-sigmast-5-en-3-ol	hair conditioning / skin conditioning	1	15,0
DISTEARDIMONIUM HECTORITE	97280-96-1	1-Octadecanaminium, N,N-dimethyl-N-octadecyl-, chloride, reaction products with hectorite	stabilising / viscosity controlling	1	15,0
EUGENIA CARYOPHYLLUS OIL	8000-34-8	Eugenia Caryophyllus Oil is the volatile oil steam distilled from the dried flower buds of the clove, Eugenia caryophyllus, Myrtaceae. It consists chiefly of eugenol.	tonic	1	15,0

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BRASSICA CAMPESTRIS/ALEURITES FORDII OIL COPOLYMER		Brassica Campestris/Aleurites Fordii Oil Copolymer is a copolymer of Brassica Campestris Oil and Aleurites fordii oil monomers	film forming / skin conditioning	1	14,0
ALUMINUM/MAGNESIUM HYDROXIDE STEARATE		Aluminum magnesium hydroxide and stearic acid	emulsion stabilising	1	14,0
CEDRUS ATLANTICA OIL	8000-27-9	Cedrus Atlantica Oil is the volatile oil obtained from the bark of Cedrus atlantica, Pinaceae	tonic	1	14,0
ANTHEMIS NOBILIS OIL	8015-92-7	Anthemis Nobilis Oil is the volatile oil distilled from the dried flower heads of Anthemis nobilis, Compositae.	tonic / skin conditioning	1	14,0
VITIS VINIFERA FRUIT EXTRACT	84929-27-1	Vitis Vinifera Extract is an extract of the fruit of the Red Grape, Vitis Vinifera L., Vitaceae	skin conditioning / antimicrobial ?	1	14,0
CI 61565	128-80-3	1,4-bis(p-tolylamino)anthraquinone.	cosmetic colorant	1	13,0
ALUMINUM DISTEARATE	300-92-5	Hydroxyaluminium distearate.	emulsion stabilising / opacifying / viscosity controlling	1	13,0
CITRUS AURANTIUM BERGAMIA OIL	8007-75-8	Citrus Aurantium Bergamia Oil is the psoralen-free volatile oil obtained from the fruit of Citrus aurantium bergamia, Rutaceae	masking	1	13,0
TROMETHAMINE	77-86-1	1,3-Propanediol, 2-amino-2-(hydroxymethyl)	buffering	1	13,0
TRIETHANOLAMINE	102-71-6	2,2',2''-nitrilotriethanol.	buffering	1	13,0
ANIBA ROSAEODORA WOOD OIL	8015-77-8	Aniba Rosaeodora Wood Oil is the volatile oil obtained from the wood of the tree, Aniba rosaeodora, Lauraceae	astringent / masking / perfuming / skin conditioning / tonic	1	13,0
SYMPHYTUM OFFICINALE LEAF EXTRACT	84696-05-9	Symphytum Officinale Leaf Extract is an extract of the leaves of the comfrey, Symphytum officinale, Borraginaceae	skin conditioning	1	13,0
ROSA DAMASCENA EXTRACT	90106-38-0	Rosa Damascena Extract is an extract of the flowers of the rose, Rosa damascena, Rosaceae	tonic	1	13,0
PANTHENYL ETHYL ETHER	667-83-4	(+)-N-(3-ethoxypropyl)-2,4-dihydroxy-3,3-dimethylbutyramide.	antistatic / hair conditioning	1	13,0
PROLINE	147-85-3	2-Pyrrolidinecarboxylic acid, (S)-	antistatic / skin conditioning / hair conditioning	1	13,0
DIMETHICONE	9006-65-9	Dimethicone	antifoaming / emollient	1	13,0
SODIUM BEESWAX	97721-96-5	Fatty acids, beeswax, sodium salts.	emulsifying / skin conditioning	1	13,0
CITRUS SPECIES LEAF EXTRACT	94266-47-4	Citrus Species Leaf Extract is an extract obtained from the leaves of different Citrus spp., Rutaceae	perfuming	1	13,0
SODIUM HYDROXYMETHYLGLYCINATE	70161-44-3	Sodium N-(hydroxymethyl)glycinate.	preservative	1	13,0
ZINC SULFATE	7733-02-0	Zinc sulphate.	antimicrobial / oral care / antiplaque / anticaking	1	13,0

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CI 42090	3844-45-9	Dihydrogen (ethyl)[4-[4-[ethyl(3-sulphonatobenzyl)]amino]-2'-sulphonatobenzhydrylidene]cyclohexa-2,5-dien-1-ylidene](3-sulphonatobenzyl)ammonium, disodium salt and other permitted lakes and salts	cosmetic colorant	1	12,0
CETYL PEG/PPG-10/1 DIMETHICONE		Cetyl PEG/PPG-10/1 Dimethicone is the copolymer of Cetyl Dimethicone and an alkoxylated derivative of Dimethicone containing an average of 10 moles of ethylene oxide and 1 mole of propylene oxide	emulsifying / skin conditioning / surfactant	1	12,0
CITRUS AURANTIUM AMARA FLOWER OIL	68916-04-1	Citrus Aurantium Amara Flower Oil is the volatile oil obtained from the flowers of the Bitter Orange, Citrus aurantium L. var. amara L., Rutaceae	masking / skin conditioning	1	12,0
CITRUS MEDICA LIMONUM OIL	8008-56-8	Citrus Medica Limonum Oil is the volatile oil obtained from the fresh peel of Citrus medica limonum, Rutaceae.	tonic / masking	1	12,0
DIMETHICONOL	31692-79-2	Poly[oxy(dimethylsilylane)], .alpha.-hydro-.omega.-hydroxy-	antifoaming / emollient / moisturising	1	12,0
ARGANIA SPINOSA KERNEL OIL	223747-87-3	Argania Spinosa Kernel Oil is the fixed oil expressed from the kernels, Argania Spinosa (L.), Sapotaceae	emollient / skin conditioning	1	12,0
THYMUS VULGARIS EXTRACT	84929-51-1	Thymus Vulgaris Extract is an extract of the flowers and leaves of the thyme, Thymus vulgaris, Labiatae	tonic / masking	1	12,0
BETA VULGARIS ROOT EXTRACT	89957-89-1	Beta Vulgaris Root Extract is an extract of the roots of the Sugar Beet, Beta vulgaris L., Chenopodiaceae	skin condtioning	1	12,0
BENZOPHENONE-3	131-57-7	2-Hydroxy-4-methoxybenzophenone	uv absorber / uv filter	1	12,0
LONICERA JAPONICA LEAF EXTRACT	223749-79-9	Lonicera Japonica Leaf Extract is an extract of the leaves of the honeysuckle, Lonicera japonica, Caprifoliaceae	skin conditioning	1	12,0
GLYCERYL TRIACETATE CAPRYLATE				1	12,0
CITRUS LIMONUM LEAF EXTRACT	84929-31-7	Citrus Limonum Leaf Extract is an extract obtained from the leaves of the Lemon, Citrus limonum (syn: C. medica limon), Rutaceae - NOT OFFICIALLY AN INCI NAME BUT PERFUMING	perfuming	1	11,0
WHEAT AMINO ACIDS		Amino acids, wheat	skin protecting / soothing / skin conditioning	1	11,0
CINNAMAL	104-55-2	Cinnamaldehyde.	denaturant	1	11,0
CITRUS AURANTIUM BERGAMIA FRUIT EXTRACT	89957-91-5	Citrus Aurantium Bergamia Fruit Extract is an extract of the fruit of the Bergamot, Citrus aurantium L. var. bergamia, Rutaceae	skin conditioning	1	11,0
BUTYROSPERMUM PARKII BUTTER EXTRACT	91080-23-8	Butyrospermum Parkii Butter Extract is an extract of shea butter, Butyrospermum parkii, Sapotaceae.	emollient	1	11,0
TILIA CORDATA FLOWER EXTRACT	84929-52-2	Tilia Cordata Flower Extract is an extract of the flowers of the Linden, Tilia cordata, Tiliaceae	skin conditioning	1	11,0

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INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
SUCROSE DISTEARATE	27195-16-0	Sucrose distearate.	emollient / emulsifying / skin conditioning	1	11,0
TETRAHYDROXYPROPYL ETHYLENEDIAMINE	102-60-3	1,1',1'',1'''-ethylenedinitrilotetrapropan-2-ol.	chelating	1	11,0
LAURYL LACTATE	6283-92-7	Dodecyl lactate.	emollient / skin conditioning	1	11,0
MICA	12001-26-2	Mica-group minerals (CI 77019).	opacifying	1	11,0
MYRTUS COMMUNIS OIL	84082-67-7	Myrtus Communis Oil is a volatile oil obtained from the the leaves of the myrtle, Myrtus communis, Myrtaceae	tonic / masking	1	11,0
DISTARCH PHOSPHATE	55963-33-2	Starch, phosphoric acid ester (2:1)	binding / anticaking / absorbent	1	11,0
DAUCUS CAROTA OIL	8015-88-1	Daucus Sativa Oil is the oil obtained from the seed of the carrot, Daucus carota sativa, Umbelliferae.	tonic / masking	1	11,0
HAMAMELIS VIRGINIANA EXTRACT	84696-19-5	Hamamelis Virginiana Extract is an extract of the bark, leaves and twigs of the witch hazel, Hamamelis virginiana, Hamamelidaceae	astringent / soothing / skin conditioning / hair conditioning	1	11,0
RUSCUS ACULEATUS ROOT EXTRACT	84012-38-4	Ruscus Aculeatus Root Extract is an extract of the roots of the Butcheerbroom, Ruscus aculeatus, Liliaceae	astringent / refreshing / skin conditioning / soothing / stabilising / tonic	1	11,0
EUPHRASIA OFFICINALIS EXTRACT	84625-36-5	Euphrasia Officinalis Extract is an extract of the aerial parts of the euphrasia, Euphrasia officinalis, Scrophulariaceae	tonic / soothing / astringent / antimicrobial / skin conditioning	1	11,0
SAMBUCUS NIGRA FLOWER EXTRACT	84603-58-7	Sambucus Nigra Flower Extract is an extract of the flowers of the Elder, Sambucus nigra L., Caprifoliaceae	refreshing / skin conditioning / soothing / tonic	1	11,0
CITRUS AURANTIUM DULCIS PEEL OIL	8008-57-9	Citrus Aurantium Dulcis Peel Oil is the volatile oil obtained by expression from the fresh peel of the ripe fruit of the sweet orange, Citrus aurantium var. dulcis, Rutaceae	astringent / masking / skin conditioning / tonic	1	10,0
CITRUS NOBILIS FRUIT EXTRACT	84929-38-4	Citrus Nobilis Fruit Extract is an extract of the fruit of the mandarin orange, Citrus nobilis.	skin conditioning	1	10,0
TERMINALIA FERDINANDIANA FRUIT EXTRACT		Terminalia Ferdinandiana Fruit Extract is an extract of the fruit of the Terminalia ferdinandiana, Combretaceae	antioxidant / bleaching	1	10,0
ROSA CANINA FRUIT OIL	84603-93-0	Rosa Canina Fruit Oil is the fixed oil derived from the dog rose, Rosa canina, Rosaceae. It consists primarily of the glycerides of the fatty acids	emollient / skin conditioning	1	10,0
LAVANDULA HYBRIDA OIL	8022-15-9	Lavandula Hybrida Oil is the essential oil obtained from the flowers of the lavandin, Lavandula hybrida, Labiatae.	emollient	1	10,0
PEG-14M	25322-68-3	Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-hydroxy-	binding / emulsion stabilising / viscosity controlling	1	10,0

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PELARGONIUM GRAVEOLENS FLOWER OIL	90082-51-2	Pelargonium Graveolens Flower Oil is the volatile oil obtained from the flowers of the Bourbon Geranium, Pelargonium graveolens (L.), Geraniaceae	masking	1	10,0
OLEIC ACID	112-80-1	9-Octadecenoic acid (9Z)-	emollient / emulsifying	1	10,0
HYDROLYZED SOY PROTEIN	68607-88-5	Protein hydrolyzates, soya. Substance obtained by acidic, alkaline, or enzymatic hydrolysis of soya composed primarily of amino acids, peptides, and proteins. It may contain impurities consisting chiefly of carbohydrates and lipids along with smaller quan	antistatic / humectant / hair conditioning / skin conditioning	1	10,0
DIPOTASSIUM GLYCYRRHIZATE	68797-35-3	.alpha.-d-Glucopyranosiduronic acid, (3.beta.,20.beta.)-20-carboxy-11-oxo-30-norolean-12-en-3-yl 2-O-.beta.-d-glucopyranuronosyl-, dipotassium salt.	humectant / skin conditioning	1	10,0
ETHYLHEXYL METHOXYCINNAMATE	5466-77-3	2-ethylhexyl 4-methoxycinnamate.	uv filter / uv absorber	1	10,0
SODIUM LAUROYL SARCOSINATE	137-16-6	Sodium N-lauroylsarcosinate.	antistatic / surfactant / viscosity controlling / emulsifying / hair conditioning / cleansing / foaming / skin conditioning	1	10,0
EUGENIA CARYOPHYLLATA	8015-97-2			1	10,0
RUMEX ACETOSELLA EXTRACT		Rumex Acetosella Extract is an extract of the leaves and aerial parts of the sorrel, Rumex acetosella, Polygonaceae	skin conditioning / soothing	1	10,0
GENTIANA LUTEA EXTRACT	72968-42-4	Gentiana Lutea Extract is an extract of the rhizomes and roots of the gentian, Gentiana lutea, Gentianaceae	tonic / skin conditioning	1	10,0
SEDUM PURPUREUM EXTRACT		Sedum Purpureum Extract is an extract of the whole plant, Sedum Purpureum, Crassulaceae	skin conditioning	1	10,0
ALTHAEA OFFICINALIS LEAF EXTRACT	73049-65-7	Althaea Officinalis Leaf Extract is the extract of the leaves of the Marsh Mallow, Althaea officinalis L., Malvaceae	skin conditioning	1	9,0
CETYL PALMITATE	540-10-3	Hexadecyl hexadecanoate	emollient	1	9,0
CITRUS AURANTIUM AMARA LEAF OIL	68916-04-1	Citrus Aurantium Amara Leaf/Twig Oil is the volatile oil obtained from the leaves and twigs of the Bitter Orange, Citrus aurantium L. var. amara L., Rutaceae	flavouring / masking	1	9,0
SORBIC ACID	110-44-1	Hexa-2,4-dienoic acid.	preservative	1	9,0
C12-15 ALKYL BENZOATE	68411-27-8	Benzoic acid, C12-15-alkyl esters.	antimicrobial / emollient / skin conditioning	1	9,0
CARRAGEENAN	2593-40-5	Carrageenan.	binding / emulsion stabilising / viscosity controlling / gel forming	1	9,0
JUNIPERUS COMMUNIS EXTRACT	84603-69-0	Juniperus Communis Extract is an extract of the ripe fruit of the juniper, Juniperus communis, Cupressaceae	tonic / deodorant / masking / antimicrobial ?	1	9,0

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MELILOTUS OFFICINALIS EXTRACT	84082-81-5	Melilotus Officinalis Extract is an extract of the aerial parts of the sweet clover, Melilotus officinalis, Leguminosae	soothing / astringent / masking	1	9,0
MELALEUCA ALTERNIFOLIA OIL	85085-48-9	Melaleuca Alternifolia Oil is the oil distilled from the leaves of the tea tree, Melaleuca alternifolia, Myrtaceae	antimicrobial ?	1	9,0
MESEMBRYANTHEMUM CRYSTALLINUM EXTRACT		Mesembryanthemum Crystallinum Extract is the extract of the whole plant, Mesembryanthemum crystallinum L., Aizoaceae	humectant	1	9,0
SIMMONDSIA CHINENSIS CERA	61789-91-1	Simmondsia Chinensis Cera is a waxy substance obtained from the seeds of Simmondsia chinensis, Buxaceae	emollient / hair conditioning / skin conditioning / viscosity controlling	1	9,0
COMMIPHORA MYRRHA EXTRACT	84929-26-0	Commiphora Myrrha Extract is an extract of the bark exudate of the myrrh, Commiphora myrrha, Burseraceae	cleansing	1	9,0
HYDROGENATED CASTOR OIL	8001-78-3	Castor oil, hydrogenated.	emollient / emulsifying / surfactant / viscosity controlling / skin conditioning	1	9,0
ROSMARINUS OFFICINALIS LEAF OIL	84604-14-8	Rosmarinus Officinalis Leaf Oil is the essential oil obtained from the flowering tops and leaves of the Rosemary, Rosmarinus officinalis L., Lamiaceae	masking / skin conditioning / antimicrobial ?	1	9,0
EUGENIA CARYOPHYLLUS BUD OIL	84961-50-2	"Clove Oil". Eugenia Caryophyllus Bud Oil is an essential oil steam-distilled from the dried flower buds of the Clove, Syzygium aromaticum, syn. Eugenia caryophyllus, Myrtaceae. It contains eugenol	masking / perfuming	1	9,0
SORBITAN OLIVATE	223706-40-9	D-Glucitol, 1,4-Anhydro-, 6-monoester with olive oil fatty acids	emulsifying	1	8,0
CINNAMOMUM ZEYLANICUM EXTRACT	84649-98-9	Cinnamomum Zeylanicum Extract is an extract of the dried bark of the cinnamon, Cinnamomum zeylanicum, Lauraceae	tonic / deodorant / cleansing / refreshing /antimicrobial?	1	8,0
ALUMINUM STARCH OCTENYLSUCCINATE	9087-61-0	Starch, hydrogen octenylbutanedionate, aluminum salt	absorbent / viscosity controlling / anticaking	1	8,0
ARCTIUM LAPPA EXTRACT	84012-13-5	Arctium Lappa Extract is an extract of the roots of the burdock, Arctium lappa, Compositae	soothing / antiseborrhoeic / skin conditioning / astringent / tonic	1	8,0
ANTHEMIS NOBILIS FLOWER OIL	84649-86-5	"Chamomile Oil-Roman". Anthemis Nobilis Flower Oil is the volatile oil distilled from the dried flower heads of the Roman Chamomile, Anthemis nobilis L., Compositae. It contains mainly esters of angelica acid	masking / perfuming / skin conditioning	1	8,0
MALIC ACID	97-67-6	Butenedioic acid, hydroxy-, (2S)-	buffering	1	8,0
PYROS CYDONIA SEED EXTRACT	90106-03-9	Pyrus Cydonia Extract is an extract of the quince, Pyrus cydonia, Rosaceae	skin conditioning / soothing	1	8,0

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ISOPROPYL PALMITATE	142-91-6	Isopropyl palmitate.	antistatic / binding / emollient / solvent / skin conditioning	1	8,0
PEG-150 DISTEARATE	2595-26-8	Poly(oxy-1,2-ethanediyl), .alpha.-(1-oxooctadecyl)-.omega.-[(1-oxooctadecyl)oxy]-	emulsifying / surfactant / viscosity controlling	1	8,0
POPULUS TREMULOIDES BARK EXTRACT	90083-05-9	Populus Tremuloides Bark Extract is an extract of the bark of Populus tremuloides, Salicaceae	antiseborrhoeic / skin conditioning	1	8,0
PLANTAGO MAJOR EXTRACT	84929-43-1	Plantago Major Extract is an extract of the leaves of the plantain, Plantago major, Plantaginaceae	astringent	1	8,0
POLYGLYCERYL-4 ISOSTEARATE	91824-88-3	1,2,3-Propanetriol, homopolymer, isooctadecanoates (1:1) (4 mol glycerol average molar ratio)	emulsifying	1	8,0
METHYL GLUCOSE SESQUISTEARATE	68936-95-8	D-Glucopyranoside, methyl, octadecanoate (2:3).	emollient / emulsifying / skin conditioning	1	8,0
ORYZA SATIVA POWDER	68553-81-7	Oryza Sativa Powder is the powder obtained by grinding the dried seeds of the Rice, Oryza sativa L., Poaceae	bulking /antimicrobial ?	1	8,0
DISODIUM PHOSPHATE	7558-79-4	Disodium hydrogenorthophosphate.	buffering	1	8,0
HYDROGENATED VEGETABLE GLYCERIDES	100684-29-5	Glycerides, vegetable-oil, hydrogenated.	emollient / emulsifying / skin conditioning / viscosity controlling / surfactant	1	8,0
SODIUM DEHYDROACETATE	4418-26-2	Sodium 1-(3,4-dihydro-6-methyl-2,4-dioxo-2H-pyran-3-ylidene)ethanolate.	preservative	1	8,0
ROSMARINUS OFFICINALIS OIL	8000-25-7	Rosmarinus Officinalis Oil is the volatile oil obtained from the flowering tops of the rosemary, Rosmarinus officinalis, Labiatae	tonic / refreshing	1	8,0
ROSMARINUS OFFICINALIS EXTRACT	84604-14-8	Rosmarinus Officinalis Extract is an extract of the leaves of the rosemary, Rosmarinus officinalis, Labiatae	tonic / refreshing / antimicrobial	1	8,0
GLYCINE SOJA PROTEIN	9010-10-0	Glycine Soja Protein is a protein obtained from the soybean, Glycine soja, Leguminosae	skin conditioning / solvent / moisturising / emollient	1	8,0
ACRYLATES COPOLYMER	25133-97-5	2-propenoic acid, 2-methyl-, polymer with ethyl 2-propenoate and methyl 2-methyl-2-propenoate	antistatic / binding / film forming	1	7,0
SODIUM METHYL COCOYL TAURATE	61791-42-2	Ethanesulfonic acid, 2-(methylamino)-, N-coco acyl derivs., sodium salts.	surfactant / foaming / cleansing	1	7,0
YUCCA SCHIDIGERA FRUIT	90147-57-2	Yucca Schidigera Fruit is the fruit of the Small Soap Weed, Yucca schidigera, Liliaceae	skin protection	1	7,0
CITRUS AURANTIUM BERGAMIA FRUIT OIL	8007-75-8	Citrus Aurantium Bergamia Fruit Oil is the psoralen-free volatile oil obtained from the fruit of Citrus aurantium bergamia, Rutaceae	masking	1	7,0
SODIUM STEAROYL GLUTAMATE	38517-23-6	Sodium hydrogen N-(1-oxooctadecyl)-L-glutamate.	emulsifying / cleansing / hair conditioning / skin conditioning	1	7,0
XYLITOL	87-99-0	Xylitol.	humectant / skin conditioning	1	7,0
CETEARYL OLIVATE		Cetearyl Olivate is the ester of Cetearyl Alcohol and the fatty acids derived from olive oil	hair conditioning	1	7,0

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ARCTIUM LAPPA SEED OIL	84012-13-5	Arctium Lappa Seed Oil is the fixed oil expressed from the seeds of the burdock, Arctium lappa, Compositae	emollient / skin conditioning	1	7,0
CARNAUBA ACID WAX	442682-58-8	Carnauba Acid Wax is the acid portion obtained from the leaves of the palm tree, Copernicia cerifera, Palmaceae	absorbent / binding / film forming / viscosity	1	7,0
ARCTIUM LAPPA ROOT EXTRACT	84012-13-5	Arctium Lappa Root Extract is an extract of the roots of the Burdock, Arctium lappa L., Asteraceae	skin conditioning	1	7,0
THEOBROMA CACAO BUTTER	8002-31-1	Theobroma Cacao Butter is a yellowish white solid material obtained from the roasted seeds of Theobroma cacao, Sterculiaceae	emollient	1	7,0
CETEARYL OCTANOATE	90411-68-0			1	7,0
LYSOLECITHIN	85711-58-6	Lecithins, hydrolyzed.	emulsifying	1	7,0
LAURYL METHYL GLUCETH-10 HYDROXYPROPYLDI MONIUM CHLORIDE		D-Glucopyranose, methyl ether, ethoxylated, 3-(N-dodecyl-N,N-dimethylammonio)-2-hydroxypropyl ethers (10 mol EO average molar ratio)	antistatic / hair conditioning	1	7,0
MENTHA VIRIDIS OIL	8008-79-5	Mentha Viridis Oil is the volatile oil obtained from the dried tops and leaves of the spearmint, Mentha viridis, Labiatae	masking	1	7,0
METHYL GLUCOSE DIOLEATE	82933-91-3	D-glucopyranoside methyl 2,6-dioleate.	emollient / humectant / skin conditioning	1	7,0
GUM TRANGACANTH	9000-65-1			1	7,0
FAEX	68876-77-7	Naturally occurring substances, yeast	skin conditioning	1	7,0
ALOE BARBADENSIS LEAF POWDER	85507-69-3	Aloe Barbadensis Leaf Powder is the powder obtained from the dried gound leaves of the aloe, Aloe barbadensis, Liliaceae	skin conditioning	1	6,0
SORBITAN ISOSTEARATE	71902-01-7	Sorbitan, isooctadecanoate.	emulsifying	1	6,0
BRASSICA CAMPESTRIS OLEIFERA OIL	8002-13-9	Brassica Campestris Oleifera Oil is the oil expressed from the seeds of the rape, Brassica campestris oleifera, Brassicaceae	emollient	1	6,0
BABASSUAMIDOPROPYL BETAINE	223704-95-8	1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-babassu-oil acyl derivatives, inner salt	surfactant / foam boosting / cleansing	1	6,0
BETULA ALBA LEAF EXTRACT	84012-15-7	Betula Alba Leaf Extract is an extract of the leaves of the birch, Betula alba, Betulaceae.	tonic / astringent / soothing / cleansing	1	6,0
CERESIN	8001-75-0	Ceresin. A complex combination of hydrocarbons produced by the purification of ozocerite with sulfuric acid and filtration through bone black to form waxy cakes.	antistatic / binding / emulsion stabilising / opacifying / viscosity controlling / hair conditioning	1	6,0
MALVA SYLVESTRIS EXTRACT	84082-57-5	Malva Sylvestris Extract is an extract of the flowers and leaves of the mallow, Malva sylvestris, Malvaceae	soothing / smoothing / emollient / astringent	1	6,0
ISONONYL ISONONANOATE	59219-71-5	3,5,5-trimethylhexyl 3,5,5-trimethylhexanoate.	antistatic / emollient / skin conditioning	1	6,0
PEG-7 GLYCERYL COCOATE	68201-46-7	Glycerides, coco mono- and di-, ethoxylated	emulsifying / surfactant	1	6,0

Table 2.1 All 459 ingredients listed after falling frequency					
INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
PERSEA GRATISSIMA CERA	227200-57-9	Persea Gratissima Cera is the semi-solid fraction of Avocado Oil (Persea gratissima, Lauraceae)	emollient / stabilising	1	6,0
HYDROLYZED BEESWAX		Beeswax, hydrolyzed	surfactant / emulsifying / emulsion stabilising / stabilising	1	6,0
CUCUMIS SATIVUS EXTRACT	89998-01-6	Cucumis Sativus Extract is an extract of the fruit of the cucumber, Cucumis sativus, Cucurbitaceae	emollient	1	6,0
HYDROLYZED SILK	96690-41-4	Protein hydrolyzates, silk.	antistatic / humectant / hair conditioning / skin conditioning	1	6,0
GLYCERYL LAURATE	27215-38-4	Lauric acid, monoester with glycerol / 2,3-dihydroxypropyl laurate.	emollient / emulsifying	1	6,0
GLYCERYL OLEATE CITRATE		Glyceryl Oleate Citrate is the reaction product of glyceryl oleate and citric acid	emulsifying / surfactant	1	6,0
AVENA SATIVA KERNEL EXTRACT	84012-26-0	Avena Sativa Kernel Extract is an extract of the kernels of oats, Avena sativa, Poaceae	abrasive	1	5,0
URTICA DIOICA	84012-40-8	Urtica Dioica is the dried plant nettle, Urtica dioica, Urticaceae	hair conditioning	1	5,0
BROMELAIN	9001-00-7	Bromelain is a mixture of enzymes found in pineapple juice	keratolytic / skin conditioning	1	5,0
DIHYDROGENATED PALMOYLETHYL HYDROXYETHYLMONIUM METHOSULFATE	91995-81-2	Tris-(2-hydroxyethyl)methylammonium methyl sulfate, diester with hydrogenated palm oil fatty acids	antistatic / hair conditioning	1	5,0
JOJOBA ESTERS		Oils, jojoba, product with hydrogenated jojoba wax	skin conditioning / emollient / soothing / moisturising	1	5,0
POTASSIUM OLIVATE	68154-77-8	Fatty acids, olive-oil, potassium salts.	surfactant / emulsifying	1	5,0
SODIUM COCOYL SULFOACETATE				1	5,0
COCAMIDOPROPYL BETAINAMIDE MEA CHLORIDE	164288-56-6	1-Propanaminium, 3-amino-N-[2[(2-hydroxyethyl)amino]2-oxoethyl]-N,N-dimethyl-, N-C12-18 acyl derivatives, chlorides	cleansing / foam boosting / surfactant	1	5,0
RUBUS IDAEUS EXTRACT	84929-76-0	Rubus Idaeus Extract is an extract of the fruit of the red raspberry, Rubus idaeus, Rosaceae	smoothing / keratolytic / astringent / tonic	1	5,0
SODIUM LEVULINATE	19856-23-6	Sodium 4-oxovalerate.	skin conditioning	1	5,0
STEARAMIDOPROPYL DIMETHYLAMINE	2100-54-9	N-[3-(dimethylamino)propyl]stearamide.	antistatic / emulsifying / surfactant / hair conditioning	1	4,0
TRIETHYL CITRATE	77-93-0	Triethyl citrate.	antioxidant / deodorant / solvent / plasticiser	1	4,0
LINOLEAMIDE DEA	56863-02-6	(9Z,12Z)-N,N-bis(2-hydroxyethyl)octadeca-9,12-dien-1-amide.	antistatic / viscosity controlling / hair conditioning / foam boosting	1	4,0
ISOPROPYL MYRISTATE	110-27-0	Isopropyl myristate.	binding / emollient / solvent / skin conditioning	1	4,0
CITRUS PARADISI SEED EXTRACT	90045-43-5	Citrus Paradisi Seed Extract is an extract of the seeds obtained from the Grapefruit, Citrus paradisi M., Rutaceae	masking / perfuming	1	4,0

Table 2.1 All 459 ingredients listed after falling frequency					
INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
COCAMIDE DEA	68603-42-9	Amides, coco, N,N-bis(hydroxyethyl).	emulsifying / emulsion stabilising / surfactant / viscosity controlling / foam boosting	1	4,0
SODIUM LAUROAMPHOACETATE	68647-44-9	Sodium 1-(carboxymethyl)-4,5-dihydro-1(or 3)-(2-hydroxyethyl)-2-undecyl-1H-imidazolium hydroxide.	surfactant / cleansing / foaming / hair conditioning	1	4,0
SODIUM LAURETH-11 CARBOXYLATE	53610-02-9	Sodium salt of the carboxylic acid derived from Laureth-11	surfactant / cleansing / foaming	1	4,0
CORN STARCH MODIFIED		Corn starch, reaction products with 3-(dodecenyl)dihydro-2,5-furandione, calcium salt, degree of substitution per glucose unit less than 0.1	absorbent / film forming / skin conditioning / viscosity controlling	1	4,0
SCLEROTIUM GUM	39464-87-4	Sclerotium rolfssii gum	emulsion stabilising / viscosity controlling / skin conditioning	1	4,0
SESAMUM INDICUM DAUCUS CAROTA		Sesamolie med gulerodsolie		1	4,0
CETRIMONIUM CHLORIDE	112-02-7	1-Hexadecanaminium, N,N,N-trimethyl-, chloride	antimicrobial / antistatic / emulsifying / preservative / surfactant	1	3,0
SODIUM SUCROSE OCTASULFATE	74135-10-7	alfa-D-glucopyranoside, 1,3,4,6-tetra-O-sulfo-beta-D-fructofuranosyl, tetrakis(hydrogen sulfate), octasodium salt	skin condtioning	1	3,0
BRASSICA OLERACEA ITALICA SEED OIL		Brassica Oleracea Italica Seed Oil is the oil expressed from the seeds of the Broccoli, Brassica oleracea L. italica, Brassicaceae	emollient / hair conditioning / skin conditioning	1	3,0
BAMBUSA ARUNDINACEA STEM EXTRACT	91771-32-3	Bambusa Arundinacea Stem Extract is an extract of the stems of the Bamboo, Bambusa arundinacea, Poaceae	skin conditioning	1	3,0
CETEARYL ETHYLHEXANOATE	90411-68-0	Hexanoic acid, 2-ethyl-, C16-18-alkyl esters.	emollient	1	3,0
CERA MICROCRISTALLINA	63231-60-7	Paraffin waxes and Hydrocarbon waxes, microcryst.. A complex combination of long, branched chain hydrocarbons obtained from residual oils by solvent crystallization. It consists predominantly of saturated straight and branched chain hydrocarbons predomina	binding / emulsion stabilising / opacifying / viscosity controlling	1	3,0
ANTHYLLIS VULNERARIA EXTRACT	89957-45-9	Anthyllis Vulneraria Extract is an extract of the flowers of Anthyllis vulneraria, Leguminosae	skin conditioning	1	3,0
CAPRYLIC/CAPRIC/STEARIC TRIGLYCERIDE		Octadecanoic acid, mixed triesters with octanoic acid, decanoic acid and 1,2,3-propanetriol	emollient / solvent	1	3,0
ISOCETYL STEARATE	25339-09-7	Isohexadecyl stearate.	emollient / skin conditioning	1	3,0
LAVANDULA ANGUSTIFOLIA HERB OIL	90063-37-9	Lavandula Angustifolia Herb Oil is an essential oil distilled from the flowering herbs of the lavender, Lavandula angustifolia, Labiatae - NOT an official INCI name	perfuming	1	3,0

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INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
PARAFFIN	8002-74-2	Paraffin waxes and Hydrocarbon waxes. A complex combination of hydrocarbons obtained from petroleum fractions by solvent crystallization (solvent deoiling) or by the sweating process. It consists predominantly of straight chain hydrocarbons having carbon	emollient / viscosity controlling	1	3,0
OCTYLDODECANOL	5333-42-6	2-octyldodecan-1-ol.	emollient / solvent	1	3,0
SHOREA STENOPTERA BUTTER	91770-65-9	Shorea Stenoptera Extract is a fat obtained from the fruits and seeds of Shorea stenoptera, Dipterocarpaceae	emollient	1	3,0
DECYL OLEATE	3687-46-5	Decyl oleate.	emollient	1	3,0
GUAR GUM	9000-30-0		binding / emulsifying / film forming / viscosity controlling	1	3,0
TRICAPRYLIN	538-23-8	Glycerol trioctanoate.	emollient / solvent / skin conditioning	1	2,0
ANTHEMIS NOBILIS FLOWER WATER	84649-86-5	Anthemis Nobilis Flower Water is the aqueous solution of the steam distillate obtained from the flowers of the Roman Chamomile, Anthemis nobilis L., Compositae	masking / skin conditioning	1	2,0
ROSA CANINA EXTRACT	84696-47-9		astringent	1	2,0
KAOLIN	1332-58-7	Naturally occurring substances, kaolin (CI 77004).	absorbent / anticaking / abrasive / bulking / opacifying	1	2,0
ROSA DAMASCENA FLOWER WATER	90106-38-0	Rosa Damascena Flower water is an aqueous solution of the steam of the distillate obtained from the flowers of the Damask Rose, Rosa damascena, Rosaceae	masking / skin conditioning / skin protecting	1	2,0
POTASSIUM ALUM	10043-67-1	Aluminium potassium bis(sulphate).	antiperspirant / deodorant	1	2,0
DISODIUM LAUROAMPHODIACETATE	14350-97-1	Disodium 1-[2-(carboxymethoxy)ethyl]-1-(carboxymethyl)-4,5-dihydro-2-undecyl-1H-imidazolium hydroxide.	antistatic / surfactant / viscosity controlling / foaming / cleansing	1	2,0
DICOCOYLETHYL HYDROXYETHYLMONIUM METHOSULFATE		Ethanaminium, 2-hydroxy-N,N-bis-(2-hydroxyethyl)-N-methyl-, coco-fatty acid diester, methyl sulfate	antistatic / hair conditioning	1	2,0
ETHYLHEXYL PALMITATE	29806-73-3	2-ethylhexyl palmitate.	emollient	1	2,0
HAMAMELIS VIRGINIANA WATER	84696-19-5	Hamamelis Virginiana Water is the aqueous solution of the odoriferous principles of the flowers of Hamamelis virginiana, Hamamelidaceae.	astringent / soothing / skin conditioning / hair conditioning	1	2,0
HELIANTHUS ANNUUS HYPERICUM PERFORATUM		Solsikkeolie. Men hypericum perforatum står som INCI navn alene		1	2,0
ALOE BARBADENSIS	85507-69-3	Aloe Barbadensis is a plant material derived from the leaves of the aloe, Aloe barbadensis, Liliaceae.	emollient	1	1,0

Table 2.1 All 459 ingredients listed after falling frequency					
INCIName	CAS No	Chemical name or descroption as stated on the INCI list	Function	In number of products	Average ranking
LAVANDULA ANGUSTIFOLIA FLOWER WATER	90063-37-9	Lavandula Angustifolia Flower Water is an aqueous solution of the steam distillate obtained from the flowers of the Lavender, Lavandula angustifolia, Labiatae	skin conditioning	1	1,0
ROSA CENTIFOLIA FLOWER WATER	84604-12-6	Rosa Centifolia Flower Water is an aqueous solution of the steam distillate obtained from the flowers of the Cabbage Rose, Rosa centifolia (L.), Rosaceae	skin conditioning / skin protecting	1	1,0
CI 77007	1302-83-6	Lazurite.	cosmetic colorant	1	32,0
ALUMINUM HYDROXIDE	21645-51-2	Aluminium hydroxide.	emollient / humectant / viscosity controlling	1	34,0
CITRUS AURANTIUM DULCIS FLOWER WATER	8028-48-6	Citrus Aurantium Dulcis Flower Water is an aqueous solution of the odoriferous principles of the flowers of the orange, Citrus aurantium dulcis.	skin conditioning	1	28,0
SULFUR	7704-34-9	Sulphur.	antidandruff / antistatic / antiseborrhoeic	1	30,0
CI 77891	13463-67-7	Titanium dioxide.	cosmetic colorant	1	31,0
CI 77499	12227-89-3	Triiron tetraoxide.	cosmetic colorant	1	30,0
CI 77492	51274-00-1	Iron oxide.	cosmetic colorant	1	29,0
BENTONITE	1302-78-9	Bentonite. A colloidal clay. Consists primarily of montmorillonite (CI 77004).	absorbent / emulsion stabilising / viscosity controlling	1	25,0
TRIFOLIUM PRATENSE FLOWER POWDER	85085-25-2	Trifolium Pratense Flower Powder is the powder obtained from the dried, ground flowers of the Red Clover, Trifolium pratense L., Leguminosae	astringent / masking	1	29,0
TRITICUM VULGARE GERM EXTRACT	84012-44-2	Triticum Vulgare Germ Extract is an extract of the germ of the wheat, Triticum vulgare, Gramineae	skin protecting / skin conditioning	1	28,0
CERAMIDE 6 II	100403-19-8	1,3,4-Octadecanetriol, 2-(2-Hydroxy) Stearamide	hair conditioning / skin conditioning	1	27,0
CARAPA GUAIANENSIS OIL	223748-14-9	Carapa Guaianensis Oil is the fixed oil expressed from the seeds of Carapa guaianensis, Meliaceae	denaturant	1	27,0
LINUM USITATISSIMUM SEED OIL	8001-26-1	Linum Usitatissimum Seed Oil is the expressed oil from the dried ripe seed of the Linseed, Linum usitatissimum L., Linaceae	perfuming / skin conditioning	1	25,0
ROSA CENTIFOLIA EXTRACT	84604-12-6	Rosa Centifolia Extract is an extract of the flowers of the cabbage rose, Rosa centifolia, Rosaceae	tonic / astringent	1	30,0
IRIS FLORENTINA ROOT EXTRACT	90045-89-9	Iris Florentina Root Extract is an extract of the roots of the Orris, Iris florentina L., Iridaceae	masking / tonic	1	28,0
ONONIS SPINOSA EXTRACT	84775-89-3	Ononis Spinosa Extract is an extract of the roots of the restharrow, Ononis spinosa, Leguminosae	soothing / antiseborrhoeic	1	25,0
MELISSA OFFICINALIS EXTRACT	84082-61-1	Melissa Officinalis Extract is an extract of the leaves and tops of the balm mint, Melissa officinalis, Labiatae	tonic / soothing	1	24,0
OLUS OIL	68956-68-3	Olus Oil is an expressed oil of vegetable origin consisting primarily of triglycerides of fatty acids	emollient	1	24,0

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INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
DISTEAROYLETHYL HYDROXYETHYLMONIUM METHOSULFATE		Ethanaminium, 2-hydroxxy-N-methyl-N,N-bis(2-(1-oxooctadecyl)oxyethyl)-, methyl sulfate	antistatic / hair conditioning	1	25,0
SHELLAC	9000-59-3	Shellac. A resin secreted by Laccifer lacca, Coccidae.	emollient / film forming / viscosity controlling / hair fixing	1	25,0
HECTORITE	12173-47-6	Hectorite (clay mineral).	absorbent / viscosity controlling / bulking	1	30,0
SALVIA OFFICINALIS EXTRACT	84082-79-1	Salvia Officinalis Extract is an extract of the leaves of the sage, Salvia officinalis, Labiatae	tonic / cleansing / antidandruff / antioxidant / antiperspirant / deodorant / skin protecting / astringent / antimicrobial / skin conditioning / soothing	1	26,0

2.2 Alphabetical overview

Table 2.2 All 459 ingredients listed in alphabetical overview					
INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
ACHILLEA MILLEFOLIUM EXTRACT	84082-83-7	Achillea Millefolium Extract is an extract of the leaves and flowers of the yarrow, Achillea millefolium, Asteraceae	soothing / antidandruff / refreshing / cleansing / tonic	3	18,0
ACHILLEA MILLEFOLIUM OIL	2236-20-6	Achillea Millefolium Oil is the oil obtained from the flowering herb of the yarrow, Achillea millefolium, Asteraceae.	soothing / antidandruff / refreshing / cleansing / tonic	1	19,0
ACRYLATES COPOLYMER	25133-97-5	2-propenoic acid, 2-methyl-, polymer with ethyl 2-propenoate and methyl 2-methyl-2-propenoate	antistatic / binding / film forming	1	7,0
ACRYLATES/C10-30 ALKYL ACRYLATE CROSSPOLYMER		C10-C30 alkyl propenoate, polymer with propenoic acid, butenoic acidand/or alkyl propenoates, product with propenyl sucrose ether or propenyl 2,2-dihydroxymethyl-1,3-propanediol	emulsion stabilising / film forming / viscosity controlling	1	15,0
ALCOHOL	64-17-5	Ethanol.	antifoaming / antimicrobial / astringent / masking / solvent viscosity controling	33	4,7
ALCOHOL DENAT.	64-17-5	Ethanol denatured in accordance with Customs and Excise regulations	antifoaming / antimicrobial / astringent / masking / solvent / viscosity controlling	4	3,0
ALGIN	9005-38-3	Alginic acid, sodium salt	binding / viscosity controlling	2	7,5
ALLANTOIN	97-59-6	Urea, (2,5-dioxo-4-imidazolidinyl)	soothing	7	14,9
ALOE BARBADENSIS	85507-69-3	Aloe Barbadensis is a plant material derived from the leaves of the aloe, Aloe barbadensis, Liliaceae.	emollient	1	1,0
ALOE BARBADENSIS LEAF EXTRACT	85507-69-3	Aloe Barbadensis Leaf Extract is an extract of the leaves of the aloe, Aloe barbadensis, Liliaceae	emollient / humectant / oral care / skin conditioning	2	14,5
ALOE BARBADENSIS LEAF JUICE	85507-69-3	Aloe Barbadensis Leaf Juice is the juice expressed from the leaves of the aloe, Aloe barbadensis, Liliaceae	skin conditioning	8	4,3
ALOE BARBADENSIS LEAF POWDER	85507-69-3	Aloe Barbadensis Leaf Powder is the powder obtained from the dried gound leaves of the aloe, Aloe barbadensis, Liliaceae	skin conditioning	1	6,0
ALTHAEA OFFICINALIS EXTRACT	73049-65-7	Althaea Officinalis Extract is an extract of the roots of the marshmallow, Althaea officinalis, Malvaceae	emollient	1	20,0
ALTHAEA OFFICINALIS LEAF EXTRACT	73049-65-7	Althaea Officinalis Leaf Extract is the extract of the leaves of the Marsh Mallow, Althaea officinalis L., Malvaceae	skin conditioning	1	9,0
ALTHAEA OFFICINALIS ROOT EXTRACT	73049-65-7	Althaea Officinalis Root Extract is an extract of the roots of the Marsh Mallow, Althaea officinalis L., Malvaceae	skin conditioning	1	18,0
ALUMINA	1344-28-1	Aluminium oxide.	abrasive / opacifying / viscosity controlling	1	19,0

Table 2.2 All 459 ingredients listed in alphabetical overview					
INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
ALUMINUM DISTEARATE	300-92-5	Hydroxyaluminium distearate.	emulsion stabilising / opacifying / viscosity controlling	1	13,0
ALUMINUM HYDROXIDE	21645-51-2	Aluminium hydroxide.	emollient / humectant / viscosity controlling	1	34,0
ALUMINUM STARCH OCTENYLSUCCINATE	9087-61-0	Starch, hydrogen octenylbutanedionate, aluminum salt	absorbent / viscosity controlling / anticaking	1	8,0
ALUMINUM/MAGNESI M HYDROXIDE STEARATE		Aluminum magnesium hydroxide and stearic acid	emulsion stabilising	1	14,0
ANIBA ROSAEODORA OIL	8015-77-8	Aniba Rosaeodora Oil is the volatile oil obtained from the wood of the tree, Aniba rosaeodora, Lauraceae	tonic	1	19,0
ANIBA ROSAEODORA WOOD OIL	8015-77-8	Aniba Rosaeodora Wood Oil is the volatile oil obtained from the wood of the tree, Aniba rosaeodora, Lauraceae	astringent / masking / perfuming / skin conditioning / tonic	1	13,0
ANTHEMIS NOBILIS FLOWER OIL	84649-86-5	"Chamomile Oil-Roman". Anthemis Nobilis Flower Oil is the volatile oil distilled from the dried flower heads of the Roman Chamomile, Anthemis nobilis L., Compositae. It contains mainly esters of angelica acid	masking / perfuming / skin conditioning	1	8,0
ANTHEMIS NOBILIS FLOWER WATER	84649-86-5	Anthemis Nobilis Flower Water is the aqueous solution of the steam distillate obtained from the flowers of the Roman Chamomile, Anthemis nobilis L., Compositae	masking / skin conditioning	1	2,0
ANTHEMIS NOBILIS OIL	8015-92-7	Anthemis Nobilis Oil is the volatile oil distilled from the dried flower heads of Anthemis nobilis, Compositae.	tonic / skin conditioning	1	14,0
ANTHYLLIS VULNERARIA EXTRACT	89957-45-9	Anthyllis Vulneraria Extract is an extract of the flowers of Anthyllis vulneraria, Leguminosae	skin conditioning	1	3,0
AQUA	7732-18-5	Water.	solvent	82	1,1
ARACHIS HYPOGAEA OIL	2228-77-7	Arachis Hypogaea Oil is the refined fixed oil obtained from the seed kernels of one or more of the cultivated varieties of the peanut, Arachis hypogaea, Leguminosae	emollient / solvent	3	7,3
ARCTIUM LAPPA EXTRACT	84012-13-5	Arctium Lappa Extract is an extract of the roots of the burdock, Arctium lappa, Compositae	soothing / antiseborrhoeic / skin conditioning / astringent / tonic	1	8,0
ARCTIUM LAPPA ROOT EXTRACT	84012-13-5	Arctium Lappa Root Extract is an extract of the roots of the Burdock, Arctium lappa L., Asteraceae	skin conditioning	1	7,0
ARCTIUM LAPPA SEED OIL	84012-13-5	Arctium Lappa Seed Oil is the fixed oil expressed from the seeds of the burdock, Arctium lappa, Compositae	emollient / skin conditioning	1	7,0
ARGANIA SPINOSA KERNEL OIL	223747-87-3	Argania Spinosa Kernel Oil is the fixed oil expressed from the kernels, Argania Spinosa (L.), Sapotaceae	emollient / skin conditioning	1	12,0
ARGANIA SPINOSA OIL	223747-87-3	Argania Spinosa Oil is the fixed oil expressed from the kernels of the African tree, Argania spinosa, Sapotaceae	skin conditioning	2	2,0

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INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
ARGININE	74-79-3	L-Arginine.	antistatic	3	16,3
AROMA		Flavours or aromatic compositions and their ingredients	flavouring	12	12,8
ASCORBIC ACID	50-81-7	Ascorbic acid.	antioxidant / buffering	2	17,5
ASCORBYL PALMITATE	137-66-6	6-O-palmitoylascorbic acid.	antioxidant	18	21,2
AVENA SATIVA KERNEL EXTRACT	84012-26-0	Avena Sativa Kernel Extract is an extract of the kernels of oats, Avena sativa, Poaceae	abrasive	1	5,0
BABASSUAMIDOPROPYL BETAINE	223704-95-8	1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-babassu-oil acyl derivatives, inner salt	surfactant / foam boosting / cleansing	1	6,0
BACKHOUSIA ANISATA LEAF EXTRACT		Backhousia Anisata Leaf Extract is an extract of the leaves of Backhousia anisata, Myrtaceae	emollient / hair conditioning / humectant / skin conditioning	2	13,0
BACKHOUSIA CITRIODORA LEAF OIL	84775-80-4	Backhousia Citriodora Leaf Oil is the volatile oil obtained from the leaves of Backhousia citriodora, Myrtaceae	masking / perfuming	2	12,0
BAMBUSA ARUNDINACEA STEM EXTRACT	91771-32-3	Bambusa Arundinacea Stem Extract is an extract of the stems of the Bamboo, Bambusa arundinacea, Poaceae	skin conditioning	1	3,0
BEESWAX ACID	135457-95-3	Fatty acids, beeswax	stabilising	2	4,0
BEHENIC ACID	112-85-6	Docosanoic acid.	emulsifying	2	9,0
BEHENYL ALCOHOL	661-19-8	Docosan-1-ol.	emollient	3	7,0
BENTONITE	1302-78-9	Bentonite. A colloidal clay. Consists primarily of montmorillonite (CI 77004).	absorbent / emulsion stabilising / viscosity controlling	1	25,0
BENZOPHENONE-3	131-57-7	2-Hydroxy-4-methoxybenzophenone	uv absorber / uv filter	1	12,0
BENZYL ALCOHOL	100-51-6	Benzyl alcohol.	perfuming / preservative / solvent / viscosity controlling	2	24,0
BENZYL BENZOATE	120-51-4	Benzyl benzoate.	antimicrobial / perfuming / solvent	3	22,7
BENZYL SALICYLATE	118-58-1	Benzyl salicylate.	uv absorber	1	19,0
BETA VULGARIS ROOT EXTRACT	89957-89-1	Beta Vulgaris Root Extract is an extract of the roots of the Sugar Beet, Beta vulgaris L., Chenopodiaceae	skin condtioning	1	12,0
BETAGLUCAN	26874-89-5	Beta-d-glucose homopolymer	skin conditioning / bulking	1	16,0
BETAINE	107-43-7	Methanaminium, 1-carboxy-N,N,N-trimethyl-, hydroxide, inner salt	antistatic / viscosity controlling	3	8,7
BETULA ALBA LEAF EXTRACT	84012-15-7	Betula Alba Leaf Extract is an extract of the leaves of the birch, Betula alba, Betulaceae.	tonic / astringent / soothing / cleansing	1	6,0
BIOTIN	58-85-5	1H-Thieno[3,4-d]imidazole-4-pentanoic acid, hexahydro-2-oxo-,[3aS-(3a.alpha.,4.beta.,6a.alpha.)]-	hair conditioning / skin conditioning / antiseborrhoeic	2	21,5
BISABOLOL	515-69-5	(R*,R*)-.alpha.,4-dimethyl-.alpha.-(4-methyl-3-pentenyl)cyclohex-3-ene-1-methanol.	soothing	5	16,2
BORAGO OFFICINALIS SEED OIL	225234-12-8	Borago Officinalis Seed Oil is the fixed oil obtained from the seeds of Borago officinalis, Boraginaceae	emollient	3	12,7

Table 2.2 All 459 ingredients listed in alphabetical overview					
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BRASSICA CAMPESTRIS OLEIFERA OIL	8002-13-9	Brassica Campestris Oleifera Oil is the oil expressed from the seeds of the rape, Brassica campestris oleifera, Brassicaceae	emollient	1	6,0
BRASSICA CAMPESTRIS STEROLS	90989-79-0	Brassica Campestris Sterols is a mixture of sterols obtained from the Cabbage, Brassica campestris L., Brassicaceae	emollient / skin conditioning	7	13,3
BRASSICA CAMPESTRIS/ALEURITES FORDII OIL COPOLYMER		Brassica Campestris/Aleurites Fordii Oil Copolymer is a copolymer of Brassica Campestris Oil and Aleurites fordii oil monomers	film forming / skin conditioning	1	14,0
BRASSICA OLERACEA ITALICA SEED OIL		Brassica Oleracea Italica Seed Oil is the oil expressed from the seeds of the Broccoli, Brassica oleracea L. italica, Brassicaceae	emollient / hair conditioning / skin conditioning	1	3,0
BROMELAIN	9001-00-7	Bromelain is a mixture of enzymes found in pineapple juice	keratolytic / skin conditioning	1	5,0
BUTYLENE GLYCOL	107-88-0	Butane-1,3-diol.	humectant / solvent	3	4,3
BUTYROSPERMUM PARKII BUTTER	91080-23-8	Butyrospermum Parkii Butter is the fat obtained from the fruit of the karite tree, Butyrospernum parkii, Sapotaceae	skin conditioning / emollient	19	8,1
BUTYROSPERMUM PARKII BUTTER EXTRACT	91080-23-8	Butyrospermum Parkii Butter Extract is an extract of shea butter, Butyrospermum parkii, Sapotaceae.	emollient	1	11,0
C12-15 ALKYL BENZOATE	68411-27-8	Benzoic acid, C12-15-alkyl esters.	antimicrobial / emollient / skin conditioning	1	9,0
CALCIUM CARBONATE	471-34-1	Calcium carbonate. CI 77220	buffering / opacifying / oral care / abrasive	2	1,5
CALENDULA OFFICINALIS FLOWER EXTRACT	84776-23-8	Calendula Officinalis Flower Extract is an extract obrained from the flowers of the Calendula, Calendula officinalis L., Compositae	masking / perfuming / skin conditioning	2	6,5
CALLITRIS INTROTROPICA WOOD OIL	180287-43-8	Callitris Intratropica Wood Oil is the volatile oil obtained from the wood of Callitris intratropica, Cupressaceae	masking / tonic	2	19,0
CAMELIA SINENSIS LEAF EXTRACT	84650-60-2	Camelia Sinensis Extract is an extract of the leaves of the tea plant, Camelia sinensis, Theaceae	antimicrobial / antioxidant / astringent / emollient / humectant / masking / oral care / skin conditioning / skin protection / tonic / UV-absorber	5	12,4
CANANGA ODORATA FLOWER OIL	83863-30-3	Cananga Odorata Flower Oil is the oil obtained from the flower, Cananga odorata, Anonaceae. Definitions in ISO 3063	masking / perfuming	1	15,0
CANANGA ODORATA OIL	8006-81-3	Cananga Odorata Oil is the oil obtained from the flower of the ylang-ylang, Cananga odorata, Annonaceae.	solvent	3	13,3
CANDELILLA CERA	8006-44-8	Candelilla Cera is the candelilla wax obtained from Euphorbia cerifera, Euphorbiaceae	emollient / film forming	1	16,0

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CAPRYL/CAPRAMIDO PROPYL BETAINE		N-(3-Decanoyl(or octanoyl)aminopropyl)-N-carboxymethyl-N,N-dimethyl-1-propanaminium inner salts	antistatic / hair conditioning / skin conditioning / surfactant / cleansing / foam boosting / viscosity controlling	2	6,5
CAPRYLIC/CAPRIC TRIGLYCERIDE	73398-61-5	Triglycerides, mixed decanoyl and octanoyl.	emollient / solvent	6	8,0
CAPRYLIC/CAPRIC/STEARIC TRIGLYCERIDE		Octadecanoic acid, mixed triesters with octanoic acid, decanoic acid and 1,2,3-propanetriol	emollient / solvent	1	3,0
CAPRYLOYL GLYCINE	14246-53-8	N-(1-oxooctyl)glycine.	cleansing	2	10,0
CAPRYLYL GLYCOL	1117-86-8	Octane-1,2-diol.	emollient / humectant / hair conditioning	2	9,0
CAPRYLYL/CAPRYL GLUCOSIDE		D-glucoside, mixed octyl and decyl	surfactant / cleansing / foaming	2	15,5
CARAPA GUAIANENSIS OIL	223748-14-9	Carapa Guaianensis Oil is the fixed oil expressed from the seeds of Carapa guaianensis, Meliaceae	denaturant	1	27,0
CARBOMER	9007-20-9	2-Propenoic acid, polymer with 2,2-bis(hydroxymethyl)propane-1,3-diol 2-propenyl ether	emulsion stabilising / viscosity controlling / gel forming	3	9,7
CARNAUBA ACID WAX	442682-58-8	Carnauba Acid Wax is the acid portion obtained from the leaves of the palm tree, Copernicia cerifera, Palmaceae	absorbent / binding / film forming / viscosity	1	7,0
CARRAGEENAN	2593-40-5	Carrageenan.	binding / emulsion stabilising / viscosity controlling / gel forming	1	9,0
CARTHAMUS TINCTORIUS SEED OIL	8001-23-8	Carthamus Tinctorius Seed Oil is the oily liquid obtained from the seeds of Safflower, Carthamus tinctorius L., Compositae. It consists principally of the triglycerides of linoleic acid	masking / skin conditioning	2	11,5
CEDRUS ATLANTICA OIL	8000-27-9	Cedrus Atlantica Oil is the volatile oil obtained from the bark of Cedrus atlantica, Pinaceae	tonic	1	14,0
CERA ALBA	8012-89-3	Beeswax. The wax obtained from the honeycomb of the bee. It consists primarily of myricyl palmitate, cerotic acid and esters and some high-carbon paraffins.	emollient / emulsifying / film forming / perfuming	8	10,3
CERA MICROCRISTALLINA	63231-60-7	Paraffin waxes and Hydrocarbon waxes, microcryst.. A complex combination of long, branched chain hydrocarbons obtained from residual oils by solvent crystallization. It consists predominantly of saturated straight and branched chain hydrocarbons predomina	binding / emulsion stabilising / opacifying / viscosity controlling	1	3,0
CERAMIDE 3	100403-19-8	Octadecanamide, N-(1,3,4-trihydroxy-2-octadecyl)	skin conditioning / skin protecting	4	16,5
CERAMIDE 6 II	100403-19-8	1,3,4-Octadecanetriol, 2-(2-Hydroxy) Stearamide	hair conditioning / skin conditioning	1	27,0
CERESIN	8001-75-0	Ceresin. A complex combination of hydrocarbons produced by the purification of ozocerite with sulfuric acid and filtration through bone black to form waxy cakes.	antistatic / binding / emulsion stabilising / opacifying / viscosity controlling / hair conditioning	1	6,0

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CETEARETH-20	68439-49-6	C16-18 alcohols, ethoxylated (20 mol EO average molar ratio)	emulsifying / surfactant	2	7,5
CETEARYL ALCOHOL	67762-27-0	Alcohols, C16-18.	emollient / emulsifying / emulsion stabilising / opacifying / viscosity controlling	19	7,1
CETEARYL ETHYLHEXANOATE	90411-68-0	Hexanoic acid, 2-ethyl-, C16-18-alkyl esters.	emollient	1	3,0
CETEARYL GLUCOSIDE	246159-33-1	D-Glucopyranose, C16-C18 alkyl glycosides	emulsifying	3	8,0
CETEARYL ISONONANOATE	111937-03-2	Isononanoic acid, C16-18-alkyl esters	emollient	3	4,7
CETEARYL OCTANOATE	90411-68-0			1	7,0
CETEARYL OLIVATE		Cetearyl Olivate is the ester of Cetearyl Alcohol and the fatty acids derived from olive oil	hair conditioning	1	7,0
CETRIMONIUM CHLORIDE	112-02-7	1-Hexadecanaminium, N,N,N-trimethyl-, chloride	antimicrobial / antistatic / emulsifying / preservative / surfactant	1	3,0
CETYL ALCOHOL	36653-82-4	Hexadecan-1-ol.	emollient / emulsifying / opacifying / viscosity controlling	6	11,8
CETYL PALMITATE	540-10-3	Hexadecyl hexadecanoate	emollient	1	9,0
CETYL PEG/PPG-10/1 DIMETHICONE		Cetyl PEG/PPG-10/1 Dimethicone is the copolymer of Cetyl Dimethicone and an alkoxylated derivative of Dimethicone containing an average of 10 moles of ethylene oxide and 1 mole of propylene oxide	emulsifying / skin conditioning / surfactant	1	12,0
CHAMOMILLA RECUTITA EXTRACT	84082-60-0	Chamomilla Recutita Extract is an extract of the flowerheads of the matricaria, Chamomilla recutita, Compositae	emollient / antimicrobial?	5	10,2
CHAMOMILLA RECUTITA FLOWER EXTRACT	84082-60-0	Chamomilla Recutita Flower Extract is an extract of the flowerheads of the matricaria, Chamomilla recutita (L.), Compositae	masking / skin conditioning /antimicrobial ?	3	18,0
CHITOSAN LACTATE	66267-50-6	Chitosan, 2-hydroxypropanoate salt	film forming	2	6,0
CHOLESTEROL	57-88-5	Cholest-5-en-3-ol (beta)-	emollient / emulsifying / stabilising	4	10,5
CHOLESTERYL HYDROXYSTEARATE	40445-72-5	Cholest-5-en-3-ol (3.beta.)-, 12-hydroxyoctadecanoate	emollient / viscosity controlling	1	15,0
CHONDRUS CRISPUS	9000-07-1	Chondrus Crispus (Carrageenan) is the plant material obtained from various members of the Gigartinaceae or Solieriaceae families of the Red Seaweed, Rodophyceae	hair conditioning / masking	5	6,4
CHONDRUS CRISPUS EXTRACT	244023-79-8	Chondrus Crispus Extract is an extract of the carrageenan, Chondrus crispus, Gigartinaceae	viscosity controlling	4	12,5
CI 42090	3844-45-9	Dihydrogen (ethyl)[4-[4-[ethyl(3-sulphonatobenzyl)]amino]-2'-sulphonatobenzhydrylidene]cyclohexa-2,5-dien-1-ylidene](3-sulphonatobenzyl)ammonium, disodium salt and other permitted lakes and salts	cosmetic colorant	1	12,0
CI 61565	128-80-3	1,4-bis(p-tolylamino)anthraquinone.	cosmetic colorant	1	13,0
CI 77007	1302-83-6	Lazurite.	cosmetic colorant	1	32,0

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CI 77491	1309-37-1	Diiron trioxide.	cosmetic colorant	2	20,0
CI 77492	51274-00-1	Iron oxide.	cosmetic colorant	1	29,0
CI 77499	12227-89-3	Triiron tetraoxide.	cosmetic colorant	1	30,0
CI 77891	13463-67-7	Titanium dioxide.	cosmetic colorant	1	31,0
CINNAMAL	104-55-2	Cinnamaldehyde.	denaturant	1	11,0
CINNAMOMUM ZEYLANICUM EXTRACT	84649-98-9	Cinnamomum Zeylanicum Extract is an extract of the dried bark of the cinnamon, Cinnamomum zeylanicum, Lauraceae	tonic / deodorant / cleansing / refreshing /antimicrobial?	1	8,0
CITRAL	5392-40-5	2,6-Octadienal, 3,7-dimethyl-	masking	12	22,5
CITRIC ACID	77-92-9	2-Hydroxy-1,2,3-propanetricarboxylic acid	buffering / chelating	23	12,2
CITRONELLOL	106-22-9	Citronellol.	masking	11	23,5
CITRUS AURANTIFOLIA OIL	8008-26-2	Citrus Aurantifolia Oil is the volatile oil obtained from the fruits of Citrus aurantifolia, Rutaceae.	skin conditioning / hair conditioning / tonic / cleansing	3	14,3
CITRUS AURANTIUM AMARA FLOWER OIL	68916-04-1	Citrus Aurantium Amara Flower Oil is the volatile oil obtained from the flowers of the Bitter Orange, Citrus aurantium L. var. amara L., Rutaceae	masking / skin conditioning	1	12,0
CITRUS AURANTIUM AMARA LEAF OIL	68916-04-1	Citrus Aurantium Amara Leaf/Twig Oil is the volatile oil obtained from the leaves and twigs of the Bitter Orange, Citrus aurantium L. var. amara L., Rutaceae	flavouring / masking	1	9,0
CITRUS AURANTIUM BERGAMIA FRUIT EXTRACT	89957-91-5	Citrus Aurantium Bergamia Fruit Extract is an extract of the fruit of the Bergamot, Citrus aurantium L. var. bergamia, Rutaceae	skin conditioning	1	11,0
CITRUS AURANTIUM BERGAMIA FRUIT OIL	8007-75-8	Citrus Aurantium Bergamia Fruit Oil is the psoralen-free volatile oil obtained from the fruit of Citrus aurantium bergamia, Rutaceae	masking	1	7,0
CITRUS AURANTIUM BERGAMIA OIL	8007-75-8	Citrus Aurantium Bergamia Oil is the psoralen-free volatile oil obtained from the fruit of Citrus aurantium bergamia, Rutaceae	masking	1	13,0
CITRUS AURANTIUM DULCIS EXTRACT	8028-48-6	Citrus Aurantium Dulcis Extract is an extract of the fruit of the orange, Citrus aurantium dulcis, Rutaceae	skin conditioning	2	17,5
CITRUS AURANTIUM DULCIS FLOWER WATER	8028-48-6	Citrus Aurantium Dulcis Flower Water is an aqueous solution of the odoriferous principles of the flowers of the orange, Citrus aurantium dulcis.	skin conditioning	1	28,0
CITRUS AURANTIUM DULCIS PEEL OIL	8008-57-9	Citrus Aurantium Dulcis Peel Oil is the volatile oil obtained by expression from the fresh peel of the ripe fruit of the sweet orange, Citrus aurantium var. dulcis, Rutaceae	astringent / masking / skin conditioning / tonic	1	10,0
CITRUS BERGAMIA LEAF OIL	89957-91-5	Citrus Bergamia Leaf Oil is an essential oil obtained from the leaves of the Bergamot, Citrus bergamia risso, Rutaceae (not officially an INCI name but perfuming)	perfuming	1	18,0
CITRUS GRANDIS EXTRACT	90045-43-5	Citrus Grandis Extract is an extract of the fruit of the grapefruit, Citrus grandis, Rutaceae	skin conditioning / astringent / tonic	3	5,3
CITRUS GRANDIS SEED EXTRACT	90045-43-5	Citrus Grandis Seed Extract is an extract of the seeds of the grapefruit, Citrus grandis, Rutaceae.	skin conditioning / astringent / tonic	2	12,5

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INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
CITRUS LIMONUM LEAF EXTRACT	84929-31-7	Citrus Limonum Leaf Extract is an extract obtained from the leaves of the Lemon, Citrus limonum (syn: C. medica limon), Rutaceae - NOT OFFICIALLY AN INCI NAME BUT PERFUMING	perfuming	1	11,0
CITRUS MEDICA LIMONUM OIL	8008-56-8	Citrus Medica Limonum Oil is the volatile oil obtained from the fresh peel of Citrus medica limonum, Rutaceae.	tonic / masking	1	12,0
CITRUS MEDICA LIMONUM PEEL EXTRACT	84929-31-7	Citrus Medica Limonum Peel Extract is an extract of the peel of the lemon, Citrus medica limonum, Rutaceae.	tonic	2	16,0
CITRUS NOBILIS FRUIT EXTRACT	84929-38-4	Citrus Nobilis Fruit Extract is an extract of the fruit of the mandarin orange, Citrus nobilis.	skin conditioning	1	10,0
CITRUS PARADISI OIL	8016-20-4		masking	3	16,0
CITRUS PARADISI SEED EXTRACT	90045-43-5	Citrus Paradisi Seed Extract is an extract of the seeds obtained from the Grapefruit, Citrus paradisi M., Rutaceae	masking / perfuming	1	4,0
CITRUS SINENSIS OIL	95327-98-3			2	13,0
CITRUS SPECIES LEAF EXTRACT	94266-47-4	Citrus Species Leaf Extract is an extract obtained from the leaves of different Citrus spp., Rutaceae	perfuming	1	13,0
COCAMIDE DEA	68603-42-9	Amides, coco, N,N-bis(hydroxyethyl).	emulsifying / emulsion stabilising / surfactant / viscosity controlling / foam boosting	1	4,0
COCAMIDOPROPYL BETAINAMIDE MEA CHLORIDE	164288-56-6	1-Propanaminium, 3-amino-N-[2[(2-hydroxyethyl)amino]2-oxoethyl]-N,N-dimethyl-, N-C12-18 acyl derivatives, chlorides	cleansing / foam boosting / surfactant	1	5,0
COCAMIDOPROPYL BETAINE	61789-40-0	1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-coco acyl derivs., hydroxides, inner salts.	surfactant / cleansing / foam boosting	7	4,3
COCO-CAPRYLATE/CAPRATE		Alcohols, coco, mixed esters with octanoic and decanoic acids	emollient	2	4,0
COCO-GLUCOSIDE		Alcohols, coco, reaction products with glucose	surfactant / foaming / cleansing	15	5,9
COCOGLYCERIDES	92045-31-3	Glycerides, coco.	emollient / emulsifying	2	5,5
COCOS NUCIFERA OIL	8001-31-8	Cocos Nucifera Oil is the fixed oil extracted from the dried endosperm of Cocos nucifera, Palmae.	emollient / solvent	8	5,9
COMMIPHORA MYRRHA EXTRACT	84929-26-0	Commiphora Myrrha Extract is an extract of the bark exudate of the myrrh, Commiphora myrrha, Burseraceae	cleansing	1	9,0
CORN STARCH MODIFIED		Corn starch, reaction products with 3-(dodecenyl)dihydro-2,5-furandione, calcium salt, degree of substitution per glucose unit less than 0.1	absorbent / film forming / skin conditioning / viscosity controlling	1	4,0
COUMARIN	91-64-5	Coumarin.	masking	5	22,8
CRITHMUM MARITIMUM EXTRACT	89997-98-8	Crithmum Maritimum Extract is an extract of the whole plant of Crithmum maritimum, Apiaceae	tonic	1	21,0
CUCUMIS SATIVUS EXTRACT	89998-01-6	Cucumis Sativus Extract is an extract of the fruit of the cucumber, Cucumis sativus, Cucurbitaceae	emollient	1	6,0

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CYCLOPENTASILOXANE	541-02-6	Decamethylcyclopentasiloxane	hair conditioning / emollient / solvent	2	2,0
CYMBOPOGON MARTINI OIL	84649-81-0	Cymbopogon Martini Oil is the volatile oil expressed from the herb palmarosa, Cymbopogon martini, Gramineae	tonic	3	13,3
D-ALPHA TOCOPHERYL ACETATE	1406-70-8	Vitamin E	antioxidant / masking / skin conditioning	2	8,5
DAUCUS CAROTA OIL	8015-88-1	Daucus Sativa Oil is the oil obtained from the seed of the carrot, Daucus carota sativa, Umbelliferae.	tonic / masking	1	11,0
DAUCUS CAROTA SATIVA ROOT EXTRACT	84929-61-3	Daucus Carota Sativa Root Extract is an extract of the roots of the Carrot, Daucus carota L. var. sativa, Umbelliferae	skin conditioning	4	11,8
DECYL GLUCOSIDE	54549-25-6	Decyl D-glucoside.	surfactant / emulsion stabilising	6	3,2
DECYL OLEATE	3687-46-5	Decyl oleate.	emollient	1	3,0
DENATONIUM BENZOATE	3734-33-6	Denatonium benzoate.	denaturant	2	16,5
DICAPRYLYL CARBONATE	1680-31-5	Carbonic Acid, Dicaprylyl Ester	emollient / skin conditioning	5	7,6
DICAPRYLYL ETHER	629-82-3	Dioctyl ether.	solvent	2	19,5
DICOCOYLETHYL HYDROXYETHYLMONIUM METHOSULFATE		Ethanaminium, 2-hydroxy-N,N-bis-(2-hydroxyethyl)-N-methyl-, coco-fatty acid diester, methyl sulfate	antistatic / hair conditioning	1	2,0
DIHYDROGENATED PALMOYLETHYL HYDROXYETHYLMONIUM METHOSULFATE	91995-81-2	Tris-(2-hydroxyethyl)methylammonium methyl sulfate, diester with hydrogenated palm oil fatty acids	antistatic / hair conditioning	1	5,0
DIMETHICONE	9006-65-9	Dimethicone	antifoaming / emollient	1	13,0
DIMETHICONOL	31692-79-2	Poly[oxy(dimethylsilylane)], .alpha.-hydro-.omega.-hydroxy-	antifoaming / emollient / moisturising	1	12,0
DIPOTASSIUM GLYCYRRHIZATE	68797-35-3	.alpha.-d-Glucopyranosiduronic acid, (3.beta.,20.beta.)-20-carboxy-11-oxo-30-norolean-12-en-3-yl 2-O-.beta.-d-glucopyranuronosyl-, dipotassium salt.	humectant / skin conditioning	1	10,0
DIPROPYLENE GLYCOL	110-98-5	1,1'-oxydipropan-2-ol.	solvent	2	6,5
DISODIUM COCOYL GLUTAMATE	68187-30-4	L-Glutamic acid, N-coco acyl derivs., disodium salts.	surfactant	6	5,3
DISODIUM EDTA	139-33-3	Disodium dihydrogen ethylenediaminetetraacetate.	chelating / viscosity controlling	3	15,3
DISODIUM LAUROAMPHODIACETATE	14350-97-1	Disodium 1-[2-(carboxymethoxy)ethyl]-1-(carboxymethyl)-4,5-dihydro-2-undecyl-1H-imidazolium hydroxide.	antistatic / surfactant / viscosity controlling / foaming / cleansing	1	2,0
DISODIUM PHOSPHATE	7558-79-4	Disodium hydrogenorthophosphate.	buffering	1	8,0
DISTARCH PHOSPHATE	55963-33-2	Starch, phosphoric acid ester (2:1)	binding / anticaking / absorbent	1	11,0
DISTEARDIMONIUM HECTORITE	97280-96-1	1-Octadecanaminium, N,N-dimethyl-N-octadecyl-, chloride, reaction products with hectorite	stabilising / viscosity controlling	1	15,0
DISTEAROYLETHYL HYDROXYETHYLMONIUM METHOSULFATE		Ethanaminium, 2-hydroxxy-N-methyl-N,N-bis(2-(1-oxooctadecyl)oxyethyl)-, methyl sulfate	antistatic / hair conditioning	1	25,0

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ECTOIN	96702-03-3	2-methyl-1,4,5,6,-tetrahydropyrimidin-4-carboxylic acid		2	12,5
ELAEIS GUINEENSIS KERNEL OIL	8023-79-8	Elaeis Guineensis Kernel Oil is the oil obtained from the seeds of the palm, Elaeis guineensis, Palmae	emollient	3	2,0
ELAEIS GUINEENSIS OIL	8002-75-3	Elaeis Guineensis Oil is a natural oil obtained from the fruits of the palm, Elaeis guineensis, Palmae	emollient	2	3,0
EMULSIFYING WAX				2	4,5
EQUISETUM ARVENSE EXTRACT	71011-23-9	Equisetum Arvense Extract is an extract of the sterile caules of the horsetail, Equisetum arvense, Equisetaceae	emollient / astringent / tonic / soothing	3	16,0
EQUISETUM HIEMALE LEAF/STEM EXTRACT	90028-32-3	Equisetum Hiemale Leaf/Stem Extract is the extract of the leaves and stems of Horsetail, Equisetum hiemale L., Equisetaceae	skin conditioning	1	17,0
ESCULIN	531-75-9	2H-1-Benzopyran-2-one, 6-(beta-D-glucopyranosyloxy)-7-hydroxy-	tonic	2	19,5
ETHYLHEXYL METHOXYCINNAMATE	5466-77-3	2-ethylhexyl 4-methoxycinnamate.	uv filter / uv absorber	1	10,0
ETHYLHEXYL PALMITATE	29806-73-3	2-ethylhexyl palmitate.	emollient	1	2,0
ETHYLHEXYL STEARATE	22047-49-0	2-ethylhexyl stearate.	emollient	5	3,6
ETHYLHEXYLGLYCERIN	70445-33-9	1,2-propanediol, 3-(2-ethylhexyloxy)	skin conditioning	3	15,7
EUCALYPTUS GLOBULUS LEAF EXTRACT	84625-32-1	Eucalyptus Globulus Leaf Extract is an extract of the fresh leaves of the Eucalyptus, Eucalyptus globulus, Myrtaceae	perfuming / skin conditioning	2	6,0
EUCALYPTUS RADIATA FLOWER/LEAF/STEM OIL	92201-64-4	Eucalyptus Radiata Flower/Leaf/Stem Oil is the volatile oil obtained from the flowers, leaves and stems of Eucalyptus, Eucalyptus radiata var. Australiana, Myrtaceae	masking	2	15,0
EUCALYPTUS STAIGERIANA		Essential eucalyptus oil		1	19,0
EUGENIA CARYOPHYLLATA	8015-97-2			1	10,0
EUGENIA CARYOPHYLLUS BUD OIL	84961-50-2	"Clove Oil". Eugenia Caryophyllus Bud Oil is an essential oil steam-distilled from the dried flower buds of the Clove, Syzygium aromaticum, syn. Eugenia caryophyllus, Myrtaceae. It contains eugenol	masking / perfuming	1	9,0
EUGENIA CARYOPHYLLUS OIL	8000-34-8	Eugenia Caryophyllus Oil is the volatile oil steam distilled from the dried flower buds of the clove, Eugenia caryophyllus, Myrtaceae. It consists chiefly of eugenol.	tonic	1	15,0
EUGENOL	97-53-0	Phenol, 2-methoxy-4-(2-propenyl)	denaturant / tonic	7	24,9
EUPHRASIA OFFICINALIS EXTRACT	84625-36-5	Euphrasia Officinalis Extract is an extract of the aerial parts of the euphrasia, Euphrasia officinalis, Scrophulariaceae	tonic / soothing / astringent / antimicrobial / skin conditioning	1	11,0
FAEX	68876-77-7	Naturally occurring substances, yeast	skin conditioning	1	7,0
FARNESOL	4602-84-0	2,6,10-Dodecatrien-1-ol, 3,7,11-trimethyl-	soothing / solvent / deodorant	5	23,6

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FOENICULUM VULGARE OIL	8006-84-6	Foeniculum Vulgare Oil is the volatile oil obtained from the seeds of the fennel, Foeniculum vulgare, Umbelliferae.	tonic / emollient / soothing / skin conditioning	2	5,5
GENTIANA LUTEA EXTRACT	72968-42-4	Gentiana Lutea Extract is an extract of the rhizomes and roots of the gentian, Gentiana lutea, Gentianaceae	tonic / skin conditioning	1	10,0
GERANIOL	106-24-1	2,6-Octadien-1-ol, 3,7-dimethyl-, (2E)-	tonic	18	22,2
GLYCERIN	56-81-5	Glycerol.	denaturant / humectant / solvent	57	5,6
GLYCERYL CAPRATE	26402-22-2	Decanoic acid, monoester with glycerol.	emollient	2	8,0
GLYCERYL CAPRYLATE	26402-26-6	Octanoic acid, monoester with glycerol.	emollient / emulsifying	3	9,0
GLYCERYL LAURATE	27215-38-4	Lauric acid, monoester with glycerol / 2,3-dihydroxypropyl laurate.	emollient / emulsifying	1	6,0
GLYCERYL OLEATE	25496-72-4	Oleic acid, monoester with glycerol.	emollient / emulsifying	9	10,9
GLYCERYL OLEATE CITRATE		Glyceryl Oleate Citrate is the reaction product of glyceryl oleate and citric acid	emulsifying / surfactant	1	6,0
GLYCERYL STEARATE	31566-31-1	Stearic acid, monoester with glycerol.	emollient / emulsifying	12	8,4
GLYCERYL STEARATE CITRATE	55840-13-6	1,2,3-Propanetricarboxylic acid, 2-hydroxy-, ester with 1,2,3-propanetriol monooctadecanoate.	emollient / emulsifying / skin conditioning	7	8,6
GLYCERYL STEARATE SE	11099-07-3	Octadecanoic acid, reaction products with 1,2,3-propanetriol (1:1), neutralized	emulsifying	5	4,8
GLYCERYL TRIACETATE CAPRYLATE				1	12,0
GLYCINE	56-40-6	Glycine.	antistatic / buffering / skin conditioning / hair conditioning	3	10,7
GLYCINE SOJA GERM EXTRACT	84776-91-0	Glycine Soja Germ Extract is an extract of the germ of the soy, Glycine soja, Leguminosae.	skin conditioning / emollient	1	19,0
GLYCINE SOJA OIL	8001-22-7	Glycine Soja Oil is the oil obtained from the beans of soy, Glycine soja, Leguminosae, by extraction or expression. It consists esentially of triglycerides of oleic, linoleic and saturated acids	emollient / skin conditioning	5	9,4
GLYCINE SOJA PROTEIN	9010-10-0	Glycine Soja Protein is a protein obtained from the soybean, Glycine soja, Leguminosae	skin conditioning / solvent / moisturising / emollient	1	8,0
GLYCOL DISTEARATE	627-83-8	Ethylene distearate.	emollient / emulsifying / opacifying / viscosity controlling / skin conditioning	3	7,3
GUAR GUM	9000-30-0		binding / emulsifying / film forming / viscosity controlling	1	3,0
GUAR HYDROXYPROPYLTRIMONIUM CHLORIDE	65497-29-2	Guar gum, 2-hydroxy-3-(trimethylammonio)propyl ether, chloride	antistatic / film forming / viscosity controlling / skin conditioning	5	19,2
GUM TRANGACANTH	9000-65-1			1	7,0
HAMAMELIS VIRGINIANA EXTRACT	84696-19-5	Hamamelis Virginiana Extract is an extract of the bark, leaves and twigs of the witch hazel, Hamamelis virginiana, Hamamelidaceae	astringent / soothing / skin conditioning / hair conditioning	1	11,0

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INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
HAMAMELIS VIRGINIANA WATER	84696-19-5	Hamamelis Virginiana Water is the aqueous solution of the odoriferous principles of the flowers of Hamamelis virginiana, Hamamelidaceae.	astringent / soothing / skin conditioning / hair conditioning	1	2,0
HECTORITE	12173-47-6	Hectorite (clay mineral).	absorbent / viscosity controlling / bulking	1	30,0
HELIANTHUS ANNUUS FLOWER EXTRACT	84776-03-4	Helianthus Annuus Flower Extract is the extract of the flowers of the Sunflower, Helianthus annuus L., Compositae	skin conditioning	2	12,5
HELIANTHUS ANNUUS HYPERICUM PERFORATUM		Solsikkeolie. Men hypericum perforatum står som INCI navn alene		1	2,0
HELIANTHUS ANNUUS SEED OIL	8001-21-6	Helianthus Annuus Seed Oil is the oil expressed from the seeds of the sunflower, Helianthus annuus, Compositae	emollient / skin conditioning / masking	8	10,0
HIPPOPHAE RHAMNOIDES EXTRACT	90106-68-6	Hippophae Rhamnoides Extract is an extract of the fruit of the seabuckthorn, Hippophae rhamnoides, Elaeagnaceae	skin conditioning / masking	2	12,0
HIPPOPHAE RHAMNOIDES OIL	225234-03-7	Hippophae Rhamnoides Oil is the fixed oil obtained from the fruits of the seabuckthorn, Hippophae rhmanoides, Elagnaceae	emollient / skin conditioning	1	17,0
HYALURONIC ACID	9004-61-9	Hyaluronic acid.	antistatic / humectant / skin conditioning / moisturising	2	15,5
HYDROGENATED CASTOR OIL	8001-78-3	Castor oil, hydrogenated.	emollient / emulsifying / surfactant / viscosity controlling / skin conditioning	1	9,0
HYDROGENATED LECITHIN	92128-87-5	Lecithins, hydrogenated.	emulsifying / skin conditioning	3	14,0
HYDROGENATED PALM GLYCERIDES	91744-66-0	Glycerides, palm-oil mono-, di- and tri-, hydrogenated.	emollient / emulsifying / skin conditioning / viscosity controlling	3	7,7
HYDROGENATED PALM GLYCERIDES CITRATE	91744-68-2	Glycerides, palm-oil mono-, di-, and tri-hydrogenated, citrates	skin conditioning / emollient	15	23,4
HYDROGENATED VEGETABLE GLYCERIDES	100684-29-5	Glycerides, vegetable-oil, hydrogenated.	emollient / emulsifying / skin conditioning / viscosity controlling / surfactant	1	8,0
HYDROGENATED VEGETABLE OIL	68334-28-1	Oils, vegetable, hydrogenated.	emollient / skin conditioning	2	20,0
HYDROLYZED BEESWAX		Beeswax, hydrolyzed	surfactant / emulsifying / emulsion stabilising / stabilising	1	6,0
HYDROLYZED SILK	96690-41-4	Protein hydrolyzates, silk.	antistatic / humectant / hair conditioning / skin conditioning	1	6,0

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INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
HYDROLYZED SOY PROTEIN	68607-88-5	Protein hydrolyzates, soya. Substance obtained by acidic, alkaline, or enzymatic hydrolysis of soya composed primarily of amino acids, peptides, and proteins. It may contain impurities consisting chiefly of carbohydrates and lipids along with smaller quan	antistatic / humectant / hair conditioning / skin conditioning	1	10,0
HYDROLYZED WHEAT PROTEIN	94350-06-8	Protein hydrolyzates, wheat germ. Substance obtained by acidic, alkaline, or enzymatic hydrolysis of wheat germ composed primarily of amino acids, peptides, and proteins. It may contain impurities consisting chiefly of carbohydrates and lipids along with	antistatic / hair conditioning / skin conditioning	4	12,3
HYDROXYETHYLCELLULOSE	9004-62-0	Cellulose, 2-hydroxyethyl ether	binding / emulsion stabilising / film forming / viscosity controlling / stabilising	2	4,0
HYPERICUM PERFORATUM EXTRACT	84082-80-4	Hypericum Perforatum Extract is an extract of the capsules, flowers, leaves and stem heads of the St. John's wort, Hypericum perforatum, Hypericaceae	antimicrobial / astringent / masking / skin conditioning / skin protection / soothing / tonic	3	20,0
IRIS FLORENTINA ROOT EXTRACT	90045-89-9	Iris Florentina Root Extract is an extract of the roots of the Orris, Iris florentina L., Iridaceae	masking / tonic	1	28,0
ISOCETYL ALCOHOL	36311-34-9	Isohexadecanol.	emollient / viscosity controlling / skin conditioning	2	15,5
ISOCETYL STEARATE	25339-09-7	Isohexadecyl stearate.	emollient / skin conditioning	1	3,0
ISONONYL ISONONANOATE	59219-71-5	3,5,5-trimethylhexyl 3,5,5-trimethylhexanoate.	antistatic / emollient / skin conditioning	1	6,0
ISOPROPYL MYRISTATE	110-27-0	Isopropyl myristate.	binding / emollient / solvent / skin conditioning	1	4,0
ISOPROPYL PALMITATE	142-91-6	Isopropyl palmitate.	antistatic / binding / emollient / solvent / skin conditioning	1	8,0
JOJOBA ESTERS		Oils, jojoba, product with hydrogenated jojoba wax	skin conditioning / emollient / soothing / moisturising	1	5,0
JUNIPERUS COMMUNIS EXTRACT	84603-69-0	Juniperus Communis Extract is an extract of the ripe fruit of the juniper, Juniperus communis, Cupressaceae	tonic / deodorant / masking / antimicrobial ?	1	9,0
KAOLIN	1332-58-7	Naturally occurring substances, kaolin (CI 77004).	absorbent / anticaking / abrasive / bulking / opacifying	1	2,0
LACTIC ACID	50-21-5	Propanoic acid, 2-hydroxy-	buffering / humectant / skin conditioning	17	12,9

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LANOLIN	8006-54-0	Lanolin. Fat-like substance derived from sheep wool. Contains a complex combination of esters and polyesters, consisting chiefly of cholesteryl and isocholesteryl esters of the higher fatty acids.	antistatic / emollient / emulsifying / skin conditioning / hair conditioning / surfactant	2	12,5
LAURYL ALCOHOL	112-53-8	Dodecan-1-ol.	emollient / emulsion stabilising / viscosity controlling / emulsifying	2	20,5
LAURYL GLUCOSIDE	110615-47-9	D-Glucose homopolymer, dodecyl ether	cleansing / surfactant	12	6,0
LAURYL LACTATE	6283-92-7	Dodecyl lactate.	emollient / skin conditioning	1	11,0
LAURYL METHYL GLUCETH-10 HYDROXYPROPYLDIMONIUM CHLORIDE		D-Glucopyranose, methyl ether, ethoxylated, 3-(N-dodecyl-N,N-dimethylammonio)-2-hydroxypropyl ethers (10 mol EO average molar ratio)	antistatic / hair conditioning	1	7,0
LAVANDULA ANGUSTIFOLIA EXTRACT	90063-37-9	Lavandula Angustifolia Extract is an extract of the flowers of the lavender, Lavandula angustifolia, Labiatae	tonic / refreshing / cleansing / deodorant / masking	2	10,0
LAVANDULA ANGUSTIFOLIA FLOWER WATER	90063-37-9	Lavandula Angustifolia Flower Water is an aqueous solution of the steam distillate obtained from the flowers of the Lavender, Lavandula angustifolia, Labiatae	skin conditioning	1	1,0
LAVANDULA ANGUSTIFOLIA HERB OIL	90063-37-9	Lavandula Angustifolia Herb Oil is an essential oil distilled from the flowering herbs of the lavender, Lavandula angustifolia, Labiatae - NOT an official INCI name	perfuming	1	3,0
LAVANDULA ANGUSTIFOLIA OIL	8000-28-0	Lavandula Angustifolia Oil is the volatile oil obtained from the flowers of Lavandula officinalis, Labiatae.	tonic / masking	7	9,6
LAVANDULA HYBRIDA OIL	8022-15-9	Lavandula Hybrida Oil is the essential oil obtained from the flowers of the lavandin, Lavandula hybrida, Labiatae.	emollient	1	10,0
LECITHIN	8002-43-5	Lecithins. The complex combination of diglycerides of fatty acids linked to the choline ester of phosphoric acid.	antistatic / emollient / emulsifying / skin conditioning	20	19,4
LEPTOSPERMUM PETERSONII OIL	85085-43-4	Leptospermum Petersonii Oil is an essential oil obtained from hydrodistillation of the leaves of the plant, Leptospermum petersonii, Myrtaceae. Syn. Lemon scented Tea tree oil	masking / perfuming	2	11,0
LEVULINIC ACID	123-76-2	4-oxovaleric acid.	skin conditioning	3	9,0
LIMONENE	5989-27-5	(R)-p-Mentha-1,8-diene; (4R)-1-Methyl-4-(1-methylethenyl)cyclohexene	masking / perfuming	31	16,0
LINALOOL	78-70-6	1,6-Octadien-3-ol, 3,7-dimethyl-	deodorant	23	19,6
LINOLEAMIDE DEA	56863-02-6	(9Z,12Z)-N,N-bis(2-hydroxyethyl)octadeca-9,12-dien-1-amide.	antistatic / viscosity controlling / hair conditioning / foam boosting	1	4,0
LINUM USITATISSIMUM SEED OIL	8001-26-1	Linum Usitatissimum Seed Oil is the expressed oil from the dried ripe seed of the Linseed, Linum usitatissimum L., Linaceae	perfuming / skin conditioning	1	25,0

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INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
LONICERA CAPRIFOLIUM FLOWER EXTRACT	84603-62-3	Lonicera Caprifolium Flower Extract is an extract of the flowers of the Honeysuckle, Lonicera caprifolium L., Caprifoliaceae	perfuming / skin conditioning	1	21,0
LONICERA JAPONICA LEAF EXTRACT	223749-79-9	Lonicera Japonica Leaf Extract is an extract of the leaves of the honeysuckle, Lonicera japonica, Caprifoliaceae	skin conditioning	1	12,0
LYSOLECITHIN	85711-58-6	Lecithins, hydrolyzed.	emulsifying	1	7,0
MACADAMIA TERNIFOLIA SEED OIL	128497-20-1	Macadamia Ternifolia Seed Oil is the fixed oil obtained from the nuts of the macadamia tree, Macadamia ternifolia, Proteaceae. It consists primarily of the glycerides of the fatty acids	emollient	3	6,7
MAGNESIUM ALUMINUM SILICATE	1327-43-1	Silicic acid, aluminum magnesium salt.	absorbent / opacifying / viscosity controlling / anticaking	5	9,8
MAGNESIUM CHLORIDE	7786-30-3	Magnesium chloride.	viscosity controlling	1	15,0
MAGNESIUM NITRATE	10377-60-3	Magnesium nitrate.	hair conditioning	1	17,0
MAGNESIUM SULFATE	7487-88-9	Magnesium sulphate.	viscosity controlling / hair conditioning / bulking	5	13,2
MALIC ACID	97-67-6	Butenedioic acid, hydroxy-, (2S)-	buffering	1	8,0
MALVA SYLVESTRIS EXTRACT	84082-57-5	Malva Sylvestris Extract is an extract of the flowers and leaves of the mallow, Malva sylvestris, Malvaceae	soothing / smoothing / emollient / astringent	1	6,0
MARIS SAL		Naturally occurring substances, inorganic salts derived from sea water	skin conditioning	5	7,4
MELALEUCA ALTERNIFOLIA OIL	85085-48-9	Melaleuca Alternifolia Oil is the oil distilled from the leaves of the tea tree, Melaleuca alternifolia, Myrtaceae	antimicrobial ?	1	9,0
MELALEUCA ERICIFOLIA LEAF OIL	85085-48-9	Melaleuca Ericifolia Leaf Oil is the volatile oil distilled from the leaves of the Tea Tree, Melaleuca ericifolia, Myrtaceae	masking / tonic	1	17,0
MELALEUCA QUINQUENERVIA OIL	132940-73-9	Melaleuca Quinquenervia Oil is an essential oil hydrodistilled from the leaves of the plant, Melaleuca quinquenervia, Myrtaceae. Syn. Niaouli oil	perfuming	5	23,0
MELILOTUS OFFICINALIS EXTRACT	84082-81-5	Melilotus Officinalis Extract is an extract of the aerial parts of the sweet clover, Melilotus officinalis, Leguminosae	soothing / astringent / masking	1	9,0
MELISSA OFFICINALIS EXTRACT	84082-61-1	Melissa Officinalis Extract is an extract of the leaves and tops of the balm mint, Melissa officinalis, Labiatae	tonic / soothing	1	24,0
MELISSA OFFICINALIS LEAF EXTRACT	84082-61-1	Melissa Officinalis Leaf Extract is an extract of the leaves of the Balmint, Melissa officinalis L., Labiatae	skin conditioning	1	22,0
MENTHA PIPERITA OIL	8006-90-4	Mentha Piperita Oil is the volatile oil obtained from the leaves of the peppermint, Mentha piperita, Labiatae	tonic / refreshing / deodorant / masking	3	14,0
MENTHA VIRIDIS OIL	8008-79-5	Mentha Viridis Oil is the volatile oil obtained from the dried tops and leaves of the spearmint, Mentha viridis, Labiatae	masking	1	7,0

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MESEMBRYANTHEMUM CRYSTALLINUM EXTRACT		Mesembryanthemum Crystallinum Extract is the extract of the whole plant, Mesembryanthemum crystallinum L., Aizoaceae	humectant	1	9,0
METHYL GLUCOSE DIOLEATE	82933-91-3	D-glucopyranoside methyl 2,6-dioleate.	emollient / humectant / skin conditioning	1	7,0
METHYL GLUCOSE SESQUISTEARATE	68936-95-8	D-Glucopyranoside, methyl, octadecanoate (2:3).	emollient / emulsifying / skin conditioning	1	8,0
METHYLCHLOROISOTHIAZOLINONE	26172-55-4	5-chloro-2-methyl-2H-isothiazol-3-one.	preservative	1	16,0
METHYLISOTHIAZOLINONE	2682-20-4	2-methyl-2H-isothiazol-3-one.	preservative	2	22,0
MICA	12001-26-2	Mica-group minerals (CI 77019).	opacifying	1	11,0
MYRISTYL ALCOHOL	112-72-1	Tetradecanol.	emollient / emulsion stabilising / viscosity controlling / skin conditioning / foam boosting	1	17,0
MYRTUS COMMUNIS OIL	84082-67-7	Myrtus Communis Oil is a volatile oil obtained from the the leaves of the myrtle, Myrtus communis, Myrtaceae	tonic / masking	1	11,0
NIGELLA SATIVA SEED EXTRACT	90064-32-7	Nigella Sativa Seed Extract is an extract of the seeds of the Black Caraway, Nigella sativa L., Ranunculaceae	perfuming / skin conditioning	2	11,0
OCTYLDODECANOL	5333-42-6	2-octyldodecan-1-ol.	emollient / solvent	1	3,0
OENOTHERA BIENNIS OIL	90028-66-3	Oenothera Biennis Oil is the fixed oil derived from the seeds of the evening primrose, Oenothera biennis, Onagraceae. It consists primarily of the glycerides of the fatty acids	emollient	3	7,7
OLEA EUROPAEA FRUIT OIL	8001-25-0	fixed oil obtained from the ripe fruit of the Olive, Olea europaea L., Oleaceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic and palmitic	emollient / perfuming / solvent	3	4,0
OLEA EUROPAEA OIL	8001-25-0	Olea Europaea Oil is the fixed oil obtained from the ripe fruit of the olive tree, Olea europaea, Oleaceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic and palmitic	emollient / solvent	3	5,7
OLEA EUROPAEA OIL UNSAPONIFIABLES	8001-25-0	Olea Europaea Oil Unsaponifiables is the fraction of olive (Olea europaea, Oleaceae) oil which has not been transformed into soaps during the process of saponification	emollient	2	14,0
OLEIC ACID	112-80-1	9-Octadecenoic acid (9Z)-	emollient / emulsifying	1	10,0
OLEUM CHAMAEMELUM ORMENSIS			skin conditioning	1	17,0
OLEUM SIMMONDSIAE CALIFORNICAE				2	4,5
OLUS OIL	68956-68-3	Olus Oil is an expressed oil of vegetable origin consisting primarily of triglycerides of fatty acids	emollient	1	24,0
ONONIS SPINOSA EXTRACT	84775-89-3	Ononis Spinosa Extract is an extract of the roots of the restharrow, Ononis spinosa, Leguminosae	soothing / antiseborrhoeic	1	25,0
ONONIS SPINOSA ROOT EXTRACT	84775-89-3	Ononis Spinosa Root Extract is an extract of the roots of the Restharrow, Ononis spinosa L., Leguminosae	antiseborrhoeic / soothing	1	23,0

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INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
ORYZA SATIVA POWDER	68553-81-7	Oryza Sativa Powder is the powder obtained by grinding the dried seeds of the Rice, Oryza sativa L., Poaceae	bulking /antimicrobial ?	1	8,0
ORYZANOL	11042-64-1	gamma-Oryzanol	antistatic / skin conditioning	2	24,5
PALMITIC ACID	57-10-3	Hexadecanoic acid	emollient / emulsifying	6	7,8
PANICUM MILIACEUM SEED EXTRACT	90082-36-3	Panicum Miliaceum Seed Extract is an extract of the seeds of the Millet, Panicum miliaceum L., Gramineae	skin conditioning / smoothing	2	11,0
p-ANISIC ACID	100-09-4	Benzoic acid, 4-methoxy-	masking	2	12,5
PANTHENOL	81-13-0	Butanamide, 2,4-dihydroxy-N-(3-hydroxypropyl)-3,3-dimethyl-, (2R)-	antistatic / hair conditioning / skin conditioning	17	11,2
PANTHENYL ETHYL ETHER	667-83-4	(+)-N-(3-ethoxypropyl)-2,4-dihydroxy-3,3-dimethylbutyramide.	antistatic / hair conditioning	1	13,0
PARAFFIN	8002-74-2	Paraffin waxes and Hydrocarbon waxes. A complex combination of hydrocarbons obtained from petroleum fractions by solvent crystallization (solvent deoiling) or by the sweating process. It consists predominantly of straight chain hydrocarbons having carbon	emollient / viscosity controlling	1	3,0
PARAFFINUM LIQUIDUM	8012-95-1	Paraffin oils. Liquid hydrocarbons from petroleum.	antistatic / emollient / solvent / skin protecting	3	2,7
PARFUM		Perfume and aromatic compositions and their raw materials	deodorant / masking / perfuming	16	13,7
PEG-100 STEARATE	9004-99-3	Poly(oxy-1,2-ethanediyl), .alpha.-(1-oxooctadecyl)-.omega.-hydroxy-	surfactant	2	10,0
PEG-14M	25322-68-3	Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-hydroxy-	binding / emulsion stabilising / viscosity controlling	1	10,0
PEG-150 DISTEARATE	2595-26-8	Poly(oxy-1,2-ethanediyl), .alpha.-(1-oxooctadecyl)-.omega.-[(1-oxooctadecyl)oxy]-	emulsifying / surfactant / viscosity controlling	1	8,0
PEG-7 GLYCERYL COCOATE	68201-46-7	Glycerides, coco mono- and di-, ethoxylated	emulsifying / surfactant	1	6,0
PELARGONIUM GRAVEOLENS FLOWER OIL	90082-51-2	Pelargonium Graveolens Flower Oil is the volatile oil obtained from the flowers of the Bourbon Geranium, Pelargonium graveolens (L.), Geraniaceae	masking	1	10,0
PELARGONIUM GRAVEOLENS OIL	90082-51-2	Pelargonium Graveolens Oil is the volatile oil obtained from the flowers of Pelargonium graveolens, Geraniaceae	tonic	3	14,7
PENTYLENE GLYCOL	5343-92-0	1,2-Dihydroxypentane	skin conditioning / solvent	12	6,1
PERSEA GRATISSIMA CERA	227200-57-9	Persea Gratissima Cera is the semi-solid fraction of Avocado Oil (Persea gratissima, Lauraceae)	emollient / stabilising	1	6,0
PERSEA GRATISSIMA OIL	8024-32-6	Persea Gratissima Oil is the fixed oil obtained by pressing the dehydrated sliced flesh of the avocado pear, Persea gratissima, Lauraceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic, and palmitic	emollient	2	7,0

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INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
PERSEA GRATISSIMA OIL UNSAPONIFIABLES	91770-40-0	Persea Gratissima Oil Unsaponifiables is the fraction of Persea gratissima (Persea gratissima, Lauraceae) oil which has not been transformed into soaps during the process of saponification	emollient	3	13,0
PETROLATUM	2231-33-5	Petrolatum. A complex combination of hydrocarbons obtained as a semi-solid from dewaxing paraffinic residual oil. It consists predominantly of saturated crystalline and liquid hydrocarbons having carbon numbers predominantly greater than C25.	antistatic / emollient	2	2,5
PHENOXYETHANOL	122-99-6	2-phenoxyethanol.	preservative	2	18,5
PHYTOSTERYL MACADAMIATE		Fatty acids, macadamia nut-oil, esters with (3-.beta.)-sigmast-5-en-3-ol	hair conditioning / skin conditioning	1	15,0
PIMPINELLA ANISUM EXTRACT	84775-42-8	Pimpinella Anisum Extract is an extract of the dried ripe fruit of the anise, Pimpinella anisum, Umbelliferae	oral care / masking	2	14,0
PLANTAGO MAJOR EXTRACT	84929-43-1	Plantago Major Extract is an extract of the leaves of the plantain, Plantago major, Plantaginaceae	astringent	1	8,0
POGOSTEMON CABLIN OIL	8014-09-3	Pogostemon Cablin Oil is the volatile oil obtained from the patchouli, Pogostemon cablin, Labiatae	masking / antimicrobial ?	3	15,0
POLYGLYCERYL-10 LAURATE	34406-66-1	1,2,3-Propanetriol, homopolymer, dodecanoates (1:1) (10 mol glycerol average molar ratio)	skin conditioning	2	3,5
POLYGLYCERYL-2 DIPOLYHYDROXYSTEARATE	137398-08-4	Octadecanoic acid, 12-hydroxy-, homopolymer, ester with oxybis(propanediol)	skin conditioning	1	19,0
POLYGLYCERYL-3 METHYLGLUCOSE DISTEARATE		Methyl-D-glucopyranoside, ethers with 1,2,3-propanetriol homopolymer, octadecanoates (1:1:2) (3 mol glycerol average molar ratio)	emulsifying	5	7,8
POLYGLYCERYL-3 OLEATE	33940-98-6	Oleic acid, monoester with triglycerol.	emulsifying	2	6,0
POLYGLYCERYL-3 POLYRICINOLEATE	235783-76-3	9-Octadecanoic acid, 12-hydroxy-(9Z, 12R)-, homopolymer, ester with triglycerol	emulsifying / viscosity controlling	4	11,0
POLYGLYCERYL-4 ISOSTEARATE	91824-88-3	1,2,3-Propanetriol, homopolymer, isooctadecanoates (1:1) (4 mol glycerol average molar ratio)	emulsifying	1	8,0
POPULUS TREMULOIDES BARK EXTRACT	90083-05-9	Populus Tremuloides Bark Extract is an extract of the bark of Populus tremuloides, Salicaceae	antiseborrhoeic / skin conditioning	1	8,0
POTASSIUM ALUM	10043-67-1	Aluminium potassium bis(sulphate).	antiperspirant / deodorant	1	2,0
POTASSIUM CETYL PHOSPHATE	84861-79-0	1-Hexadecanol, phosphate, potassium salt.	surfactant	6	13,8
POTASSIUM OLIVATE	68154-77-8	Fatty acids, olive-oil, potassium salts.	surfactant / emulsifying	1	5,0
POTASSIUM SORBATE	24634-61-5	Potassium (E,E)-hexa-2,4-dienoate.	preservative	4	14,3
PROLINE	147-85-3	2-Pyrrolidinecarboxylic acid, (S)-	antistatic / skin conditioning / hair conditioning	1	13,0
PROPOLIS CERA	85665-41-4	Propolis, ext.	antiseborrhoeic / moisturising / smoothing	2	19,5
PROPYLENE GLYCOL	57-55-6	Propane-1,2-diol.	humectant / solvent / skin conditioning / viscosity controlling	7	5,6

Table 2.2 All 459 ingredients listed in alphabetical overview					
INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
PRUNUS AMYGDALUS DULCIS OIL	8007-69-0	Prunus Amygdalus Dulcis Oil is the fixed oil obtained from the ripe seeds of the sweet almond, Prunus amygdalus dulcis, Rosaceae. It consist primarily of the glycerides of the fatty acids.	emollient / skin conditioning	9	9,8
PRUNUS ARMENIACA KERNEL OIL	72869-69-3	Prunus Armeniaca Kernel Oil is the fixed oil expressed from the kernels of the apricot, Prunus armeniaca, Rosaceae. It consists primarily of the glycerides of the fatty acids	emollient / skin conditioning	3	6,3
PRUNUS PERSICA KERNEL OIL	8002-78-6	Prunus Persica Kernel Oil is the oil expressed from the kernels of the peach, Prunus persica, Rosaceae. It consists primarily of the glycerides of the fatty acids	emollient / skin conditioning	2	2,0
PUNICA GRANATUM SEED OIL	84961-57-9	Punica Granatum Seed Oil is the oil expressed from the seeds of the Pomegranate, Punica granatum L., Punicaceae	emollient / antimicrobial ?	2	10,0
PYROS CYDONIA SEED EXTRACT	90106-03-9	Pyrus Cydonia Extract is an extract of the quince, Pyrus cydonia, Rosaceae	skin conditioning / soothing	1	8,0
RETINYL PALMITATE	79-81-2	Retinyl palmitate.	skin conditioning	3	17,0
RHIZOBIAN GUM		Rhizobian Gum is the polysaccharide gum produced by the fermentation by Rhizobian	film forming / hair fixing / plasticiser / viscosity controling	1	17,0
RICINUS COMMUNIS OIL	8001-79-4	Ricinus Communis Oil is the fixed oil obtained from the seeds of Ricinus communis, Euphorbiaceae. It consists primarily of the glycerides of the fatty acid ricinoleic	emollient / skin conditioning / moisturising / smoothing / solvent	2	14,0
ROSA CANINA EXTRACT	84696-47-9		astringent	1	2,0
ROSA CANINA FRUIT OIL	84603-93-0	Rosa Canina Fruit Oil is the fixed oil derived from the dog rose, Rosa canina, Rosaceae. It consists primarily of the glycerides of the fatty acids	emollient / skin conditioning	1	10,0
ROSA CANINA SEED EXTRACT	84696-47-9	Rosa Canina Seed Extract is an extract of the seeds of the dog rose, Rosa canina, Rosaceae	skin conditioning	1	17,0
ROSA CENTIFOLIA EXTRACT	84604-12-6	Rosa Centifolia Extract is an extract of the flowers of the cabbage rose, Rosa centifolia, Rosaceae	tonic / astringent	1	30,0
ROSA CENTIFOLIA FLOWER WATER	84604-12-6	Rosa Centifolia Flower Water is an aqueous solution of the steam distillate obtained from the flowers of the Cabbage Rose, Rosa centifolia (L.), Rosaceae	skin conditioning / skin protecting	1	1,0
ROSA DAMASCENA DISTILLATE	90106-38-0	Rosa Damascena Distillate is an aqueous solution containing volatile oils obtained by the distillation of the flowers of Rosa damascena, Rosaceae	skin protecting	4	1,3
ROSA DAMASCENA EXTRACT	90106-38-0	Rosa Damascena Extract is an extract of the flowers of the rose, Rosa damascena, Rosaceae	tonic	1	13,0
ROSA DAMASCENA FLOWER EXTRACT	90106-38-0	Rosa Damascena Flower Extract is an extract of the flowers of the Damask Rose, Rosa damascena, Rosaceae	masking / tonic	2	8,0

Table 2.2 All 459 ingredients listed in alphabetical overview					
INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
ROSA DAMASCENA FLOWER OIL	8007-01-0	Rosa Damascena Flower Oil is the volatile oil obtained from the flowers of the Damask Rose, Rosa damascena, Rosaceae	masking / skin conditioning	5	8,4
ROSA DAMASCENA FLOWER WATER	90106-38-0	Rosa Damascena Flower water is an aqueous solution of the steam of the distillate obtained from the flowers of the Damask Rose, Rosa damascena, Rosaceae	masking / skin conditioning / skin protecting	1	2,0
ROSA MOSCHATA SEED OIL		Rosa Moschata Seed Oil is the oil expressed from the seeds of the musk rose, Rosa moschata, Rosaceae	skin conditioning / emollient	2	7,0
ROSMARINUS OFFICINALIS EXTRACT	84604-14-8	Rosmarinus Officinalis Extract is an extract of the leaves of the rosemary, Rosmarinus officinalis, Labiatae	tonic / refreshing / antimicrobial	1	8,0
ROSMARINUS OFFICINALIS LEAF EXTRACT	84604-14-8	Rosmarinus Officinalis Leaf Extract is an extract of the leaves of the Rosemary, Rosmarinus officinalis L., Lamiaceae	antimicrobial / masking / skin conditioning	3	9,7
ROSMARINUS OFFICINALIS LEAF OIL	84604-14-8	Rosmarinus Officinalis Leaf Oil is the essential oil obtained from the flowering tops and leaves of the Rosemary, Rosmarinus officinalis L., Lamiaceae	masking / skin conditioning / antimicrobial ?	1	9,0
ROSMARINUS OFFICINALIS OIL	8000-25-7	Rosmarinus Officinalis Oil is the volatile oil obtained from the flowering tops of the rosemary, Rosmarinus officinalis, Labiatae	tonic / refreshing	1	8,0
RUBUS IDAEUS EXTRACT	84929-76-0	Rubus Idaeus Extract is an extract of the fruit of the red raspberry, Rubus idaeus, Rosaceae	smoothing / keratolytic / astringent / tonic	1	5,0
RUMEX ACETOSELLA EXTRACT		Rumex Acetosella Extract is an extract of the leaves and aerial parts of the sorrel, Rumex acetosella, Polygonaceae	skin conditioning / soothing	1	10,0
RUSCUS ACULEATUS EXTRACT	84012-38-4	Ruscus Aculeatus Extract is an extract of the rhizomes of the butcherbroom, Ruscus aculeatus, Liliaceae	tonic / soothing / refreshing / astringent / skin conditioning / stabilising	2	9,0
RUSCUS ACULEATUS ROOT EXTRACT	84012-38-4	Ruscus Aculeatus Root Extract is an extract of the roots of the Butcheerbroom, Ruscus aculeatus, Liliaceae	astringent / refreshing / skin conditioning / soothing / stabilising / tonic	1	11,0
SALIX ALBA BARK EXTRACT	84082-82-6	Salix Alba Bark Extract is and extract of the bark of the white willow, Salix alba, Salicaceae	astringent / tonic / skin conditioning / soothing	1	20,0
SALVIA OFFICINALIS EXTRACT	84082-79-1	Salvia Officinalis Extract is an extract of the leaves of the sage, Salvia officinalis, Labiatae	tonic / cleansing / antidandruff / antioxidant / antiperspirant / deodorant / skin protecting / astringent / antimicrobial / skin conditioning / soothing	1	26,0
SALVIA OFFICINALIS LEAF EXTRACT	84082-79-1	Salvia Officinalis Leaf Extract is an extract of the leaves of the Sage, Salvia officinalis L., Lamiaceae	antidandruff / cleansing / oral care / skin conditioning / tonic / antimicrobial ?	2	19,5

Table 2.2 All 459 ingredients listed in alphabetical overview					
INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
SAMBUCUS NIGRA FLOWER EXTRACT	84603-58-7	Sambucus Nigra Flower Extract is an extract of the flowers of the Elder, Sambucus nigra L., Caprifoliaceae	refreshing / skin conditioning / soothing / tonic	1	11,0
SANTALUM ALBUM OIL	8006-87-9	Santalum Album Oil is the volatile oil obtained from the heartwood of the sandalwood, Santalum album, Santalaceae	masking	2	17,0
SANTALUM SPICATA WOOD OIL	8024-35-9	Santalum Spicata Wood Oil is an essential oil obtained from the wood of the Australian Sandalwood, Santalum spicata, Santalaceae. It contains 75% santalols and 10% farnesol	perfuming	2	18,0
SCLEROTIUM GUM	39464-87-4	Sclerotium rolfssii gum	emulsion stabilising / viscosity controlling / skin conditioning	1	4,0
SEDUM PURPUREUM EXTRACT		Sedum Purpureum Extract is an extract of the whole plant, Sedum Purpureum, Crassulaceae	skin conditioning	1	10,0
SESAMUM INDICUM DAUCUS CAROTA		Sesamolie med gulerodsolie		1	4,0
SESAMUM INDICUM OIL	8008-74-0	Sesamum Indicum Oil is the oil obtained from the seed of sesame, Sesamum indicum, Pedaliaceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic, palmitic and stearic	emollient / hair conditioning / skin conditioning	4	10,3
SESAMUM INDICUM SEED OIL	8008-74-0	Sesamum Indicum Seed Oil is the oil obtained from the seed of the Sesame, Sesamum indicum L., Pedaliaceae	emollient / hair conditioning / masking / skin conditioning	6	4,2
SHELLAC	9000-59-3	Shellac. A resin secreted by Laccifer lacca, Coccidae.	emollient / film forming / viscosity controlling / hair fixing	1	25,0
SHOREA STENOPTERA BUTTER	91770-65-9	Shorea Stenoptera Extract is a fat obtained from the fruits and seeds of Shorea stenoptera, Dipterocarpaceae	emollient	1	3,0
SILICA	7631-86-9	Silicon dioxide.	abrasive / absorbent / opacifying / viscosity controlling / anticaking / bulking	4	4,3
SIMMONDSIA CHINENSIS CERA	61789-91-1	Simmondsia Chinensis Cera is a waxy substance obtained from the seeds of Simmondsia chinensis, Buxaceae	emollient / hair conditioning / skin conditioning / viscosity controlling	1	9,0
SIMMONDSIA CHINENSIS OIL	61789-91-1	Simmondsia Chinensis Oil is the fixed oil expressed or extracted from seeds of the jojoba, Simmondsia chinensis, Buxaceae	emollient	7	5,7
SIMMONDSIA CHINENSIS SEED OIL	90045-98-0	Simmondsia Chinensis Seed Oil is the fixed oil expressed or extracted from seeds of the desert shrub, Jojoba, Simmondsia chinensis, Buxaceae	emollient / hair conditioning / skin conditioning	11	8,1
SMITHSONITE EXTRACT		Smithsonite Extract is an extract of Smithsonite	antioxidant / skin conditioning	1	19,0
SODIUM ASCORBYL PHOSHATE	66170-10-3	L-Ascorbic acid, 2-(dihydrogen phosphate), trisodium salt	antioxidant	4	16,3

Table 2.2 All 459 ingredients listed in alphabetical overview					
INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
SODIUM BEESWAX	97721-96-5	Fatty acids, beeswax, sodium salts.	emulsifying / skin conditioning	1	13,0
SODIUM BENZOATE	532-32-1	Sodium benzoate.	preservative	5	15,0
SODIUM CETEARYL SULFATE	59186-41-3	Sulfuric acid, mixed cetyl and stearyl esters, sodium salts	surfactant / cleansing / foaming	2	18,0
SODIUM CHLORIDE	7647-14-5	Sodium chloride.	viscosity controlling / bulking	5	8,0
SODIUM COCOAMPHOACETATE	68390-66-9	Imidazolium compounds, 1-(carboxymethyl)-4,5-dihydro-1-(hydroxyethyl)-2-norcoco alkyl, hydroxides, monosodium salts.	surfactant / foaming / cleansing / hair conditioning	6	4,2
SODIUM COCOYL GLUTAMATE	68187-32-6	L-Glutamic acid, N-coco acyl derivs., monosodium salts.	surfactant / cleansing	7	7,4
SODIUM COCOYL SULFOACETATE				1	5,0
SODIUM DEHYDROACETATE	4418-26-2	Sodium 1-(3,4-dihydro-6-methyl-2,4-dioxo-2H-pyran-3-ylidene)ethanolate.	preservative	1	8,0
SODIUM GLUCONATE	527-07-1	Sodium gluconate.	chelating	7	14,1
SODIUM HYDROXIDE	1310-73-2	Sodium hydroxide.	buffering / denaturant	4	15,0
SODIUM HYDROXYMETHYLGLYCINATE	70161-44-3	Sodium N-(hydroxymethyl)glycinate.	preservative	1	13,0
SODIUM LACTATE	72-17-3	Sodium lactate.	buffering / humectant	12	13,0
SODIUM LAURETH SULFATE	9004-82-4	Poly(oxy-1,2-ethanediyl), .alpha.-sulfo-.omega.-(dodecyloxy)-, sodium salt	surfactant / cleansing / foaming	4	2,5
SODIUM LAURETH-11 CARBOXYLATE	53610-02-9	Sodium salt of the carboxylic acid derived from Laureth-11	surfactant / cleansing / foaming	1	4,0
SODIUM LAUROAMPHOACETATE	68647-44-9	Sodium 1-(carboxymethyl)-4,5-dihydro-1(or 3)-(2-hydroxyethyl)-2-undecyl-1H-imidazolium hydroxide.	surfactant / cleansing / foaming / hair conditioning	1	4,0
SODIUM LAUROYL SARCOSINATE	137-16-6	Sodium N-lauroylsarcosinate.	antistatic / surfactant / viscosity controlling / emulsifying / hair conditioning / cleansing / foaming / skin conditioning	1	10,0
SODIUM LAURYL GLUCOSE CARBOXYLATE		Sodium carboxymethyl ether of Lauryl Glucoside	cleansing / surfactant	2	4,0
SODIUM LAURYL SULFOACETATE	1847-58-1	Sodium 2-(dodecyloxy)-2-oxoethane-1-sulphonate.	surfactant / cleansing / foaming	3	3,7
SODIUM LEVULINATE	19856-23-6	Sodium 4-oxovalerate.	skin conditioning	1	5,0
SODIUM METHYL COCOYL TAURATE	61791-42-2	Ethanesulfonic acid, 2-(methylamino)-, N-coco acyl derivs., sodium salts.	surfactant / foaming / cleansing	1	7,0
SODIUM PCA	28874-51-3	Sodium 5-oxo-2-pyrrolidinecarboxylate	antistatic / humectant / skin conditioning	4	9,5
SODIUM STEAROYL GLUTAMATE	38517-23-6	Sodium hydrogen N-(1-oxooctadecyl)-L-glutamate.	emulsifying / cleansing / hair conditioning / skin conditioning	1	7,0
SODIUM STEAROYL LACTYLATE	25383-99-7	Sodium 2-stearoyllactate.	emulsifying	8	6,8

Table 2.2 All 459 ingredients listed in alphabetical overview					
INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
SODIUM SUCROSE OCTASULFATE	74135-10-7	alfa-D-glucopyranoside, 1,3,4,6-tetra-O-sulfo-beta-D-fructofuranosyl, tetrakis(hydrogen sulfate), octasodium salt	skin condtioning	1	3,0
SORBIC ACID	110-44-1	Hexa-2,4-dienoic acid.	preservative	1	9,0
SORBITAN ISOSTEARATE	71902-01-7	Sorbitan, isooctadecanoate.	emulsifying	1	6,0
SORBITAN OLEATE	1338-43-8	Sorbitan oleate.	emulsifying	2	8,0
SORBITAN OLIVATE	223706-40-9	D-Glucitol, 1,4-Anhydro-, 6-monoester with olive oil fatty acids	emulsifying	1	8,0
SORBITAN STEARATE	1338-41-6	Sorbitan stearate.	emulsifying	2	12,5
SORBITOL	50-70-4	D-glucitol.	humectant / plasticiser / skin conditioning	11	7,5
SQUALANE	111-01-3	2,6,10,15,19,23-hexamethyltetracosane.	emollient / hair conditioning / refatting / skin conditioning	10	5,2
STEARAMIDOPROPYL DIMETHYLAMINE	2100-54-9	N-[3-(dimethylamino)propyl]stearamide.	antistatic / emulsifying / surfactant / hair conditioning	1	4,0
STEARIC ACID	57-11-4	Stearic acid.	emulsifying / emulsion stabilising / refatting / cleansing	9	12,4
STEARYL ALCOHOL	112-92-5	Octadecan-1-ol.	emollient / emulsion stabilising / opacifying / viscosity controlling / foam boosting / refatting	2	11,0
STEARYL GLYCYRRHETINATE	13832-70-7	Olean-12-en-29-oic acid, 3-hydroxy-11-oxo-, octadecyl ester, (3.beta.,20.beta.)	skin conditioning / soothing	1	15,0
STYRAX BENZOIN GUM	2593-35-2	Styrax Benzoin Gum is a balsamic resin obtained from Styrax benzoin, Styracaceae. It is a product which may contain resin acids and their esters, terpenes, and oxidation or polymerisation products of these terpenes	film forming	1	21,0
SUCROSE COCOATE	91031-88-8	Fatty acids, coco, esters with sucrose.	antistatic / emulsifying / skin conditioning	4	16,3
SUCROSE DISTEARATE	27195-16-0	Sucrose distearate.	emollient / emulsifying / skin conditioning	1	11,0
SULFUR	7704-34-9	Sulphur.	antidandruff / antistatic / antiseborrhoeic	1	30,0
SYMPHYTUM OFFICINALE LEAF EXTRACT	84696-05-9	Symphytum Officinale Leaf Extract is an extract of the leaves of the comfrey, Symphytum officinale, Borraginaceae	skin conditioning	1	13,0
TAGETES MINUTA FLOWER OIL	91770-75-1	Tagetes Minuta Flower Oil is the essential oil obtained from the flowers of the Tagetes, Tagetes minuta L., Compositae	masking / skin conditioning	1	20,0
TERMINALIA FERDINANDIANA FRUIT EXTRACT		Terminalia Ferdinandiana Fruit Extract is an extract of the fruit of the Terminalia ferdinandiana, Combretaceae	antioxidant / bleaching	1	10,0
TETRAHYDROXYPROPYL ETHYLENEDIAMINE	102-60-3	1,1',1'',1'''-ethylenedinitrilotetrapropan-2-ol.	chelating	1	11,0

Table 2.2 All 459 ingredients listed in alphabetical overview					
INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
THEOBROMA CACAO BUTTER	8002-31-1	Theobroma Cacao Butter is a yellowish white solid material obtained from the roasted seeds of Theobroma cacao, Sterculiaceae	emollient	1	7,0
THYMUS SERPILLUM EXTRACT	84776-98-7	Thymus Serpyllum Extract is an extract of the herb of the wild thyme, Thymus serpyllum, Labiatae	tonic / deodorant / cleansing / masking	2	26,0
THYMUS VULGARIS EXTRACT	84929-51-1	Thymus Vulgaris Extract is an extract of the flowers and leaves of the thyme, Thymus vulgaris, Labiatae	tonic / masking	1	12,0
TILIA CORDATA FLOWER EXTRACT	84929-52-2	Tilia Cordata Flower Extract is an extract of the flowers of the Linden, Tilia cordata, Tiliaceae	skin conditioning	1	11,0
TITANIUM DIOXIDE	13463-67-7	Titanium dioxide (CI 77891).	opacifying / uv absorber	3	6,0
TOCOPHEROL	10191-41-0	3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-ol.	antioxidant / skin conditioning	34	19,2
TOCOPHERYL ACETATE	7695-91-2	3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-yl acetate.	antioxidant	14	14,1
TRIBEHENIN	18641-57-1	Propane-1,2,3-triyl tridocosanoate.	emollient / skin conditioning	2	9,0
TRICAPRYLIN	538-23-8	Glycerol trioctanoate.	emollient / solvent / skin conditioning	1	2,0
TRIETHANOLAMINE	102-71-6	2,2',2''-nitrilotriethanol.	buffering	1	13,0
TRIETHYL CITRATE	77-93-0	Triethyl citrate.	antioxidant / deodorant / solvent / plasticiser	1	4,0
TRIFOLIUM PRATENSE FLOWER POWDER	85085-25-2	Trifolium Pratense Flower Powder is the powder obtained from the dried, ground flowers of the Red Clover, Trifolium pratense L., Leguminosae	astringent / masking	1	29,0
TRITICUM VULGARE GERM EXTRACT	84012-44-2	Triticum Vulgare Germ Extract is an extract of the germ of the wheat, Triticum vulgare, Gramineae	skin protecting / skin conditioning	1	28,0
TRITICUM VULGARE GERM OIL	68917-73-7	Triticum Vulgare Germ Oil is the oil obtained from the expression or extraction of wheat germ (Triticum vulgare, Graminae). It consists primarily of the glycerides of the fatty acids	emollient	7	7,7
TROMETHAMINE	77-86-1	1,3-Propanediol, 2-amino-2-(hydroxymethyl)	buffering	1	13,0
UREA	57-13-6	Urea.	antistatic / humectant / skin conditioning	5	5,8
URTICA DIOICA	84012-40-8	Urtica Dioica is the dried plant nettle, Urtica dioica, Urticaceae	hair conditioning	1	5,0
URTICA DIOICA ROOT EXTRACT	84012-40-8	Urtica Dioica Root Extract is an extract of the roots of the Nettle, Urtica dioica L., Urticaceae	skin conditioning	1	16,0
VITIS VINIFERA FRUIT EXTRACT	84929-27-1	Vitis Vinifera Extract is an extract of the fruit of the Red Grape, Vitis Vinifera L., Vitaceae	skin conditioning / antimicrobial ?	1	14,0
WHEAT AMINO ACIDS		Amino acids, wheat	skin protecting / soothing / skin conditioning	1	11,0
XANTHAN GUM	11138-66-2	Xanthan gum.	binding / emulsion stabilising / viscosity controlling / gel forming	40	12,9
XYLITOL	87-99-0	Xylitol.	humectant / skin conditioning	1	7,0

Table 2.2 All 459 ingredients listed in alphabetical overview					
INCIName	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
YUCCA SCHIDIGERA FRUIT	90147-57-2	Yucca Schidigera Fruit is the fruit of the Small Soap Weed, Yucca schidigera, Liliaceae	skin protection	1	7,0
ZEA MAYS OIL	8001-30-7	Zea Mays Oil is the refined fixed oil obtained from wet milling of corn, Zea mays, Gramineae. It consists primarily of the glycerides of the fatty acids linoleic, oleic, palmitic and stearic	antistatic / emollient / solvent	6	5,0
ZINC OXIDE	1314-13-2	Zinc oxide (CI 77947).	bulking / uv absorber / skin protecting	3	14,0
ZINC SULFATE	7733-02-0	Zinc sulphate.	antimicrobial / oral care / antiplaque / anticaking	1	13,0

3 Chemical substances found in the identified cosmetic products – distributed on the marketing of the products

This chapter shows the chemical substances in the identified cosmetics products distributed on the marketing of the products. That means the substances which are found in products either marketed as "non-preserved" or as "naturally-preserved".

The ingredients are listed after falling frequency.

3.1 Ingredients in products marketed as "non-preserved"

In all 244 different ingredients are used in the 45 products that are marketed as "non-preserved". The ingredients are listed after falling frequency.

Tabel 3.1 All 244 ingredients in cosmetic products marketed as "non-preserved"

INCI Name	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
AQUA	7732-18-5	Water.	solvent	40	1,1
GLYCERIN	56-81-5	Glycerol.	denaturant / humectant / solvent	25	5,2
XANTHAN GUM	11138-66-2	Xanthan gum.	binding / emulsion stabilising / viscosity controlling / gel forming	18	13,1
CITRIC ACID	77-92-9	2-Hydroxy-1,2,3-propanetricarboxylic acid	buffering / chelating	17	11,4
TOCOPHEROL	10191-41-0	3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-ol.	antioxidant / skin conditioning	16	18,8
ALCOHOL	64-17-5	Ethanol.	antifoaming / antimicrobial / astringent / masking / solvent viscosity controling	15	6,3
TOCOPHERYL ACETATE	7695-91-2	3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-yl acetate.	antioxidant	12	14,3
PENTYLENE GLYCOL	5343-92-0	1,2-Dihydroxypentane	skin conditioning / solvent	12	6,1
LECITHIN	8002-43-5	Lecithins. The complex combination of diglycerides of fatty acids linked to the choline ester of phosphoric acid.	antistatic / emollient / emulsifying / skin conditioning	10	21,4
ASCORBYL PALMITATE	137-66-6	6-O-palmitoylascorbic acid.	antioxidant	10	20,9

Tabel 3.1 All 244 ingredients in cosmetic products marketed as "non-preserved"					
INCI Name	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
BUTYROSPERMUM PARKII BUTTER	91080-23-8	Butyrospermum Parkii Butter is the fat obtained from the fruit of the karite tree, Butyrospernum parkii, Sapotaceae	skin conditioning / emollient	10	8,0
HYDROGENATED PALM GLYCERIDES CITRATE	91744-68-2	Glycerides, palm-oil mono-, di-, and tri- hydrogenated, citrates	skin conditioning / emollient	9	22,1
PANTHENOL	81-13-0	Butanamide, 2,4-dihydroxy-N-(3-hydroxypropyl)-3,3-dimethyl-, (2R)-	antistatic / hair conditioning / skin conditioning	9	12,8
AROMA		Flavours or aromatic compositions and their ingredients	flavouring	9	12,1
SORBITOL	50-70-4	D-glucitol.	humectant / plasticiser / skin conditioning	9	7,3
CETEARYL ALCOHOL	67762-27-0	Alcohols, C16-18.	emollient / emulsifying / emulsion stabilising / opacifying / viscosity controlling	8	6,5
SQUALANE	111-01-3	2,6,10,15,19,23-hexamethyltetracosane.	emollient / hair conditioning / refatting / skin conditioning	8	5,3
LAURYL GLUCOSIDE	110615-47-9	D-Glucose homopolymer, dodecyl ether	cleansing / surfactant	8	4,9
SODIUM GLUCONATE	527-07-1	Sodium gluconate.	chelating	7	14,1
LIMONENE	5989-27-5	(R)-p-Mentha-1,8-diene; (4R)-1-Methyl-4-(1-methylethenyl)cyclohexene	masking / perfuming	7	12,6
GLYCERYL STEARATE	31566-31-1	Stearic acid, monoester with glycerol.	emollient / emulsifying	7	8,1
POTASSIUM CETYL PHOSPHATE	84861-79-0	1-Hexadecanol, phosphate, potassium salt.	surfactant	6	13,8
GLYCERYL STEARATE CITRATE	55840-13-6	1,2,3-Propanetricarboxylic acid, 2-hydroxy-, ester with 1,2,3-propanetriol monooctadecanoate.	emollient / emulsifying / skin conditioning	6	8,8
SODIUM STEAROYL LACTYLATE	25383-99-7	Sodium 2-stearoyllactate.	emulsifying	6	8,0
BISABOLOL	515-69-5	(R*,R*)-.alpha.,4-dimethyl-.alpha.-(4-methyl-3-pentenyl)cyclohex-3-ene-1-methanol.	soothing	5	16,2
PRUNUS AMYGDALUS DULCIS OIL	8007-69-0	Prunus Amygdalus Dulcis Oil is the fixed oil obtained from the ripe seeds of the sweet almond, Prunus amygdalus dulcis, Rosaceae. It consist primarily of the glycerides of the fatty acids.	emollient / skin conditioning	5	13,0
BRASSICA CAMPESTRIS STEROLS	90989-79-0	Brassica Campestris Sterols is a mixture of sterols obtained from the Cabbage, Brassica campestris L., Brassicaceae	emollient / skin conditioning	5	11,0
LACTIC ACID	50-21-5	Propanoic acid, 2-hydroxy-	buffering / humectant / skin conditioning	5	10,4
MAGNESIUM ALUMINUM SILICATE	1327-43-1	Silicic acid, aluminum magnesium salt.	absorbent / opacifying / viscosity controlling / anticaking	5	9,8
SODIUM CHLORIDE	7647-14-5	Sodium chloride.	viscosity controlling / bulking	5	8,0

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POLYGLYCERYL-3 METHYLGLUCOSE DISTEARATE		Methyl-D-glucopyranoside, ethers with 1,2,3-propanetriol homopolymer, octadecanoates (1:1:2) (3 mol glycerol average molar ratio)	emulsifying	5	7,8
TRITICUM VULGARE GERM OIL	68917-73-7	Triticum Vulgare Germ Oil is the oil obtained from the expression or extraction of wheat germ (Triticum vulgare, Graminae). It consists primarily of the glycerides of the fatty acids	emollient	5	7,2
PROPYLENE GLYCOL	57-55-6	Propane-1,2-diol.	humectant / solvent / skin conditioning / viscosity controlling	5	6,0
SIMMONDSIA CHINENSIS SEED OIL	90045-98-0	Simmondsia Chinensis Seed Oil is the fixed oil expressed or extracted from seeds of the desert shrub, Jojoba, Simmondsia chinensis, Buxaceae	emollient / hair conditioning / skin conditioning	5	5,8
SIMMONDSIA CHINENSIS OIL	61789-91-1	Simmondsia Chinensis Oil is the fixed oil expressed or extracted from seeds of the jojoba, Simmondsia chinensis, Buxaceae	emollient	5	5,4
ZEA MAYS OIL	8001-30-7	Zea Mays Oil is the refined fixed oil obtained from wet milling of corn, Zea mays, Gramineae. It consists primarily of the glycerides of the fatty acids linoleic, oleic, palmitic and stearic	antistatic / emollient / solvent	5	4,6
DECYL GLUCOSIDE	54549-25-6	Decyl D-glucoside.	surfactant / emulsion stabilising	5	3,2
CERAMIDE 3	100403-19-8	Octadecanamide, N-(1,3,4-trihydroxy-2-octadecyl)	skin conditioning / skin protecting	4	16,5
ALLANTOIN	97-59-6	Urea, (2,5-dioxo-4-imidazolidinyl)	soothing	4	14,8
LINALOOL	78-70-6	1,6-Octadien-3-ol, 3,7-dimethyl-	deodorant	4	14,3
MAGNESIUM SULFATE	7487-88-9	Magnesium sulphate.	viscosity controlling / hair conditioning / bulking	4	12,3
SODIUM LACTATE	72-17-3	Sodium lactate.	buffering / humectant	4	11,8
SODIUM COCOYL GLUTAMATE	68187-32-6	L-Glutamic acid, N-coco acyl derivs., monosodium salts.	surfactant / cleansing	4	8,0
MARIS SAL		Naturally occurring substances, inorganic salts derived from sea water	skin conditioning	4	7,8
COCAMIDOPROPYL BETAINE	61789-40-0	1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-coco acyl derivs., hydroxides, inner salts.	surfactant / cleansing / foam boosting	4	4,5
SODIUM COCOAMPHOACETATE	68390-66-9	Imidazolium compounds, 1-(carboxymethyl)-4,5-dihydro-1-(hydroxyethyl)-2-norcoco alkyl, hydroxides, monosodium salts.	surfactant / foaming / cleansing / hair conditioning	4	4,5
DICAPRYLYL CARBONATE	1680-31-5	Carbonic Acid, Dicaprylyl Ester	emollient / skin conditioning	4	4,3
ETHYLHEXYL STEARATE	22047-49-0	2-ethylhexyl stearate.	emollient	4	4,0

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SUCROSE COCOATE	91031-88-8	Fatty acids, coco, esters with sucrose.	antistatic / emulsifying / skin conditioning	3	17,0
ARGININE	74-79-3	L-Arginine.	antistatic	3	16,3
CHONDRUS CRISPUS EXTRACT	244023-79-8	Chondrus Crispus Extract is an extract of the carrageenan, Chondrus crispus, Gigartinaceae	viscosity controlling	3	14,0
POLYGLYCERYL-3 POLYRICINOLEATE	235783-76-3	9-Octadecanoic acid, 12-hydroxy-(9Z, 12R)-, homopolymer, ester with triglycerol	emulsifying / viscosity controlling	3	12,0
CHOLESTEROL	57-88-5	Cholest-5-en-3-ol (beta)-	emollient / emulsifying / stabilising	3	11,3
GLYCINE	56-40-6	Glycine.	antistatic / buffering / skin conditioning / hair conditioning	3	10,7
CERA ALBA	8012-89-3	Beeswax. The wax obtained from the honeycomb of the bee. It consists primarily of myricyl palmitate, cerotic acid and esters and some high-carbon paraffins.	emollient / emulsifying / film forming / perfuming	3	10,3
LAVANDULA ANGUSTIFOLIA OIL	8000-28-0	Lavandula Angustifolia Oil is the volatile oil obtained from the flowers of Lavandula officinalis, Labiatae.	tonic / masking	3	9,3
CITRUS GRANDIS EXTRACT	90045-43-5	Citrus Grandis Extract is an extract of the fruit of the grapefruit, Citrus grandis, Rutaceae	skin conditioning / astringent / tonic	3	5,3
COCOS NUCIFERA OIL	8001-31-8	Cocos Nucifera Oil is the fixed oil extracted from the dried endosperm of Cocos nucifera, Palmae.	emollient / solvent	3	5,0
CETEARYL ISONONANOATE	111937-03-2	Isononanoic acid, C16-18-alkyl esters	emollient	3	4,7
PARAFFINUM LIQUIDUM	8012-95-1	Paraffin oils. Liquid hydrocarbons from petroleum.	antistatic / emollient / solvent / skin protecting	3	2,7
SODIUM LAURETH SULFATE	9004-82-4	Poly(oxy-1,2-ethanediyl), .alpha.-sulfo-.omega.-(dodecyloxy)-, sodium salt	surfactant / cleansing / foaming	3	2,7
THYMUS SERPILLUM EXTRACT	84776-98-7	Thymus Serpyllum Extract is an extract of the herb of the wild thyme, Thymus serpyllum, Labiatae	tonic / deodorant / cleansing / masking	2	26,0
GERANIOL	106-24-1	2,6-Octadien-1-ol, 3,7-dimethyl-, (2E)-	tonic	2	25,5
HYPERICUM PERFORATUM EXTRACT	84082-80-4	Hypericum Perforatum Extract is an extract of the capsules, flowers, leaves and stem heads of the St. John's wort, Hypericum perforatum, Hypericaceae	antimicrobial / astringent / masking / skin conditioning / skin protection / soothing / tonic	2	22,0
EQUISETUM ARVENSE EXTRACT	71011-23-9	Equisetum Arvense Extract is an extract of the sterile caules of the horsetail, Equisetum arvense, Equisetaceae	emollient / astringent / tonic / soothing	2	21,0
CHAMOMILLA RECUTITA FLOWER EXTRACT	84082-60-0	Chamomilla Recutita Flower Extract is an extract of the flowerheads of the matricaria, Chamomilla recutita (L.), Compositae	masking / skin conditioning /antimicrobial ?	2	20,0

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ACHILLEA MILLEFOLIUM EXTRACT	84082-83-7	Achillea Millefolium Extract is an extract of the leaves and flowers of the yarrow, Achillea millefolium, Asteraceae	soothing / antidandruff / refreshing / cleansing / tonic	2	18,0
CITRUS AURANTIUM DULCIS EXTRACT	8028-48-6	Citrus Aurantium Dulcis Extract is an extract of the fruit of the orange, Citrus aurantium dulcis, Rutaceae	skin conditioning	2	17,5
CITRAL	5392-40-5	2,6-Octadienal, 3,7-dimethyl-	masking	2	17,0
DENATONIUM BENZOATE	3734-33-6	Denatonium benzoate.	denaturant	2	16,5
CITRUS MEDICA LIMONUM PEEL EXTRACT	84929-31-7	Citrus Medica Limonum Peel Extract is an extract of the peel of the lemon, Citrus medica limonum, Rutaceae.	tonic	2	16,0
ISOCETYL ALCOHOL	36311-34-9	Isohexadecanol.	emollient / viscosity controlling / skin conditioning	2	15,5
GLYCINE SOJA OIL	8001-22-7	Glycine Soja Oil is the oil obtained from the beans of soy, Glycine soja, Leguminosae, by extraction or expression. It consists esentially of triglycerides of oleic, linoleic and saturated acids	emollient / skin conditioning	2	15,0
FARNESOL	4602-84-0	2,6,10-Dodecatrien-1-ol, 3,7,11-trimethyl-	soothing / solvent / deodorant	2	14,5
DAUCUS CAROTA SATIVA ROOT EXTRACT	84929-61-3	Daucus Carota Sativa Root Extract is an extract of the roots of the Carrot, Daucus carota L. var. sativa, Umbelliferae	skin conditioning	2	14,0
RICINUS COMMUNIS OIL	8001-79-4	Ricinus Communis Oil is the fixed oil obtained from the seeds of Ricinus communis, Euphorbiaceae. It consists primarily of the glycerides of the fatty acid ricinoleic	emollient / skin conditioning / moisturising / smoothing / solvent	2	14,0
SESAMUM INDICUM OIL	8008-74-0	Sesamum Indicum Oil is the oil obtained from the seed of sesame, Sesamum indicum, Pedaliaceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic, palmitic and stearic	emollient / hair conditioning / skin conditioning	2	13,0
ECTOIN	96702-03-3	2-methyl-1,4,5,6,-tetrahydropyrimidin-4-carboxylic acid		2	12,5
p-ANISIC ACID	100-09-4	Benzoic acid, 4-methoxy-	masking	2	12,5
SORBITAN STEARATE	1338-41-6	Sorbitan stearate.	emulsifying	2	12,5
ZINC OXIDE	1314-13-2	Zinc oxide (CI 77947).	bulking / uv absorber / skin protecting	2	11,5
ETHYLHEXYLGLYCERIN	70445-33-9	1,2-propanediol, 3-(2-ethylhexyloxy)	skin conditioning	2	11,0
NIGELLA SATIVA SEED EXTRACT	90064-32-7	Nigella Sativa Seed Extract is an extract of the seeds of the Black Caraway, Nigella sativa L., Ranunculaceae	perfuming / skin conditioning	2	11,0
CAPRYLOYL GLYCINE	14246-53-8	N-(1-oxooctyl)glycine.	cleansing	2	10,0

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CHAMOMILLA RECUTITA EXTRACT	84082-60-0	Chamomilla Recutita Extract is an extract of the flowerheads of the matricaria, Chamomilla recutita, Compositae	emollient / antimicrobial?	2	10,0
SODIUM HYDROXIDE	1310-73-2	Sodium hydroxide.	buffering / denaturant	2	9,5
BEHENIC ACID	112-85-6	Docosanoic acid.	emulsifying	2	9,0
CAPRYLYL GLYCOL	1117-86-8	Octane-1,2-diol.	emollient / humectant / hair conditioning	2	9,0
RUSCUS ACULEATUS EXTRACT	84012-38-4	Ruscus Aculeatus Extract is an extract of the rhizomes of the butcherbroom, Ruscus aculeatus, Liliaceae	tonic / soothing / refreshing / astringent / skin conditioning / stabilising	2	9,0
CARBOMER	9007-20-9	2-Propenoic acid, polymer with 2,2-bis(hydroxymethyl)propane-1,3-diol 2-propenyl ether	emulsion stabilising / viscosity controlling / gel forming	2	8,5
LEVULINIC ACID	123-76-2	4-oxovaleric acid.	skin conditioning	2	8,0
GLYCERYL CAPRATE	26402-22-2	Decanoic acid, monoester with glycerol.	emollient	2	8,0
SORBITAN OLEATE	1338-43-8	Sorbitan oleate.	emulsifying	2	8,0
CETYL ALCOHOL	36653-82-4	Hexadecan-1-ol.	emollient / emulsifying / opacifying / viscosity controlling	2	7,0
PERSEA GRATISSIMA OIL	8024-32-6	Persea Gratissima Oil is the fixed oil obtained by pressing the dehydrated sliced flesh of the avocado pear, Persea gratissima, Lauraceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic, and palmitic	emollient	2	7,0
BEHENYL ALCOHOL	661-19-8	Docosan-1-ol.	emollient	2	6,5
BETAINE	107-43-7	Methanaminium, 1-carboxy-N,N,N-trimethyl-, hydroxide, inner salt	antistatic / viscosity controlling	2	6,5
CAPRYL/CAPRAMIDO PROPYL BETAINE		N-(3-Decanoyl(or octanoyl)aminopropyl)-N-carboxymethyl-N,N-dimethyl-1-propanaminium inner salts	antistatic / hair conditioning / skin conditioning / surfactant / cleansing / foam boosting / viscosity controlling	2	6,5
DIPROPYLENE GLYCOL	110-98-5	1,1'-oxydipropan-2-ol.	solvent	2	6,5
BORAGO OFFICINALIS SEED OIL	225234-12-8	Borago Officinalis Seed Oil is the fixed oil obtained from the seeds of Borago officinalis, Boraginaceae	emollient	2	6,0
DISODIUM COCOYL GLUTAMATE	68187-30-4	L-Glutamic acid, N-coco acyl derivs., disodium salts.	surfactant	2	5,5
OLEA EUROPAEA OIL	8001-25-0	Olea Europaea Oil is the fixed oil obtained from the ripe fruit of the olive tree, Olea europaea, Oleaceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic and palmitic	emollient / solvent	2	5,5

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SODIUM PCA	28874-51-3	Sodium 5-oxo-2-pyrrolidinecarboxylate	antistatic / humectant / skin conditioning	2	5,5
EMULSIFYING WAX				2	4,5
CHONDRUS CRISPUS	9000-07-1	Chondrus Crispus (Carrageenan) is the plant material obtained from various members of the Gigartinaceae or Solieriaceae families of the Red Seaweed, Rodophyceae	hair conditioning / masking	2	4,5
HYDROXYETHYLCELLULOSE	9004-62-0	Cellulose, 2-hydroxyethyl ether	binding / emulsion stabilising / film forming / viscosity controlling / stabilising	2	4,0
BEESWAX ACID	135457-95-3	Fatty acids, beeswax	stabilising	2	4,0
COCO-CAPRYLATE/CAPRATE		Alcohols, coco, mixed esters with octanoic and decanoic acids	emollient	2	4,0
UREA	57-13-6	Urea.	antistatic / humectant / skin conditioning	2	4,0
COCO-GLUCOSIDE		Alcohols, coco, reaction products with glucose	surfactant / foaming / cleansing	2	3,5
CAPRYLIC/CAPRIC TRIGLYCERIDE	73398-61-5	Triglycerides, mixed decanoyl and octanoyl.	emollient / solvent	2	3,0
SODIUM LAURYL SULFOACETATE	1847-58-1	Sodium 2-(dodecyloxy)-2-oxoethane-1-sulphonate.	surfactant / cleansing / foaming	2	3,0
PETROLATUM	2231-33-5	Petrolatum. A complex combination of hydrocarbons obtained as a semi-solid from dewaxing paraffinic residual oil. It consists predominantly of saturated crystalline and liquid hydrocarbons having carbon numbers predominantly greater than C25.	antistatic / emollient	2	2,5
ARGANIA SPINOSA OIL	223747-87-3	Argania Spinosa Oil is the fixed oil expressed from the kernels of the African tree, Argania spinosa, Sapotaceae	skin conditioning	2	2,0
CYCLOPENTASILOXANE	541-02-6	Decamethylcyclopentasiloxane	hair conditioning / emollient / solvent	2	2,0
ROSA DAMASCENA DISTILLATE	90106-38-0	Rosa Damascena Distillate is an aqueous solution containing volatile oils obtained by the distillation of the flowers of Rosa damascena, Rosaceae	skin protecting	2	1,0
BENZYL ALCOHOL	100-51-6	Benzyl alcohol.	perfuming / preservative / solvent / viscosity controlling	1	31,0
ROSA CENTIFOLIA EXTRACT	84604-12-6	Rosa Centifolia Extract is an extract of the flowers of the cabbage rose, Rosa centifolia, Rosaceae	tonic / astringent	1	30,0
TRIFOLIUM PRATENSE FLOWER POWDER	85085-25-2	Trifolium Pratense Flower Powder is the powder obtained from the dried, ground flowers of the Red Clover, Trifolium pratense L., Leguminosae	astringent / masking	1	29,0

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ASCORBIC ACID	50-81-7	Ascorbic acid.	antioxidant / buffering	1	29,0
TRITICUM VULGARE GERM EXTRACT	84012-44-2	Triticum Vulgare Germ Extract is an extract of the germ of the wheat, Triticum vulgare, Gramineae	skin protecting / skin conditioning	1	28,0
IRIS FLORENTINA ROOT EXTRACT	90045-89-9	Iris Florentina Root Extract is an extract of the roots of the Orris, Iris florentina L., Iridaceae	masking / tonic	1	28,0
CITRUS AURANTIUM DULCIS FLOWER WATER	8028-48-6	Citrus Aurantium Dulcis Flower Water is an aqueous solution of the odoriferous principles of the flowers of the orange, Citrus aurantium dulcis.	skin conditioning	1	28,0
CERAMIDE 6 II	100403-19-8	1,3,4-Octadecanetriol, 2-(2-Hydroxy) Stearamide	hair conditioning / skin conditioning	1	27,0
SALVIA OFFICINALIS EXTRACT	84082-79-1	Salvia Officinalis Extract is an extract of the leaves of the sage, Salvia officinalis, Labiatae	tonic / cleansing / antidandruff / antioxidant / antiperspirant / deodorant / skin protecting / astringent / antimicrobial / skin conditioning / soothing	1	26,0
SHELLAC	9000-59-3	Shellac. A resin secreted by Laccifer lacca, Coccidae.	emollient / film forming / viscosity controlling / hair fixing	1	25,0
ONONIS SPINOSA EXTRACT	84775-89-3	Ononis Spinosa Extract is an extract of the roots of the restharrow, Ononis spinosa, Leguminosae	soothing / antiseborrhoeic	1	25,0
SALVIA OFFICINALIS LEAF EXTRACT	84082-79-1	Salvia Officinalis Leaf Extract is an extract of the leaves of the Sage, Salvia officinalis L., Lamiaceae	antidandruff / cleansing / oral care / skin conditioning / tonic / antimicrobial ?	1	24,0
OLUS OIL	68956-68-3	Olus Oil is an expressed oil of vegetable origin consisting primarily of triglycerides of fatty acids	emollient	1	24,0
MELISSA OFFICINALIS EXTRACT	84082-61-1	Melissa Officinalis Extract is an extract of the leaves and tops of the balm mint, Melissa officinalis, Labiatae	tonic / soothing	1	24,0
BIOTIN	58-85-5	1H-Thieno[3,4-d]imidazole-4-pentanoic acid, hexahydro-2-oxo-,[3aS-(3a.alpha.,4.beta.,6a.alpha.)]-	hair conditioning / skin conditioning / antiseborrhoeic	1	23,0
ONONIS SPINOSA ROOT EXTRACT	84775-89-3	Ononis Spinosa Root Extract is an extract of the roots of the Restharrow, Ononis spinosa L., Leguminosae	antiseborrhoeic / soothing	1	23,0
COUMARIN	91-64-5	Coumarin.	masking	1	23,0
MELISSA OFFICINALIS LEAF EXTRACT	84082-61-1	Melissa Officinalis Leaf Extract is an extract of the leaves of the Balmint, Melissa officinalis L., Labiatae	skin conditioning	1	22,0
ALTHAEA OFFICINALIS EXTRACT	73049-65-7	Althaea Officinalis Extract is an extract of the roots of the marshmallow, Althaea officinalis, Malvaceae	emollient	1	20,0
BENZYL BENZOATE	120-51-4	Benzyl benzoate.	antimicrobial / perfuming / solvent	1	20,0

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SMITHSONITE EXTRACT		Smithsonite Extract is an extract of Smithsonite	antioxidant / skin conditioning	1	19,0
CARTHAMUS TINCTORIUS SEED OIL	8001-23-8	Carthamus Tinctorius Seed Oil is the oily liquid obtained from the seeds of Safflower, Carthamus tinctorius L., Compositae. It consists principally of the triglycerides of linoleic acid	masking / skin conditioning	1	19,0
ALTHAEA OFFICINALIS ROOT EXTRACT	73049-65-7	Althaea Officinalis Root Extract is an extract of the roots of the Marsh Mallow, Althaea officinalis L., Malvaceae	skin conditioning	1	18,0
HIPPOPHAE RHAMNOIDES OIL	225234-03-7	Hippophae Rhamnoides Oil is the fixed oil obtained from the fruits of the seabuckthorn, Hippophae rhmanoides, Elagnaceae	emollient / skin conditioning	1	17,0
MYRISTYL ALCOHOL	112-72-1	Tetradecanol.	emollient / emulsion stabilising / viscosity controlling / skin conditioning / foam boosting	1	17,0
RHIZOBIAN GUM		Rhizobian Gum is the polysaccharide gum produced by the fermentation by Rhizobian	film forming / hair fixing / plasticiser / viscosity controling	1	17,0
STEARYL ALCOHOL	112-92-5	Octadecan-1-ol.	emollient / emulsion stabilising / opacifying / viscosity controlling / foam boosting / refatting	1	16,0
SODIUM ASCORBYL PHOSHATE	66170-10-3	L-Ascorbic acid, 2-(dihydrogen phosphate), trisodium salt	antioxidant	1	15,0
CHOLESTERYL HYDROXYSTEARATE	40445-72-5	Cholest-5-en-3-ol (3.beta.)-, 12-hydroxyoctadecanoate	emollient / viscosity controlling	1	15,0
ACRYLATES/C10-30 ALKYL ACRYLATE CROSSPOLYMER		C10-C30 alkyl propenoate, polymer with propenoic acid, butenoic acidand/or alkyl propenoates, product with propenyl sucrose ether or propenyl 2,2-dihydroxymethyl-1,3-propanediol	emulsion stabilising / film forming / viscosity controlling	1	15,0
STEARYL GLYCYRRHETINATE	13832-70-7	Olean-12-en-29-oic acid, 3-hydroxy-11-oxo-, octadecyl ester, (3.beta.,20.beta.)	skin conditioning / soothing	1	15,0
DISTEARDIMONIUM HECTORITE	97280-96-1	1-Octadecanaminium, N,N-dimethyl-N-octadecyl-, chloride, reaction products with hectorite	stabilising / viscosity controlling	1	15,0
PHYTOSTERYL MACADAMIATE		Fatty acids, macadamia nut-oil, esters with (3-.beta.)-sigmast-5-en-3-ol	hair conditioning / skin conditioning	1	15,0
ALUMINUM/MAGNESI M HYDROXIDE STEARATE		Aluminum magnesium hydroxide and stearic acid	emulsion stabilising	1	14,0
CI 61565	128-80-3	1,4-bis(p-tolylamino)anthraquinone.	cosmetic colorant	1	13,0
ALUMINUM DISTEARATE	300-92-5	Hydroxyaluminium distearate.	emulsion stabilising / opacifying / viscosity controlling	1	13,0
TROMETHAMINE	77-86-1	1,3-Propanediol, 2-amino-2-(hydroxymethyl)	buffering	1	13,0
ZINC SULFATE	7733-02-0	Zinc sulphate.	antimicrobial / oral care / antiplaque / anticaking	1	13,0

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GLYCERYL CAPRYLATE	26402-26-6	Octanoic acid, monoester with glycerol.	emollient / emulsifying	1	13,0
PANTHENYL ETHYL ETHER	667-83-4	(+)-N-(3-ethoxypropyl)-2,4-dihydroxy-3,3-dimethylbutyramide.	antistatic / hair conditioning	1	13,0
CI 77491	1309-37-1	Diiron trioxide.	cosmetic colorant	1	12,0
CI 42090	3844-45-9	Dihydrogen (ethyl)[4-[4-[ethyl(3-sulphonatobenzyl)]amino]-2'-sulphonatobenzhydrylidene]cyclohexa-2,5-dien-1-ylidene](3-sulphonatobenzyl)ammonium, disodium salt and other permitted lakes and salts	cosmetic colorant	1	12,0
CETYL PEG/PPG-10/1 DIMETHICONE		Cetyl PEG/PPG-10/1 Dimethicone is the copolymer of Cetyl Dimethicone and an alkoxylated derivative of Dimethicone containing an average of 10 moles of ethylene oxide and 1 mole of propylene oxide	emulsifying / skin conditioning / surfactant	1	12,0
BETA VULGARIS ROOT EXTRACT	89957-89-1	Beta Vulgaris Root Extract is an extract of the roots of the Sugar Beet, Beta vulgaris L., Chenopodiaceae	skin condtioning	1	12,0
GLYCERYL TRIACETATE CAPRYLATE				1	12,0
CYMBOPOGON MARTINI OIL	84649-81-0	Cymbopogon Martini Oil is the volatile oil expressed from the herb palmarosa, Cymbopogon martini, Gramineae	tonic	1	12,0
DIMETHICONOL	31692-79-2	Poly[oxy(dimethylsilylane)], .alpha.-hydro-.omega.-hydroxy-	antifoaming / emollient / moisturising	1	12,0
ARACHIS HYPOGAEA OIL	2228-77-7	Arachis Hypogaea Oil is the refined fixed oil obtained from the seed kernels of one or more of the cultivated varieties of the peanut, Arachis hypogaea, Leguminosae	emollient / solvent	1	11,0
CITRUS AURANTIUM BERGAMIA FRUIT EXTRACT	89957-91-5	Citrus Aurantium Bergamia Fruit Extract is an extract of the fruit of the Bergamot, Citrus aurantium L. var. bergamia, Rutaceae	skin conditioning	1	11,0
PALMITIC ACID	57-10-3	Hexadecanoic acid	emollient / emulsifying	1	11,0
MICA	12001-26-2	Mica-group minerals (CI 77019).	opacifying	1	11,0
LANOLIN	8006-54-0	Lanolin. Fat-like substance derived from sheep wool. Contains a complex combination of esters and polyesters, consisting chiefly of cholesteryl and isocholesteryl esters of the higher fatty acids.	antistatic / emollient / emulsifying / skin conditioning / hair conditioning / surfactant	1	11,0
PELARGONIUM GRAVEOLENS OIL	90082-51-2	Pelargonium Graveolens Oil is the volatile oil obtained from the flowers of Pelargonium graveolens, Geraniaceae	tonic	1	11,0

Tabel 3.1 All 244 ingredients in cosmetic products marketed as "non-preserved"					
INCI Name	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
DISTARCH PHOSPHATE	55963-33-2	Starch, phosphoric acid ester (2:1)	binding / anticaking / absorbent	1	11,0
OLEIC ACID	112-80-1	9-Octadecenoic acid (9Z)-	emollient / emulsifying	1	10,0
LAVANDULA HYBRIDA OIL	8022-15-9	Lavandula Hybrida Oil is the essential oil obtained from the flowers of the lavandin, Lavandula hybrida, Labiatae.	emollient	1	10,0
CITRUS NOBILIS FRUIT EXTRACT	84929-38-4	Citrus Nobilis Fruit Extract is an extract of the fruit of the mandarin orange, Citrus nobilis.	skin conditioning	1	10,0
CITRUS GRANDIS SEED EXTRACT	90045-43-5	Citrus Grandis Seed Extract is an extract of the seeds of the grapefruit, Citrus grandis, Rutaceae.	skin conditioning / astringent / tonic	1	10,0
PEG-100 STEARATE	9004-99-3	Poly(oxy-1,2-ethanediyl), .alpha.-(1-oxooctadecyl)-.omega.-hydroxy-	surfactant	1	10,0
PEG-14M	25322-68-3	Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-hydroxy-	binding / emulsion stabilising / viscosity controlling	1	10,0
CETYL PALMITATE	540-10-3	Hexadecyl hexadecanoate	emollient	1	9,0
SIMMONDSIA CHINENSIS CERA	61789-91-1	Simmondsia Chinensis Cera is a waxy substance obtained from the seeds of Simmondsia chinensis, Buxaceae	emollient / hair conditioning / skin conditioning / viscosity controlling	1	9,0
HYDROGENATED CASTOR OIL	8001-78-3	Castor oil, hydrogenated.	emollient / emulsifying / surfactant / viscosity controlling / skin conditioning	1	9,0
DISODIUM EDTA	139-33-3	Disodium dihydrogen ethylenediaminetetraacetate.	chelating / viscosity controlling	1	9,0
CETEARYL GLUCOSIDE	246159-33-1	D-Glucopyranose, C16-C18 alkyl glycosides	emulsifying	1	8,0
ALUMINUM STARCH OCTENYLSUCCINATE	9087-61-0	Starch, hydrogen octenylbutanedionate, aluminum salt	absorbent / viscosity controlling / anticaking	1	8,0
TRIBEHENIN	18641-57-1	Propane-1,2,3-triyl tridocosanoate.	emollient / skin conditioning	1	8,0
SORBITAN OLIVATE	223706-40-9	D-Glucitol, 1,4-Anhydro-, 6-monoester with olive oil fatty acids	emulsifying	1	8,0
GUAR HYDROXYPROPYLTRIMONIUM CHLORIDE	65497-29-2	Guar gum, 2-hydroxy-3-(trimethylammonio)propyl ether, chloride	antistatic / film forming / viscosity controlling / skin conditioning	1	8,0
ORYZA SATIVA POWDER	68553-81-7	Oryza Sativa Powder is the powder obtained by grinding the dried seeds of the Rice, Oryza sativa L., Poaceae	bulking /antimicrobial ?	1	8,0
MALIC ACID	97-67-6	Butenedioic acid, hydroxy-, (2S)-	buffering	1	8,0
ISOPROPYL PALMITATE	142-91-6	Isopropyl palmitate.	antistatic / binding / emollient / solvent / skin conditioning	1	8,0
POLYGLYCERYL-4 ISOSTEARATE	91824-88-3	1,2,3-Propanetriol, homopolymer, isooctadecanoates (1:1) (4 mol glycerol average molar ratio)	emulsifying	1	8,0

Tabel 3.1 All 244 ingredients in cosmetic products marketed as "non-preserved"					
INCI Name	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
ROSMARINUS OFFICINALIS OIL	8000-25-7	Rosmarinus Officinalis Oil is the volatile oil obtained from the flowering tops of the rosemary, Rosmarinus officinalis, Labiatae	tonic / refreshing	1	8,0
PEG-150 DISTEARATE	2595-26-8	Poly(oxy-1,2-ethanediyl), .alpha.-(1-oxooctadecyl)-.omega.-[(1-oxooctadecyl)oxy]-	emulsifying / surfactant / viscosity controlling	1	8,0
DISODIUM PHOSPHATE	7558-79-4	Disodium hydrogenorthophosphate.	buffering	1	8,0
CARNAUBA ACID WAX	442682-58-8	Carnauba Acid Wax is the acid portion obtained from the leaves of the palm tree, Copernicia cerifera, Palmaceae	absorbent / binding / film forming / viscosity	1	7,0
SESAMUM INDICUM SEED OIL	8008-74-0	Sesamum Indicum Seed Oil is the oil obtained from the seed of the Sesame, Sesamum indicum L., Pedaliaceae	emollient / hair conditioning / masking / skin conditioning	1	7,0
CETEARYL OLIVATE		Cetearyl Olivate is the ester of Cetearyl Alcohol and the fatty acids derived from olive oil	hair conditioning	1	7,0
THEOBROMA CACAO BUTTER	8002-31-1	Theobroma Cacao Butter is a yellowish white solid material obtained from the roasted seeds of Theobroma cacao, Sterculiaceae	emollient	1	7,0
SODIUM METHYL COCOYL TAURATE	61791-42-2	Ethanesulfonic acid, 2-(methylamino)-, N-coco acyl derivs., sodium salts.	surfactant / foaming / cleansing	1	7,0
METHYL GLUCOSE DIOLEATE	82933-91-3	D-glucopyranoside methyl 2,6-dioleate.	emollient / humectant / skin conditioning	1	7,0
LAURYL METHYL GLUCETH-10 HYDROXYPROPYLDIMONIUM CHLORIDE		D-Glucopyranose, methyl ether, ethoxylated, 3-(N-dodecyl-N,N-dimethylammonio)-2-hydroxypropyl ethers (10 mol EO average molar ratio)	antistatic / hair conditioning	1	7,0
FAEX	68876-77-7	Naturally occurring substances, yeast	skin conditioning	1	7,0
POLYGLYCERYL-3 OLEATE	33940-98-6	Oleic acid, monoester with triglycerol.	emulsifying	1	7,0
CERESIN	8001-75-0	Ceresin. A complex combination of hydrocarbons produced by the purification of ozocerite with sulfuric acid and filtration through bone black to form waxy cakes.	antistatic / binding / emulsion stabilising / opacifying / viscosity controlling / hair conditioning	1	6,0
ALOE BARBADENSIS LEAF POWDER	85507-69-3	Aloe Barbadensis Leaf Powder is the powder obtained from the dried gound leaves of the aloe, Aloe barbadensis, Liliaceae	skin conditioning	1	6,0
SORBITAN ISOSTEARATE	71902-01-7	Sorbitan, isooctadecanoate.	emulsifying	1	6,0
BRASSICA CAMPESTRIS OLEIFERA OIL	8002-13-9	Brassica Campestris Oleifera Oil is the oil expressed from the seeds of the rape, Brassica campestris oleifera, Brassicaceae	emollient	1	6,0
GLYCERYL LAURATE	27215-38-4	Lauric acid, monoester with glycerol / 2,3-dihydroxypropyl laurate.	emollient / emulsifying	1	6,0

Tabel 3.1 All 244 ingredients in cosmetic products marketed as "non-preserved"					
INCI Name	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
ISONONYL ISONONANOATE	59219-71-5	3,5,5-trimethylhexyl 3,5,5-trimethylhexanoate.	antistatic / emollient / skin conditioning	1	6,0
EUCALYPTUS GLOBULUS LEAF EXTRACT	84625-32-1	Eucalyptus Globulus Leaf Extract is an extract of the fresh leaves of the Eucalyptus, Eucalyptus globulus, Myrtaceae	perfuming / skin conditioning	1	6,0
PEG-7 GLYCERYL COCOATE	68201-46-7	Glycerides, coco mono- and di-, ethoxylated	emulsifying / surfactant	1	6,0
HELIANTHUS ANNUUS SEED OIL	8001-21-6	Helianthus Annuus Seed Oil is the oil expressed from the seeds of the sunflower, Helianthus annuus, Compositae	emollient / skin conditioning / masking	1	5,0
LAVANDULA ANGUSTIFOLIA EXTRACT	90063-37-9	Lavandula Angustifolia Extract is an extract of the flowers of the lavender, Lavandula angustifolia, Labiatae	tonic / refreshing / cleansing / deodorant / masking	1	5,0
JOJOBA ESTERS		Oils, jojoba, product with hydrogenated jojoba wax	skin conditioning / emollient / soothing / moisturising	1	5,0
COCAMIDOPROPYL BETAINAMIDE MEA CHLORIDE	164288-56-6	1-Propanaminium, 3-amino-N-[2[(2-hydroxyethyl)amino]2-oxoethyl]-N,N-dimethyl-, N-C12-18 acyl derivatives, chlorides	cleansing / foam boosting / surfactant	1	5,0
MACADAMIA TERNIFOLIA SEED OIL	128497-20-1	Macadamia Ternifolia Seed Oil is the fixed oil obtained from the nuts of the macadamia tree, Macadamia ternifolia, Proteaceae. It consists primarily of the glycerides of the fatty acids	emollient	1	5,0
DIHYDROGENATED PALMOYLETHYL HYDROXYETHYLMONIUM METHOSULFATE	91995-81-2	Tris-(2-hydroxyethyl)methylammonium methyl sulfate, diester with hydrogenated palm oil fatty acids	antistatic / hair conditioning	1	5,0
SODIUM LAURETH-11 CARBOXYLATE	53610-02-9	Sodium salt of the carboxylic acid derived from Laureth-11	surfactant / cleansing / foaming	1	4,0
SESAMUM INDICUM DAUCUS CAROTA		Sesamolie med gulerodsolie		1	4,0
BUTYLENE GLYCOL	107-88-0	Butane-1,3-diol.	humectant / solvent	1	4,0
GLYCERYL STEARATE SE	11099-07-3	Octadecanoic acid, reaction products with 1,2,3-propanetriol (1:1), neutralized	emulsifying	1	4,0
CETEARYL ETHYLHEXANOATE	90411-68-0	Hexanoic acid, 2-ethyl-, C16-18-alkyl esters.	emollient	1	3,0
CERA MICROCRISTALLINA	63231-60-7	Paraffin waxes and Hydrocarbon waxes, microcryst.. A complex combination of long, branched chain hydrocarbons obtained from residual oils by solvent crystallization. It consists predominantly of saturated straight and branched chain hydrocarbons predomina	binding / emulsion stabilising / opacifying / viscosity controlling	1	3,0
SHOREA STENOPTERA BUTTER	91770-65-9	Shorea Stenoptera Extract is a fat obtained from the fruits and seeds of Shorea stenoptera, Dipterocarpaceae	emollient	1	3,0

Tabel 3.1 All 244 ingredients in cosmetic products marketed as "non-preserved"					
INCI Name	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
CETRIMONIUM CHLORIDE	112-02-7	1-Hexadecanaminium, N,N,N-trimethyl-, chloride	antimicrobial / antistatic / emulsifying / preservative / surfactant	1	3,0
SODIUM SUCROSE OCTASULFATE	74135-10-7	alfa-D-glucopyranoside, 1,3,4,6-tetra-O-sulfo-beta-D-fructofuranosyl, tetrakis(hydrogen sulfate), octasodium salt	skin condtioning	1	3,0
ALCOHOL DENAT.	64-17-5	Ethanol denatured in accordance with Customs and Excise regulations	antifoaming / antimicrobial / astringent / masking / solvent / viscosity controlling	1	3,0
BAMBUSA ARUNDINACEA STEM EXTRACT	91771-32-3	Bambusa Arundinacea Stem Extract is an extract of the stems of the Bamboo, Bambusa arundinacea, Poaceae	skin conditioning	1	3,0
ROSA DAMASCENA FLOWER OIL	8007-01-0	Rosa Damascena Flower Oil is the volatile oil obtained from the flowers of the Damask Rose, Rosa damascena, Rosaceae	masking / skin conditioning	1	3,0
OCTYLDODECANOL	5333-42-6	2-octyldodecan-1-ol.	emollient / solvent	1	3,0
ISOCETYL STEARATE	25339-09-7	Isohexadecyl stearate.	emollient / skin conditioning	1	3,0
PARAFFIN	8002-74-2	Paraffin waxes and Hydrocarbon waxes. A complex combination of hydrocarbons obtained from petroleum fractions by solvent crystallization (solvent deoiling) or by the sweating process. It consists predominantly of straight chain hydrocarbons having carbon	emollient / viscosity controlling	1	3,0
LAVANDULA ANGUSTIFOLIA HERB OIL	90063-37-9	Lavandula Angustifolia Herb Oil is an essential oil distilled from the flowering herbs of the lavender, Lavandula angustifolia, Labiatae - NOT an official INCI name	perfuming	1	3,0
DECYL OLEATE	3687-46-5	Decyl oleate.	emollient	1	3,0
ANTHEMIS NOBILIS FLOWER WATER	84649-86-5	Anthemis Nobilis Flower Water is the aqueous solution of the steam distillate obtained from the flowers of the Roman Chamomile, Anthemis nobilis L., Compositae	masking / skin conditioning	1	2,0
ROSA DAMASCENA FLOWER EXTRACT	90106-38-0	Rosa Damascena Flower Extract is an extract of the flowers of the Damask Rose, Rosa damascena, Rosaceae	masking / tonic	1	2,0
TRICAPRYLIN	538-23-8	Glycerol trioctanoate.	emollient / solvent / skin conditioning	1	2,0
HELIANTHUS ANNUUS HYPERICUM PERFORATUM		Solsikkeolie. Men hypericum perforatum står som INCI navn alene		1	2,0
POTASSIUM ALUM	10043-67-1	Aluminium potassium bis(sulphate).	antiperspirant / deodorant	1	2,0

Tabel 3.1 All 244 ingredients in cosmetic products marketed as "non-preserved"					
INCI Name	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Average ranking
PRUNUS ARMENIACA KERNEL OIL	72869-69-3	Prunus Armeniaca Kernel Oil is the fixed oil expressed from the kernels of the apricot, Prunus armeniaca, Rosaceae. It consists primarily of the glycerides of the fatty acids	emollient / skin conditioning	1	2,0
DISODIUM LAUROAMPHODIACETATE	14350-97-1	Disodium 1-[2-(carboxymethoxy)ethyl]-1-(carboxymethyl)-4,5-dihydro-2-undecyl-1H-imidazolium hydroxide.	antistatic / surfactant / viscosity controlling / foaming / cleansing	1	2,0
ETHYLHEXYL PALMITATE	29806-73-3	2-ethylhexyl palmitate.	emollient	1	2,0
ALOE BARBADENSIS	85507-69-3	Aloe Barbadensis is a plant material derived from the leaves of the aloe, Aloe barbadensis, Liliaceae.	emollient	1	1,0
LAVANDULA ANGUSTIFOLIA FLOWER WATER	90063-37-9	Lavandula Angustifolia Flower Water is an aqueous solution of the steam distillate obtained from the flowers of the Lavender, Lavandula angustifolia, Labiatae	skin conditioning	1	1,0
ROSA CENTIFOLIA FLOWER WATER	84604-12-6	Rosa Centifolia Flower Water is an aqueous solution of the steam distillate obtained from the flowers of the Cabbage Rose, Rosa centifolia (L.), Rosaceae	skin conditioning / skin protecting	1	1,0

3.2 Ingredients in products marketed as "naturally-preserved"

In all 327 different ingredients are used in the 44 products that are marketed as "non-preserved". The ingredients are listed after falling frequency.

Tabel 3.2 All 327 diferent ingredients present in cosmetic products marketed as "naturally-preserved"					
INCI Name	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Avarage ranking
AQUA	7732-18-5	Water.	solvent	42	1,2
GLYCERIN	56-81-5	Glycerol.	denaturant / humectant / solvent	32	6,0
LIMONENE	5989-27-5	(R)-p-Mentha-1,8-diene; (4R)-1-Methyl-4-(1-methylethenyl)cyclohexene	masking / perfuming	24	17,0
XANTHAN GUM	11138-66-2	Xanthan gum.	binding / emulsion stabilising / viscosity controlling / gel forming	22	12,8
LINALOOL	78-70-6	1,6-Octadien-3-ol, 3,7-dimethyl-	deodorant	19	20,7
TOCOPHEROL	10191-41-0	3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-ol.	antioxidant / skin conditioning	18	19,6
ALCOHOL	64-17-5	Ethanol.	antifoaming / antimicrobial / astringent / masking / solvent viscosity controling	18	3,4
PARFUM		Perfume and aromatic compositions and their raw materials	deodorant / masking / perfuming	16	13,7
GERANIOL	106-24-1	2,6-Octadien-1-ol, 3,7-dimethyl-, (2E)-	tonic	16	21,8

Tabel 3.2 All 327 diferent ingredients present in cosmetic products marketed as "naturally-preserved"					
INCI Name	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Avarage ranking
COCO-GLUCOSIDE		Alcohols, coco, reaction products with glucose	surfactant / foaming / cleansing	13	6,2
LACTIC ACID	50-21-5	Propanoic acid, 2-hydroxy-	buffering / humectant / skin conditioning	12	14,0
CETEARYL ALCOHOL	67762-27-0	Alcohols, C16-18.	emollient / emulsifying / emulsion stabilising / opacifying / viscosity controlling	11	7,5
CITRONELLOL	106-22-9	Citronellol.	masking	11	23,5
CITRAL	5392-40-5	2,6-Octadienal, 3,7-dimethyl-	masking	10	23,6
LECITHIN	8002-43-5	Lecithins. The complex combination of diglycerides of fatty acids linked to the choline ester of phosphoric acid.	antistatic / emollient / emulsifying / skin conditioning	10	17,4
BUTYROSPERMUM PARKII BUTTER	91080-23-8	Butyrospermum Parkii Butter is the fat obtained from the fruit of the karite tree, Butyrospernum parkii, Sapotaceae	skin conditioning / emollient	9	8,2
GLYCERYL OLEATE	25496-72-4	Oleic acid, monoester with glycerol.	emollient / emulsifying	9	10,9
STEARIC ACID	57-11-4	Stearic acid.	emulsifying / emulsion stabilising / refatting / cleansing	9	12,4
ASCORBYL PALMITATE	137-66-6	6-O-palmitoylascorbic acid.	antioxidant	8	21,5
ALOE BARBADENSIS LEAF JUICE	85507-69-3	Aloe Barbadensis Leaf Juice is the juice expressed from the leaves of the aloe, Aloe barbadensis, Liliaceae	skin conditioning	8	4,3
SODIUM LACTATE	72-17-3	Sodium lactate.	buffering / humectant	8	13,6
PANTHENOL	81-13-0	Butanamide, 2,4-dihydroxy-N-(3-hydroxypropyl)-3,3-dimethyl-, (2R)-	antistatic / hair conditioning / skin conditioning	8	9,4
EUGENOL	97-53-0	Phenol, 2-methoxy-4-(2-propenyl)	denaturant / tonic	7	24,9
HELIANTHUS ANNUUS SEED OIL	8001-21-6	Helianthus Annuus Seed Oil is the oil expressed from the seeds of the sunflower, Helianthus annuus, Compositae	emollient / skin conditioning / masking	7	10,7
HYDROGENATED PALM GLYCERIDES CITRATE	91744-68-2	Glycerides, palm-oil mono-, di-, and tri- hydrogenated, citrates	skin conditioning / emollient	6	25,3
CITRIC ACID	77-92-9	2-Hydroxy-1,2,3-propanetricarboxylic acid	buffering / chelating	6	14,5
SIMMONDSIA CHINENSIS SEED OIL	90045-98-0	Simmondsia Chinensis Seed Oil is the fixed oil expressed or extracted from seeds of the desert shrub, Jojoba, Simmondsia chinensis, Buxaceae	emollient / hair conditioning / skin conditioning	6	10,0
COCOS NUCIFERA OIL	8001-31-8	Cocos Nucifera Oil is the fixed oil extracted from the dried endosperm of Cocos nucifera, Palmae.	emollient / solvent	5	6,4
SODIUM BENZOATE	532-32-1	Sodium benzoate.	preservative	5	15,0

Tabel 3.2 All 327 diferent ingredients present in cosmetic products marketed as "naturally-preserved"					
INCI Name	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Avarage ranking
PALMITIC ACID	57-10-3	Hexadecanoic acid	emollient / emulsifying	5	7,2
GLYCERYL STEARATE	31566-31-1	Stearic acid, monoester with glycerol.	emollient / emulsifying	5	8,8
CAMELIA SINENSIS LEAF EXTRACT	84650-60-2	Camelia Sinensis Extract is an extract of the leaves of the tea plant, Camelia sinensis, Theaceae	antimicrobial / antioxidant / astringent / emollient / humectant / masking / oral care / skin conditioning / skin protection / tonic / UV-absorber	5	12,4
SESAMUM INDICUM SEED OIL	8008-74-0	Sesamum Indicum Seed Oil is the oil obtained from the seed of the Sesame, Sesamum indicum L., Pedaliaceae	emollient / hair conditioning / masking / skin conditioning	5	3,6
MELALEUCA QUINQUENERVIA OIL	132940-73-9	Melaleuca Quinquenervia Oil is an essential oil hydrodistilled from the leaves of the plant, Melaleuca quinquenervia, Myrtaceae. Syn. Niaouli oil	perfuming	5	23,0
CERA ALBA	8012-89-3	Beeswax. The wax obtained from the honeycomb of the bee. It consists primarily of myricyl palmitate, cerotic acid and esters and some high-carbon paraffins.	emollient / emulsifying / film forming / perfuming	5	10,2
SILICA	7631-86-9	Silicon dioxide.	abrasive / absorbent / opacifying / viscosity controlling / anticaking / bulking	4	4,3
COUMARIN	91-64-5	Coumarin.	masking	4	22,8
LAVANDULA ANGUSTIFOLIA OIL	8000-28-0	Lavandula Angustifolia Oil is the volatile oil obtained from the flowers of Lavandula officinalis, Labiatae.	tonic / masking	4	9,8
LAURYL GLUCOSIDE	110615-47-9	D-Glucose homopolymer, dodecyl ether	cleansing / surfactant	4	8,3
POTASSIUM SORBATE	24634-61-5	Potassium (E,E)-hexa-2,4-dienoate.	preservative	4	14,3
GUAR HYDROXYPROPYLTRIMONIUM CHLORIDE	65497-29-2	Guar gum, 2-hydroxy-3-(trimethylammonio)propyl ether, chloride	antistatic / film forming / viscosity controlling / skin conditioning	4	22,0
PRUNUS AMYGDALUS DULCIS OIL	8007-69-0	Prunus Amygdalus Dulcis Oil is the fixed oil obtained from the ripe seeds of the sweet almond, Prunus amygdalus dulcis, Rosaceae. It consist primarily of the glycerides of the fatty acids.	emollient / skin conditioning	4	5,8
DISODIUM COCOYL GLUTAMATE	68187-30-4	L-Glutamic acid, N-coco acyl derivs., disodium salts.	surfactant	4	5,3
GLYCERYL STEARATE SE	11099-07-3	Octadecanoic acid, reaction products with 1,2,3-propanetriol (1:1), neutralized	emulsifying	4	5,0
ROSA DAMASCENA FLOWER OIL	8007-01-0	Rosa Damascena Flower Oil is the volatile oil obtained from the flowers of the Damask Rose, Rosa damascena, Rosaceae	masking / skin conditioning	4	9,8

Tabel 3.2 All 327 diferent ingredients present in cosmetic products marketed as "naturally-preserved"					
INCI Name	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Avarage ranking
HYDROLYZED WHEAT PROTEIN	94350-06-8	Protein hydrolyzates, wheat germ. Substance obtained by acidic, alkaline, or enzymatic hydrolysis of wheat germ composed primarily of amino acids, peptides, and proteins. It may contain impurities consisting chiefly of carbohydrates and lipids along with	antistatic / hair conditioning / skin conditioning	4	12,3
CAPRYLIC/CAPRIC TRIGLYCERIDE	73398-61-5	Triglycerides, mixed decanoyl and octanoyl.	emollient / solvent	4	10,5
CETYL ALCOHOL	36653-82-4	Hexadecan-1-ol.	emollient / emulsifying / opacifying / viscosity controlling	4	14,3
PERSEA GRATISSIMA OIL UNSAPONIFIABLES	91770-40-0	Persea Gratissima Oil Unsaponifiables is the fraction of Persea gratissima (Persea gratissima, Lauraceae) oil which has not been transformed into soaps during the process of saponification	emollient	3	13,0
GLYCOL DISTEARATE	627-83-8	Ethylene distearate.	emollient / emulsifying / opacifying / viscosity controlling / skin conditioning	3	7,3
FARNESOL	4602-84-0	2,6,10-Dodecatrien-1-ol, 3,7,11-trimethyl-	soothing / solvent / deodorant	3	29,7
ROSMARINUS OFFICINALIS LEAF EXTRACT	84604-14-8	Rosmarinus Officinalis Leaf Extract is an extract of the leaves of the Rosemary, Rosmarinus officinalis L., Lamiaceae	antimicrobial / masking / skin conditioning	3	9,7
MENTHA PIPERITA OIL	8006-90-4	Mentha Piperita Oil is the volatile oil obtained from the leaves of the peppermint, Mentha piperita, Labiatae	tonic / refreshing / deodorant / masking	3	14,0
POGOSTEMON CABLIN OIL	8014-09-3	Pogostemon Cablin Oil is the volatile oil obtained from the patchouli, Pogostemon cablin, Labiatae	masking / antimicrobial ?	3	15,0
CHAMOMILLA RECUTITA EXTRACT	84082-60-0	Chamomilla Recutita Extract is an extract of the flowerheads of the matricaria, Chamomilla recutita, Compositae	emollient / antimicrobial?	3	10,3
CANANGA ODORATA OIL	8006-81-3	Cananga Odorata Oil is the oil obtained from the flower of the ylang-ylang, Cananga odorata, Annonaceae.	solvent	3	13,3
GLYCINE SOJA OIL	8001-22-7	Glycine Soja Oil is the oil obtained from the beans of soy, Glycine soja, Leguminosae, by extraction or expression. It consists esentially of triglycerides of oleic, linoleic and saturated acids	emollient / skin conditioning	3	5,7
AROMA		Flavours or aromatic compositions and their ingredients	flavouring	3	14,7
RETINYL PALMITATE	79-81-2	Retinyl palmitate.	skin conditioning	3	17,0
TITANIUM DIOXIDE	13463-67-7	Titanium dioxide (CI 77891).	opacifying / uv absorber	3	6,0
HYDROGENATED PALM GLYCERIDES	91744-66-0	Glycerides, palm-oil mono-, di- and tri-, hydrogenated.	emollient / emulsifying / skin conditioning / viscosity controlling	3	7,7

Tabel 3.2 All 327 diferent ingredients present in cosmetic products marketed as "naturally-preserved"					
INCI Name	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Avarage ranking
UREA	57-13-6	Urea.	antistatic / humectant / skin conditioning	3	7,0
CITRUS AURANTIFOLIA OIL	8008-26-2	Citrus Aurantifolia Oil is the volatile oil obtained from the fruits of Citrus aurantifolia, Rutaceae.	skin conditioning / hair conditioning / tonic / cleansing	3	14,3
SODIUM COCOYL GLUTAMATE	68187-32-6	L-Glutamic acid, N-coco acyl derivs., monosodium salts.	surfactant / cleansing	3	6,7
COCAMIDOPROPYL BETAINE	61789-40-0	1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-coco acyl derivs., hydroxides, inner salts.	surfactant / cleansing / foam boosting	3	4,0
ALCOHOL DENAT.	64-17-5	Ethanol denatured in accordance with Customs and Excise regulations	antifoaming / antimicrobial / astringent / masking / solvent / viscosity controlling	3	3,0
CITRUS PARADISI OIL	8016-20-4		masking	3	16,0
SODIUM ASCORBYL PHOSHATE	66170-10-3	L-Ascorbic acid, 2-(dihydrogen phosphate), trisodium salt	antioxidant	3	16,7
ELAEIS GUINEENSIS KERNEL OIL	8023-79-8	Elaeis Guineensis Kernel Oil is the oil obtained from the seeds of the palm, Elaeis guineensis, Palmae	emollient	3	2,0
HYDROGENATED LECITHIN	92128-87-5	Lecithins, hydrogenated.	emulsifying / skin conditioning	3	14,0
OLEA EUROPAEA FRUIT OIL	8001-25-0	fixed oil obtained from the ripe fruit of the Olive, Olea europaea L., Oleaceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic and palmitic	emollient / perfuming / solvent	3	4,0
ALLANTOIN	97-59-6	Urea, (2,5-dioxo-4-imidazolidinyl)	soothing	3	15,0
OENOTHERA BIENNIS OIL	90028-66-3	Oenothera Biennis Oil is the fixed oil derived from the seeds of the evening primrose, Oenothera biennis, Onagraceae. It consists primarily of the glycerides of the fatty acids	emollient	3	7,7
CHONDRUS CRISPUS	9000-07-1	Chondrus Crispus (Carrageenan) is the plant material obtained from various members of the Gigartinaceae or Solieriaceae families of the Red Seaweed, Rodophyceae	hair conditioning / masking	3	7,7
BENZYL BENZOATE	120-51-4	Benzyl benzoate.	antimicrobial / perfuming / solvent	2	24,0
METHYLISOTHIAZOLINONE	2682-20-4	2-methyl-2H-isothiazol-3-one.	preservative	2	22,0
ALOE BARBADENSIS LEAF EXTRACT	85507-69-3	Aloe Barbadensis Leaf Extract is an extract of the leaves of the aloe, Aloe barbadensis, Liliaceae	emollient / humectant / oral care / skin conditioning	2	14,5
LAURYL ALCOHOL	112-53-8	Dodecan-1-ol.	emollient / emulsion stabilising / viscosity controlling / emulsifying	2	20,5

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LEPTOSPERMUM PETERSONII OIL	85085-43-4	Leptospermum Petersonii Oil is an essential oil obtained from hydrodistillation of the leaves of the plant, Leptospermum petersonii, Myrtaceae. Syn. Lemon scented Tea tree oil	masking / perfuming	2	11,0
BACKHOUSIA ANISATA LEAF EXTRACT		Backhousia Anisata Leaf Extract is an extract of the leaves of Backhousia anisata, Myrtaceae	emollient / hair conditioning / humectant / skin conditioning	2	13,0
OLEA EUROPAEA OIL UNSAPONIFIABLES	8001-25-0	Olea Europaea Oil Unsaponifiables is the fraction of olive (Olea europaea, Oleaceae) oil which has not been transformed into soaps during the process of saponification	emollient	2	14,0
MACADAMIA TERNIFOLIA SEED OIL	128497-20-1	Macadamia Ternifolia Seed Oil is the fixed oil obtained from the nuts of the macadamia tree, Macadamia ternifolia, Proteaceae. It consists primarily of the glycerides of the fatty acids	emollient	2	7,5
BRASSICA CAMPESTRIS STEROLS	90989-79-0	Brassica Campestris Sterols is a mixture of sterols obtained from the Cabbage, Brassica campestris L., Brassicaceae	emollient / skin conditioning	2	19,0
ARACHIS HYPOGAEA OIL	2228-77-7	Arachis Hypogaea Oil is the refined fixed oil obtained from the seed kernels of one or more of the cultivated varieties of the peanut, Arachis hypogaea, Leguminosae	emollient / solvent	2	5,5
ALGIN	9005-38-3	Alginic acid, sodium salt	binding / viscosity controlling	2	7,5
BACKHOUSIA CITRIODORA LEAF OIL	84775-80-4	Backhousia Citriodora Leaf Oil is the volatile oil obtained from the leaves of Backhousia citriodora, Myrtaceae	masking / perfuming	2	12,0
CETEARYL GLUCOSIDE	246159-33-1	D-Glucopyranose, C16-C18 alkyl glycosides	emulsifying	2	8,0
CITRUS SINENSIS OIL	95327-98-3			2	13,0
CYMBOPOGON MARTINI OIL	84649-81-0	Cymbopogon Martini Oil is the volatile oil expressed from the herb palmarosa, Cymbopogon martini, Gramineae	tonic	2	14,0
OLEUM SIMMONDSIAE CALIFORNICAE				2	4,5
DAUCUS CAROTA SATIVA ROOT EXTRACT	84929-61-3	Daucus Carota Sativa Root Extract is an extract of the roots of the Carrot, Daucus carota L. var. sativa, Umbelliferae	skin conditioning	2	9,5
DICAPRYLYL ETHER	629-82-3	Dioctyl ether.	solvent	2	19,5
CHITOSAN LACTATE	66267-50-6	Chitosan, 2-hydroxypropanoate salt	film forming	2	6,0
DISODIUM EDTA	139-33-3	Disodium dihydrogen ethylenediaminetetraacetate.	chelating / viscosity controlling	2	18,5
ELAEIS GUINEENSIS OIL	8002-75-3	Elaeis Guineensis Oil is a natural oil obtained from the fruits of the palm, Elaeis guineensis, Palmae	emollient	2	3,0

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ESCULIN	531-75-9	2H-1-Benzopyran-2-one, 6-(beta-D-glucopyranosyloxy)-7-hydroxy-	tonic	2	19,5
HELIANTHUS ANNUUS FLOWER EXTRACT	84776-03-4	Helianthus Annuus Flower Extract is the extract of the flowers of the Sunflower, Helianthus annuus L., Compositae	skin conditioning	2	12,5
FOENICULUM VULGARE OIL	8006-84-6	Foeniculum Vulgare Oil is the volatile oil obtained from the seeds of the fennel, Foeniculum vulgare, Umbelliferae.	tonic / emollient / soothing / skin conditioning	2	5,5
HYDROGENATED VEGETABLE OIL	68334-28-1	Oils, vegetable, hydrogenated.	emollient / skin conditioning	2	20,0
GLYCERYL CAPRYLATE	26402-26-6	Octanoic acid, monoester with glycerol.	emollient / emulsifying	2	7,0
CETEARETH-20	68439-49-6	C16-18 alcohols, ethoxylated (20 mol EO average molar ratio)	emulsifying / surfactant	2	7,5
CAPRYLYL/CAPRYL GLUCOSIDE		D-glucoside, mixed octyl and decyl	surfactant / cleansing / foaming	2	15,5
COCOGLYCERIDES	92045-31-3	Glycerides, coco.	emollient / emulsifying	2	5,5
CALLITRIS INTROTROPICA WOOD OIL	180287-43-8	Callitris Intratropica Wood Oil is the volatile oil obtained from the wood of Callitris intratropica, Cupressaceae	masking / tonic	2	19,0
D-ALPHA TOCOPHERYL ACETATE	1406-70-8	Vitamin E	antioxidant / masking / skin conditioning	2	8,5
CALENDULA OFFICINALIS FLOWER EXTRACT	84776-23-8	Calendula Officinalis Flower Extract is an extract obrained from the flowers of the Calendula, Calendula officinalis L., Compositae	masking / perfuming / skin conditioning	2	6,5
HYALURONIC ACID	9004-61-9	Hyaluronic acid.	antistatic / humectant / skin conditioning / moisturising	2	15,5
CALCIUM CARBONATE	471-34-1	Calcium carbonate. CI 77220	buffering / opacifying / oral care / abrasive	2	1,5
BUTYLENE GLYCOL	107-88-0	Butane-1,3-diol.	humectant / solvent	2	4,5
EUCALYPTUS RADIATA FLOWER/LEAF/STEM OIL	92201-64-4	Eucalyptus Radiata Flower/Leaf/Stem Oil is the volatile oil obtained from the flowers, leaves and stems of Eucalyptus, Eucalyptus radiata var. Australiana, Myrtaceae	masking	2	15,0
PHENOXYETHANOL	122-99-6	2-phenoxyethanol.	preservative	2	18,5
POLYGLYCERYL-10 LAURATE	34406-66-1	1,2,3-Propanetriol, homopolymer, dodecanoates (1:1) (10 mol glycerol average molar ratio)	skin conditioning	2	3,5
PRUNUS ARMENIACA KERNEL OIL	72869-69-3	Prunus Armeniaca Kernel Oil is the fixed oil expressed from the kernels of the apricot, Prunus armeniaca, Rosaceae. It consists primarily of the glycerides of the fatty acids	emollient / skin conditioning	2	8,5

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SANTALUM SPICATA WOOD OIL	8024-35-9	Santalum Spicata Wood Oil is an essential oil obtained from the wood of the Australian Sandalwood, Santalum spicata, Santalaceae. It contains 75% santalols and 10% farnesol	perfuming	2	18,0
PRUNUS PERSICA KERNEL OIL	8002-78-6	Prunus Persica Kernel Oil is the oil expressed from the kernels of the peach, Prunus persica, Rosaceae. It consists primarily of the glycerides of the fatty acids	emollient / skin conditioning	2	2,0
SQUALANE	111-01-3	2,6,10,15,19,23-hexamethyltetracosane.	emollient / hair conditioning / refatting / skin conditioning	2	5,0
SODIUM LAURYL GLUCOSE CARBOXYLATE		Sodium carboxymethyl ether of Lauryl Glucoside	cleansing / surfactant	2	4,0
PUNICA GRANATUM SEED OIL	84961-57-9	Punica Granatum Seed Oil is the oil expressed from the seeds of the Pomegranate, Punica granatum L., Punicaceae	emollient / antimicrobial ?	2	10,0
PIMPINELLA ANISUM EXTRACT	84775-42-8	Pimpinella Anisum Extract is an extract of the dried ripe fruit of the anise, Pimpinella anisum, Umbelliferae	oral care / masking	2	14,0
SODIUM PCA	28874-51-3	Sodium 5-oxo-2-pyrrolidinecarboxylate	antistatic / humectant / skin conditioning	2	13,5
PROPYLENE GLYCOL	57-55-6	Propane-1,2-diol.	humectant / solvent / skin conditioning / viscosity controlling	2	4,5
TOCOPHERYL ACETATE	7695-91-2	3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-benzopyran-6-yl acetate.	antioxidant	2	13,5
SORBITOL	50-70-4	D-glucitol.	humectant / plasticiser / skin conditioning	2	8,5
SESAMUM INDICUM OIL	8008-74-0	Sesamum Indicum Oil is the oil obtained from the seed of sesame, Sesamum indicum, Pedaliaceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic, palmitic and stearic	emollient / hair conditioning / skin conditioning	2	7,5
SANTALUM ALBUM OIL	8006-87-9	Santalum Album Oil is the volatile oil obtained from the heartwood of the sandalwood, Santalum album, Santalaceae	masking	2	17,0
PELARGONIUM GRAVEOLENS OIL	90082-51-2	Pelargonium Graveolens Oil is the volatile oil obtained from the flowers of Pelargonium graveolens, Geraniaceae	tonic	2	16,5
PANICUM MILIACEUM SEED EXTRACT	90082-36-3	Panicum Miliaceum Seed Extract is an extract of the seeds of the Millet, Panicum miliaceum L., Gramineae	skin conditioning / smoothing	2	11,0
SODIUM HYDROXIDE	1310-73-2	Sodium hydroxide.	buffering / denaturant	2	20,5
SODIUM STEAROYL LACTYLATE	25383-99-7	Sodium 2-stearoyllactate.	emulsifying	2	3,0
PROPOLIS CERA	85665-41-4	Propolis, ext.	antiseborrhoeic / moisturising / smoothing	2	19,5

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ROSA MOSCHATA SEED OIL		Rosa Moschata Seed Oil is the oil expressed from the seeds of the musk rose, Rosa moschata, Rosaceae	skin conditioning / emollient	2	7,0
SODIUM COCOAMPHOACETATE	68390-66-9	Imidazolium compounds, 1-(carboxymethyl)-4,5-dihydro-1-(hydroxyethyl)-2-norcoco alkyl, hydroxides, monosodium salts.	surfactant / foaming / cleansing / hair conditioning	2	3,5
SIMMONDSIA CHINENSIS OIL	61789-91-1	Simmondsia Chinensis Oil is the fixed oil expressed or extracted from seeds of the jojoba, Simmondsia chinensis, Buxaceae	emollient	2	6,5
HIPPOPHAE RHAMNOIDES EXTRACT	90106-68-6	Hippophae Rhamnoides Extract is an extract of the fruit of the seabuckthorn, Hippophae rhamnoides, Elaeagnaceae	skin conditioning / masking	2	12,0
ROSA DAMASCENA DISTILLATE	90106-38-0	Rosa Damascena Distillate is an aqueous solution containing volatile oils obtained by the distillation of the flowers of Rosa damascena, Rosaceae	skin protecting	2	1,5
ORYZANOL	11042-64-1	gamma-Oryzanol	antistatic / skin conditioning	2	24,5
SODIUM CETEARYL SULFATE	59186-41-3	Sulfuric acid, mixed cetyl and stearyl esters, sodium salts	surfactant / cleansing / foaming	2	18,0
TRITICUM VULGARE GERM OIL	68917-73-7	Triticum Vulgare Germ Oil is the oil obtained from the expression or extraction of wheat germ (Triticum vulgare, Graminae). It consists primarily of the glycerides of the fatty acids	emollient	2	9,0
SORBIC ACID	110-44-1	Hexa-2,4-dienoic acid.	preservative	1	9,0
SODIUM STEAROYL GLUTAMATE	38517-23-6	Sodium hydrogen N-(1-oxooctadecyl)-L-glutamate.	emulsifying / cleansing / hair conditioning / skin conditioning	1	7,0
CETEARYL OCTANOATE	90411-68-0			1	7,0
STEARAMIDOPROPYL DIMETHYLAMINE	2100-54-9	N-[3-(dimethylamino)propyl]stearamide.	antistatic / emulsifying / surfactant / hair conditioning	1	4,0
CARTHAMUS TINCTORIUS SEED OIL	8001-23-8	Carthamus Tinctorius Seed Oil is the oily liquid obtained from the seeds of Safflower, Carthamus tinctorius L., Compositae. It consists principally of the triglycerides of linoleic acid	masking / skin conditioning	1	4,0
CARRAGEENAN	2593-40-5	Carrageenan.	binding / emulsion stabilising / viscosity controlling / gel forming	1	9,0
CARBOMER	9007-20-9	2-Propenoic acid, polymer with 2,2-bis(hydroxymethyl)propane-1,3-diol 2-propenyl ether	emulsion stabilising / viscosity controlling / gel forming	1	12,0
CARAPA GUAIANENSIS OIL	223748-14-9	Carapa Guaianensis Oil is the fixed oil expressed from the seeds of Carapa guaianensis, Meliaceae	denaturant	1	27,0
STEARYL ALCOHOL	112-92-5	Octadecan-1-ol.	emollient / emulsion stabilising / opacifying / viscosity controlling / foam boosting / refatting	1	6,0

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CAPRYLIC/CAPRIC/STEARIC TRIGLYCERIDE		Octadecanoic acid, mixed triesters with octanoic acid, decanoic acid and 1,2,3-propanetriol	emollient / solvent	1	3,0
STYRAX BENZOIN GUM	2593-35-2	Styrax Benzoin Gum is a balsamic resin obtained from Styrax benzoin, Styracaceae. It is a product which may contain resin acids and their esters, terpenes, and oxidation or polymerisation products of these terpenes	film forming	1	21,0
CANDELILLA CERA	8006-44-8	Candelilla Cera is the candelilla wax obtained from Euphorbia cerifera, Euphorbiaceae	emollient / film forming	1	16,0
CEDRUS ATLANTICA OIL	8000-27-9	Cedrus Atlantica Oil is the volatile oil obtained from the bark of Cedrus atlantica, Pinaceae	tonic	1	14,0
SODIUM LAURYL SULFOACETATE	1847-58-1	Sodium 2-(dodecyloxy)-2-oxoethane-1-sulphonate.	surfactant / cleansing / foaming	1	5,0
SODIUM LAURETH SULFATE	9004-82-4	Poly(oxy-1,2-ethanediyl), .alpha.-sulfo-.omega.-(dodecyloxy)-, sodium salt	surfactant / cleansing / foaming	1	2,0
CITRUS MEDICA LIMONUM OIL	8008-56-8	Citrus Medica Limonum Oil is the volatile oil obtained from the fresh peel of Citrus medica limonum, Rutaceae.	tonic / masking	1	12,0
CITRUS LIMONUM LEAF EXTRACT	84929-31-7	Citrus Limonum Leaf Extract is an extract obtained from the leaves of the Lemon, Citrus limonum (syn: C. medica limon), Rutaceae - NOT OFFICIALLY AN INCI NAME BUT PERFUMING	perfuming	1	11,0
CITRUS GRANDIS SEED EXTRACT	90045-43-5	Citrus Grandis Seed Extract is an extract of the seeds of the grapefruit, Citrus grandis, Rutaceae.	skin conditioning / astringent / tonic	1	15,0
CITRUS BERGAMIA LEAF OIL	89957-91-5	Citrus Bergamia Leaf Oil is an essential oil obtained from the leaves of the Bergamot, Citrus bergamia risso, Rutaceae (not officially an INCI name but perfuming)	perfuming	1	18,0
CITRUS AURANTIUM DULCIS PEEL OIL	8008-57-9	Citrus Aurantium Dulcis Peel Oil is the volatile oil obtained by expression from the fresh peel of the ripe fruit of the sweet orange, Citrus aurantium var. dulcis, Rutaceae	astringent / masking / skin conditioning / tonic	1	10,0
CITRUS AURANTIUM BERGAMIA OIL	8007-75-8	Citrus Aurantium Bergamia Oil is the psoralen-free volatile oil obtained from the fruit of Citrus aurantium bergamia, Rutaceae	masking	1	13,0
CITRUS AURANTIUM BERGAMIA FRUIT OIL	8007-75-8	Citrus Aurantium Bergamia Fruit Oil is the psoralen-free volatile oil obtained from the fruit of Citrus aurantium bergamia, Rutaceae	masking	1	7,0

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CITRUS AURANTIUM AMARA LEAF OIL	68916-04-1	Citrus Aurantium Amara Leaf/Twig Oil is the volatile oil obtained from the leaves and twigs of the Bitter Orange, Citrus aurantium L. var. amara L., Rutaceae	flavouring / masking	1	9,0
CITRUS AURANTIUM AMARA FLOWER OIL	68916-04-1	Citrus Aurantium Amara Flower Oil is the volatile oil obtained from the flowers of the Bitter Orange, Citrus aurantium L. var. amara L., Rutaceae	masking / skin conditioning	1	12,0
CI 77492	51274-00-1	Iron oxide.	cosmetic colorant	1	29,0
SODIUM LAUROYL SARCOSINATE	137-16-6	Sodium N-lauroylsarcosinate.	antistatic / surfactant / viscosity controlling / emulsifying / hair conditioning / cleansing / foaming / skin conditioning	1	10,0
CHAMOMILLA RECUTITA FLOWER EXTRACT	84082-60-0	Chamomilla Recutita Flower Extract is an extract of the flowerheads of the matricaria, Chamomilla recutita (L.), Compositae	masking / skin conditioning /antimicrobial ?	1	14,0
CINNAMOMUM ZEYLANICUM EXTRACT	84649-98-9	Cinnamomum Zeylanicum Extract is an extract of the dried bark of the cinnamon, Cinnamomum zeylanicum, Lauraceae	tonic / deodorant / cleansing / refreshing /antimicrobial?	1	8,0
CINNAMAL	104-55-2	Cinnamaldehyde.	denaturant	1	11,0
CI 77891	13463-67-7	Titanium dioxide.	cosmetic colorant	1	31,0
C12-15 ALKYL BENZOATE	68411-27-8	Benzoic acid, C12-15-alkyl esters.	antimicrobial / emollient / skin conditioning	1	9,0
CI 77499	12227-89-3	Triiron tetraoxide.	cosmetic colorant	1	30,0
CI 77491	1309-37-1	Diiron trioxide.	cosmetic colorant	1	28,0
CI 77007	1302-83-6	Lazurite.	cosmetic colorant	1	32,0
CHONDRUS CRISPUS EXTRACT	244023-79-8	Chondrus Crispus Extract is an extract of the carrageenan, Chondrus crispus, Gigartinaceae	viscosity controlling	1	8,0
SODIUM LEVULINATE	19856-23-6	Sodium 4-oxovalerate.	skin conditioning	1	5,0
CHOLESTEROL	57-88-5	Cholest-5-en-3-ol (beta)-	emollient / emulsifying / stabilising	1	8,0
SODIUM LAUROAMPHOACETATE	68647-44-9	Sodium 1-(carboxymethyl)-4,5-dihydro-1(or 3)-(2-hydroxyethyl)-2-undecyl-1H-imidazolium hydroxide.	surfactant / cleansing / foaming / hair conditioning	1	4,0
ANIBA ROSAEODORA OIL	8015-77-8	Aniba Rosaeodora Oil is the volatile oil obtained from the wood of the tree, Aniba rosaeodora, Lauraceae	tonic	1	19,0
SYMPHYTUM OFFICINALE LEAF EXTRACT	84696-05-9	Symphytum Officinale Leaf Extract is an extract of the leaves of the comfrey, Symphytum officinale, Borraginaceae	skin conditioning	1	13,0

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ASCORBIC ACID	50-81-7	Ascorbic acid.	antioxidant / buffering	1	6,0
TRIETHYL CITRATE	77-93-0	Triethyl citrate.	antioxidant / deodorant / solvent / plasticiser	1	4,0
ARGANIA SPINOSA KERNEL OIL	223747-87-3	Argania Spinosa Kernel Oil is the fixed oil expressed from the kernels, Argania Spinosa (L.), Sapotaceae	emollient / skin conditioning	1	12,0
ARCTIUM LAPPA SEED OIL	84012-13-5	Arctium Lappa Seed Oil is the fixed oil expressed from the seeds of the burdock, Arctium lappa, Compositae	emollient / skin conditioning	1	7,0
ARCTIUM LAPPA ROOT EXTRACT	84012-13-5	Arctium Lappa Root Extract is an extract of the roots of the Burdock, Arctium lappa L., Asteraceae	skin conditioning	1	7,0
ARCTIUM LAPPA EXTRACT	84012-13-5	Arctium Lappa Extract is an extract of the roots of the burdock, Arctium lappa, Compositae	soothing / antiseborrhoeic / skin conditioning / astringent / tonic	1	8,0
URTICA DIOICA	84012-40-8	Urtica Dioica is the dried plant nettle, Urtica dioica, Urticaceae	hair conditioning	1	5,0
ANTHYLLIS VULNERARIA EXTRACT	89957-45-9	Anthyllis Vulneraria Extract is an extract of the flowers of Anthyllis vulneraria, Leguminosae	skin conditioning	1	3,0
ANTHEMIS NOBILIS OIL	8015-92-7	Anthemis Nobilis Oil is the volatile oil distilled from the dried flower heads of Anthemis nobilis, Compositae.	tonic / skin conditioning	1	14,0
AVENA SATIVA KERNEL EXTRACT	84012-26-0	Avena Sativa Kernel Extract is an extract of the kernels of oats, Avena sativa, Poaceae	abrasive	1	5,0
ANIBA ROSAEODORA WOOD OIL	8015-77-8	Aniba Rosaeodora Wood Oil is the volatile oil obtained from the wood of the tree, Aniba rosaeodora, Lauraceae	astringent / masking / perfuming / skin conditioning / tonic	1	13,0
BABASSUAMIDOPROPYL BETAINE	223704-95-8	1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-babassu-oil acyl derivatives, inner salt	surfactant / foam boosting / cleansing	1	6,0
ALUMINUM HYDROXIDE	21645-51-2	Aluminium hydroxide.	emollient / humectant / viscosity controlling	1	34,0
ALUMINA	1344-28-1	Aluminium oxide.	abrasive / opacifying / viscosity controlling	1	19,0
ALTHAEA OFFICINALIS LEAF EXTRACT	73049-65-7	Althaea Officinalis Leaf Extract is the extract of the leaves of the Marsh Mallow, Althaea officinalis L., Malvaceae	skin conditioning	1	9,0
URTICA DIOICA ROOT EXTRACT	84012-40-8	Urtica Dioica Root Extract is an extract of the roots of the Nettle, Urtica dioica L., Urticaceae	skin conditioning	1	16,0
VITIS VINIFERA FRUIT EXTRACT	84929-27-1	Vitis Vinifera Extract is an extract of the fruit of the Red Grape, Vitis Vinifera L., Vitaceae	skin conditioning / antimicrobial ?	1	14,0
WHEAT AMINO ACIDS		Amino acids, wheat	skin protecting / soothing / skin conditioning	1	11,0
XYLITOL	87-99-0	Xylitol.	humectant / skin conditioning	1	7,0

Tabel 3.2 All 327 diferent ingredients present in cosmetic products marketed as "naturally-preserved"					
INCI Name	**CAS No**	**Chemical name or description as stated on the INCI list**	**Function**	**In number of products**	**Avarage ranking**
YUCCA SCHIDIGERA FRUIT	90147-57-2	Yucca Schidigera Fruit is the fruit of the Small Soap Weed, Yucca schidigera, Liliaceae	skin protection	1	7,0
ZEA MAYS OIL	8001-30-7	Zea Mays Oil is the refined fixed oil obtained from wet milling of corn, Zea mays, Gramineae. It consists primarily of the glycerides of the fatty acids linoleic, oleic, palmitic and stearic	antistatic / emollient / solvent	1	7,0
ACRYLATES COPOLYMER	25133-97-5	2-propenoic acid, 2-methyl-, polymer with ethyl 2-propenoate and methyl 2-methyl-2-propenoate	antistatic / binding / film forming	1	7,0
ACHILLEA MILLEFOLIUM OIL	2236-20-6	Achillea Millefolium Oil is the oil obtained from the flowering herb of the yarrow, Achillea millefolium, Asteraceae.	soothing / antidandruff / refreshing / cleansing / tonic	1	19,0
ANTHEMIS NOBILIS FLOWER OIL	84649-86-5	"Chamomile Oil-Roman". Anthemis Nobilis Flower Oil is the volatile oil distilled from the dried flower heads of the Roman Chamomile, Anthemis nobilis L., Compositae. It contains mainly esters of angelica acid	masking / perfuming / skin conditioning	1	8,0
BORAGO OFFICINALIS SEED OIL	225234-12-8	Borago Officinalis Seed Oil is the fixed oil obtained from the seeds of Borago officinalis, Boraginaceae	emollient	1	26,0
CANANGA ODORATA FLOWER OIL	83863-30-3	Cananga Odorata Flower Oil is the oil obtained from the flower, Cananga odorata, Anonaceae. Definitions in ISO 3063	masking / perfuming	1	15,0
SUCROSE DISTEARATE	27195-16-0	Sucrose distearate.	emollient / emulsifying / skin conditioning	1	11,0
SULFUR	7704-34-9	Sulphur.	antidandruff / antistatic / antiseborrhoeic	1	30,0
CITRUS PARADISI SEED EXTRACT	90045-43-5	Citrus Paradisi Seed Extract is an extract of the seeds obtained from the Grapefruit, Citrus paradisi M., Rutaceae	masking / perfuming	1	4,0
TAGETES MINUTA FLOWER OIL	91770-75-1	Tagetes Minuta Flower Oil is the essential oil obtained from the flowers of the Tagetes, Tagetes minuta L., Compositae	masking / skin conditioning	1	20,0
BUTYROSPERMUM PARKII BUTTER EXTRACT	91080-23-8	Butyrospermum Parkii Butter Extract is an extract of shea butter, Butyrospermum parkii, Sapotaceae.	emollient	1	11,0
TERMINALIA FERDINANDIANA FRUIT EXTRACT		Terminalia Ferdinandiana Fruit Extract is an extract of the fruit of the Terminalia ferdinandiana, Combretaceae	antioxidant / bleaching	1	10,0
TETRAHYDROXYPROPYL ETHYLENEDIAMINE	102-60-3	1,1',1'',1'''-ethylenedinitrilotetrapropan-2-ol.	chelating	1	11,0
BROMELAIN	9001-00-7	Bromelain is a mixture of enzymes found in pineapple juice	keratolytic / skin conditioning	1	5,0
BRASSICA OLERACEA ITALICA SEED OIL		Brassica Oleracea Italica Seed Oil is the oil expressed from the seeds of the Broccoli, Brassica oleracea L. italica, Brassicaceae	emollient / hair conditioning / skin conditioning	1	3,0

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TRIETHANOLAMINE	102-71-6	2,2',2''-nitrilotriethanol.	buffering	1	13,0
THYMUS VULGARIS EXTRACT	84929-51-1	Thymus Vulgaris Extract is an extract of the flowers and leaves of the thyme, Thymus vulgaris, Labiatae	tonic / masking	1	12,0
SUCROSE COCOATE	91031-88-8	Fatty acids, coco, esters with sucrose.	antistatic / emulsifying / skin conditioning	1	14,0
BIOTIN	58-85-5	1H-Thieno[3,4-d]imidazole-4-pentanoic acid, hexahydro-2-oxo-,[3aS-(3a.alpha.,4.beta.,6a.alpha.)]-	hair conditioning / skin conditioning / antiseborrhoeic	1	20,0
BETULA ALBA LEAF EXTRACT	84012-15-7	Betula Alba Leaf Extract is an extract of the leaves of the birch, Betula alba, Betulaceae.	tonic / astringent / soothing / cleansing	1	6,0
BETAINE	107-43-7	Methanaminium, 1-carboxy-N,N,N-trimethyl-, hydroxide, inner salt	antistatic / viscosity controlling	1	13,0
BETAGLUCAN	26874-89-5	Beta-d-glucose homopolymer	skin conditioning / bulking	1	16,0
BENZYL SALICYLATE	118-58-1	Benzyl salicylate.	uv absorber	1	19,0
TILIA CORDATA FLOWER EXTRACT	84929-52-2	Tilia Cordata Flower Extract is an extract of the flowers of the Linden, Tilia cordata, Tiliaceae	skin conditioning	1	11,0
BENZYL ALCOHOL	100-51-6	Benzyl alcohol.	perfuming / preservative / solvent / viscosity controlling	1	17,0
BENZOPHENONE-3	131-57-7	2-Hydroxy-4-methoxybenzophenone	uv absorber / uv filter	1	12,0
BENTONITE	1302-78-9	Bentonite. A colloidal clay. Consists primarily of montmorillonite (CI 77004).	absorbent / emulsion stabilising / viscosity controlling	1	25,0
BEHENYL ALCOHOL	661-19-8	Docosan-1-ol.	emollient	1	8,0
TRIBEHENIN	18641-57-1	Propane-1,2,3-triyl tridocosanoate.	emollient / skin conditioning	1	10,0
BRASSICA CAMPESTRIS/ALEURITES FORDII OIL COPOLYMER		Brassica Campestris/Aleurites Fordii Oil Copolymer is a copolymer of Brassica Campestris Oil and Aleurites fordii oil monomers	film forming / skin conditioning	1	14,0
ISOPROPYL MYRISTATE	110-27-0	Isopropyl myristate.	binding / emollient / solvent / skin conditioning	1	4,0
POLYGLYCERYL-2 DIPOLYHYDROXYSTEARATE	137398-08-4	Octadecanoic acid, 12-hydroxy-, homopolymer, ester with oxybis(propanediol)	skin conditioning	1	19,0
POLYGLYCERYL-3 OLEATE	33940-98-6	Oleic acid, monoester with triglycerol.	emulsifying	1	5,0
POLYGLYCERYL-3 POLYRICINOLEATE	235783-76-3	9-Octadecanoic acid, 12-hydroxy-(9Z, 12R)-, homopolymer, ester with triglycerol	emulsifying / viscosity controlling	1	8,0
LAVANDULA ANGUSTIFOLIA EXTRACT	90063-37-9	Lavandula Angustifolia Extract is an extract of the flowers of the lavender, Lavandula angustifolia, Labiatae	tonic / refreshing / cleansing / deodorant / masking	1	15,0

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INCI Name	CAS No	Chemical name or description as stated on the INCI list	Function	In number of products	Avarage ranking
LAURYL LACTATE	6283-92-7	Dodecyl lactate.	emollient / skin conditioning	1	11,0
POPULUS TREMULOIDES BARK EXTRACT	90083-05-9	Populus Tremuloides Bark Extract is an extract of the bark of Populus tremuloides, Salicaceae	antiseborrhoeic / skin conditioning	1	8,0
POTASSIUM OLIVATE	68154-77-8	Fatty acids, olive-oil, potassium salts.	surfactant / emulsifying	1	5,0
LANOLIN	8006-54-0	Lanolin. Fat-like substance derived from sheep wool. Contains a complex combination of esters and polyesters, consisting chiefly of cholesteryl and isocholesteryl esters of the higher fatty acids.	antistatic / emollient / emulsifying / skin conditioning / hair conditioning / surfactant	1	14,0
PROLINE	147-85-3	2-Pyrrolidinecarboxylic acid, (S)-	antistatic / skin conditioning / hair conditioning	1	13,0
CRITHMUM MARITIMUM EXTRACT	89997-98-8	Crithmum Maritimum Extract is an extract of the whole plant of Crithmum maritimum, Apiaceae	tonic	1	21,0
JUNIPERUS COMMUNIS EXTRACT	84603-69-0	Juniperus Communis Extract is an extract of the ripe fruit of the juniper, Juniperus communis, Cupressaceae	tonic / deodorant / masking / antimicrobial ?	1	9,0
LINOLEAMIDE DEA	56863-02-6	(9Z,12Z)-N,N-bis(2-hydroxyethyl)octadeca-9,12-dien-1-amide.	antistatic / viscosity controlling / hair conditioning / foam boosting	1	4,0
HYPERICUM PERFORATUM EXTRACT	84082-80-4	Hypericum Perforatum Extract is an extract of the capsules, flowers, leaves and stem heads of the St. John's wort, Hypericum perforatum, Hypericaceae	antimicrobial / astringent / masking / skin conditioning / skin protection / soothing / tonic	1	16,0
HYDROLYZED SOY PROTEIN	68607-88-5	Protein hydrolyzates, soya. Substance obtained by acidic, alkaline, or enzymatic hydrolysis of soya composed primarily of amino acids, peptides, and proteins. It may contain impurities consisting chiefly of carbohydrates and lipids along with smaller quan	antistatic / humectant / hair conditioning / skin conditioning	1	10,0
HYDROLYZED SILK	96690-41-4	Protein hydrolyzates, silk.	antistatic / humectant / hair conditioning / skin conditioning	1	6,0
HYDROLYZED BEESWAX		Beeswax, hydrolyzed	surfactant / emulsifying / emulsion stabilising / stabilising	1	6,0
HYDROGENATED VEGETABLE GLYCERIDES	100684-29-5	Glycerides, vegetable-oil, hydrogenated.	emollient / emulsifying / skin conditioning / viscosity controlling / surfactant	1	8,0
ZINC OXIDE	1314-13-2	Zinc oxide (CI 77947).	bulking / uv absorber / skin protecting	1	19,0
ACHILLEA MILLEFOLIUM EXTRACT	84082-83-7	Achillea Millefolium Extract is an extract of the leaves and flowers of the yarrow, Achillea millefolium, Asteraceae	soothing / antidandruff / refreshing / cleansing / tonic	1	18,0
PYROS CYDONIA SEED EXTRACT	90106-03-9	Pyrus Cydonia Extract is an extract of the quince, Pyrus cydonia, Rosaceae	skin conditioning / soothing	1	8,0

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ROSA CANINA EXTRACT	84696-47-9		astringent	1	2,0
HECTORITE	12173-47-6	Hectorite (clay mineral).	absorbent / viscosity controlling / bulking	1	30,0
KAOLIN	1332-58-7	Naturally occurring substances, kaolin (CI 77004).	absorbent / anticaking / abrasive / bulking / opacifying	1	2,0
MELALEUCA ALTERNIFOLIA OIL	85085-48-9	Melaleuca Alternifolia Oil is the oil distilled from the leaves of the tea tree, Melaleuca alternifolia, Myrtaceae	antimicrobial ?	1	9,0
OLEUM CHAMAEMELUM ORMENSIS			skin conditioning	1	17,0
OLEA EUROPAEA OIL	8001-25-0	Olea Europaea Oil is the fixed oil obtained from the ripe fruit of the olive tree, Olea europaea, Oleaceae. It consists primarily of the glycerides of the fatty acids linoleic, oleic and palmitic	emollient / solvent	1	6,0
PEG-100 STEARATE	9004-99-3	Poly(oxy-1,2-ethanediyl), .alpha.-(1-oxooctadecyl)-.omega.-hydroxy-	surfactant	1	10,0
PELARGONIUM GRAVEOLENS FLOWER OIL	90082-51-2	Pelargonium Graveolens Flower Oil is the volatile oil obtained from the flowers of the Bourbon Geranium, Pelargonium graveolens (L.), Geraniaceae	masking	1	10,0
MYRTUS COMMUNIS OIL	84082-67-7	Myrtus Communis Oil is a volatile oil obtained from the the leaves of the myrtle, Myrtus communis, Myrtaceae	tonic / masking	1	11,0
METHYLCHLOROISOTHIAZOLINONE	26172-55-4	5-chloro-2-methyl-2H-isothiazol-3-one.	preservative	1	16,0
METHYL GLUCOSE SESQUISTEARATE	68936-95-8	D-Glucopyranoside, methyl, octadecanoate (2:3).	emollient / emulsifying / skin conditioning	1	8,0
MESEMBRYANTHEMUM CRYSTALLINUM EXTRACT		Mesembryanthemum Crystallinum Extract is the extract of the whole plant, Mesembryanthemum crystallinum L., Aizoaceae	humectant	1	9,0
MENTHA VIRIDIS OIL	8008-79-5	Mentha Viridis Oil is the volatile oil obtained from the dried tops and leaves of the spearmint, Mentha viridis, Labiatae	masking	1	7,0
PERSEA GRATISSIMA CERA	227200-57-9	Persea Gratissima Cera is the semi-solid fraction of Avocado Oil (Persea gratissima, Lauraceae)	emollient / stabilising	1	6,0
LEVULINIC ACID	123-76-2	4-oxovaleric acid.	skin conditioning	1	11,0
MELALEUCA ERICIFOLIA LEAF OIL	85085-48-9	Melaleuca Ericifolia Leaf Oil is the volatile oil distilled from the leaves of the Tea Tree, Melaleuca ericifolia, Myrtaceae	masking / tonic	1	17,0
PLANTAGO MAJOR EXTRACT	84929-43-1	Plantago Major Extract is an extract of the leaves of the plantain, Plantago major, Plantaginaceae	astringent	1	8,0
MARIS SAL		Naturally occurring substances, inorganic salts derived from sea water	skin conditioning	1	6,0

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MALVA SYLVESTRIS EXTRACT	84082-57-5	Malva Sylvestris Extract is an extract of the flowers and leaves of the mallow, Malva sylvestris, Malvaceae	soothing / smoothing / emollient / astringent	1	6,0
MAGNESIUM SULFATE	7487-88-9	Magnesium sulphate.	viscosity controlling / hair conditioning / bulking	1	17,0
MAGNESIUM NITRATE	10377-60-3	Magnesium nitrate.	hair conditioning	1	17,0
MAGNESIUM CHLORIDE	7786-30-3	Magnesium chloride.	viscosity controlling	1	15,0
LYSOLECITHIN	85711-58-6	Lecithins, hydrolyzed.	emulsifying	1	7,0
LONICERA JAPONICA LEAF EXTRACT	223749-79-9	Lonicera Japonica Leaf Extract is an extract of the leaves of the honeysuckle, Lonicera japonica, Caprifoliaceae	skin conditioning	1	12,0
LONICERA CAPRIFOLIUM FLOWER EXTRACT	84603-62-3	Lonicera Caprifolium Flower Extract is an extract of the flowers of the Honeysuckle, Lonicera caprifolium L., Caprifoliaceae	perfuming / skin conditioning	1	21,0
LINUM USITATISSIMUM SEED OIL	8001-26-1	Linum Usitatissimum Seed Oil is the expressed oil from the dried ripe seed of the Linseed, Linum usitatissimum L., Linaceae	perfuming / skin conditioning	1	25,0
GUM TRANGACANTH	9000-65-1			1	7,0
MELILOTUS OFFICINALIS EXTRACT	84082-81-5	Melilotus Officinalis Extract is an extract of the aerial parts of the sweet clover, Melilotus officinalis, Leguminosae	soothing / astringent / masking	1	9,0
DICAPRYLYL CARBONATE	1680-31-5	Carbonic Acid, Dicaprylyl Ester	emollient / skin conditioning	1	21,0
HAMAMELIS VIRGINIANA WATER	84696-19-5	Hamamelis Virginiana Water is the aqueous solution of the odoriferous principles of the flowers of Hamamelis virginiana, Hamamelidaceae.	astringent / soothing / skin conditioning / hair conditioning	1	2,0
ETHYLHEXYL METHOXYCINNAMATE	5466-77-3	2-ethylhexyl 4-methoxycinnamate.	uv filter / uv absorber	1	10,0
SALVIA OFFICINALIS LEAF EXTRACT	84082-79-1	Salvia Officinalis Leaf Extract is an extract of the leaves of the Sage, Salvia officinalis L., Lamiaceae	antidandruff / cleansing / oral care / skin conditioning / tonic / antimicrobial ?	1	15,0
EQUISETUM HIEMALE LEAF/STEM EXTRACT	90028-32-3	Equisetum Hiemale Leaf/Stem Extract is the extract of the leaves and stems of Horsetail, Equisetum hiemale L., Equisetaceae	skin conditioning	1	17,0
EQUISETUM ARVENSE EXTRACT	71011-23-9	Equisetum Arvense Extract is an extract of the sterile caules of the horsetail, Equisetum arvense, Equisetaceae	emollient / astringent / tonic / soothing	1	6,0
SAMBUCUS NIGRA FLOWER EXTRACT	84603-58-7	Sambucus Nigra Flower Extract is an extract of the flowers of the Elder, Sambucus nigra L., Caprifoliaceae	refreshing / skin conditioning / soothing / tonic	1	11,0
DISTEAROYLETHYL HYDROXYETHYLMONIUM METHOSULFATE		Ethanaminium, 2-hydroxxy-N-methyl-N,N-bis(2-(1-oxooctadecyl)oxyethyl)-, methyl sulfate	antistatic / hair conditioning	1	25,0

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SCLEROTIUM GUM	39464-87-4	Sclerotium rolfssii gum	emulsion stabilising / viscosity controlling / skin conditioning	1	4,0
DIPOTASSIUM GLYCYRRHIZATE	68797-35-3	.alpha.-d-Glucopyranosiduronic acid, (3.beta.,20.beta.)-20-carboxy-11-oxo-30-norolean-12-en-3-yl 2-O-.beta.-d-glucopyranuronosyl-, dipotassium salt.	humectant / skin conditioning	1	10,0
DIMETHICONE	9006-65-9	Dimethicone	antifoaming / emollient	1	13,0
ETHYLHEXYLGLYCERIN	70445-33-9	1,2-propanediol, 3-(2-ethylhexyloxy)	skin conditioning	1	25,0
SEDUM PURPUREUM EXTRACT		Sedum Purpureum Extract is an extract of the whole plant, Sedum Purpureum, Crassulaceae	skin conditioning	1	10,0
EUCALYPTUS GLOBULUS LEAF EXTRACT	84625-32-1	Eucalyptus Globulus Leaf Extract is an extract of the fresh leaves of the Eucalyptus, Eucalyptus globulus, Myrtaceae	perfuming / skin conditioning	1	6,0
DECYL GLUCOSIDE	54549-25-6	Decyl D-glucoside.	surfactant / emulsion stabilising	1	3,0
DAUCUS CAROTA OIL	8015-88-1	Daucus Sativa Oil is the oil obtained from the seed of the carrot, Daucus carota sativa, Umbelliferae.	tonic / masking	1	11,0
SODIUM BEESWAX	97721-96-5	Fatty acids, beeswax, sodium salts.	emulsifying / skin conditioning	1	13,0
CUCUMIS SATIVUS EXTRACT	89998-01-6	Cucumis Sativus Extract is an extract of the fruit of the cucumber, Cucumis sativus, Cucurbitaceae	emollient	1	6,0
CORN STARCH MODIFIED		Corn starch, reaction products with 3-(dodecenyl)dihydro-2,5-furandione, calcium salt, degree of substitution per glucose unit less than 0.1	absorbent / film forming / skin conditioning / viscosity controlling	1	4,0
COMMIPHORA MYRRHA EXTRACT	84929-26-0	Commiphora Myrrha Extract is an extract of the bark exudate of the myrrh, Commiphora myrrha, Burseraceae	cleansing	1	9,0
SODIUM COCOYL SULFOACETATE				1	5,0
SODIUM DEHYDROACETATE	4418-26-2	Sodium 1-(3,4-dihydro-6-methyl-2,4-dioxo-2H-pyran-3-ylidene)ethanolate.	preservative	1	8,0
COCAMIDE DEA	68603-42-9	Amides, coco, N,N-bis(hydroxyethyl).	emulsifying / emulsion stabilising / surfactant / viscosity controlling / foam boosting	1	4,0
CITRUS SPECIES LEAF EXTRACT	94266-47-4	Citrus Species Leaf Extract is an extract obtained from the leaves of different Citrus spp., Rutaceae	perfuming	1	13,0
DICOCOYLETHYL HYDROXYETHYLMONIUM METHOSULFATE		Ethanaminium, 2-hydroxy-N,N-bis-(2-hydroxyethyl)-N-methyl-, coco-fatty acid diester, methyl sulfate	antistatic / hair conditioning	1	2,0

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ROSMARINUS OFFICINALIS LEAF OIL	84604-14-8	Rosmarinus Officinalis Leaf Oil is the essential oil obtained from the flowering tops and leaves of the Rosemary, Rosmarinus officinalis L., Lamiaceae	masking / skin conditioning / antimicrobial ?	1	9,0
SODIUM HYDROXYMETHYLGLYCINATE	70161-44-3	Sodium N-(hydroxymethyl)glycinate.	preservative	1	13,0
ROSA CANINA FRUIT OIL	84603-93-0	Rosa Canina Fruit Oil is the fixed oil derived from the dog rose, Rosa canina, Rosaceae. It consists primarily of the glycerides of the fatty acids	emollient / skin conditioning	1	10,0
GUAR GUM	9000-30-0		binding / emulsifying / film forming / viscosity controlling	1	3,0
ROSA CANINA SEED EXTRACT	84696-47-9	Rosa Canina Seed Extract is an extract of the seeds of the dog rose, Rosa canina, Rosaceae	skin conditioning	1	17,0
GLYCINE SOJA PROTEIN	9010-10-0	Glycine Soja Protein is a protein obtained from the soybean, Glycine soja, Leguminosae	skin conditioning / solvent / moisturising / emollient	1	8,0
GLYCINE SOJA GERM EXTRACT	84776-91-0	Glycine Soja Germ Extract is an extract of the germ of the soy, Glycine soja, Leguminosae.	skin conditioning / emollient	1	19,0
ROSA DAMASCENA EXTRACT	90106-38-0	Rosa Damascena Extract is an extract of the flowers of the rose, Rosa damascena, Rosaceae	tonic	1	13,0
GLYCERYL STEARATE CITRATE	55840-13-6	1,2,3-Propanetricarboxylic acid, 2-hydroxy-, ester with 1,2,3-propanetriol monooctadecanoate.	emollient / emulsifying / skin conditioning	1	7,0
ROSA DAMASCENA FLOWER EXTRACT	90106-38-0	Rosa Damascena Flower Extract is an extract of the flowers of the Damask Rose, Rosa damascena, Rosaceae	masking / tonic	1	14,0
GLYCERYL OLEATE CITRATE		Glyceryl Oleate Citrate is the reaction product of glyceryl oleate and citric acid	emulsifying / surfactant	1	6,0
ETHYLHEXYL STEARATE	22047-49-0	2-ethylhexyl stearate.	emollient	1	2,0
ROSMARINUS OFFICINALIS EXTRACT	84604-14-8	Rosmarinus Officinalis Extract is an extract of the leaves of the rosemary, Rosmarinus officinalis, Labiatae	tonic / refreshing / antimicrobial	1	8,0
HAMAMELIS VIRGINIANA EXTRACT	84696-19-5	Hamamelis Virginiana Extract is an extract of the bark, leaves and twigs of the witch hazel, Hamamelis virginiana, Hamamelidaceae	astringent / soothing / skin conditioning / hair conditioning	1	11,0
GENTIANA LUTEA EXTRACT	72968-42-4	Gentiana Lutea Extract is an extract of the rhizomes and roots of the gentian, Gentiana lutea, Gentianaceae	tonic / skin conditioning	1	10,0
RUBUS IDAEUS EXTRACT	84929-76-0	Rubus Idaeus Extract is an extract of the fruit of the red raspberry, Rubus idaeus, Rosaceae	smoothing / keratolytic / astringent / tonic	1	5,0

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INCI Name	**CAS No**	**Chemical name or description as stated on the INCI list**	**Function**	**In number of products**	**Avarage ranking**
RUMEX ACETOSELLA EXTRACT		Rumex Acetosella Extract is an extract of the leaves and aerial parts of the sorrel, Rumex acetosella, Polygonaceae	skin conditioning / soothing	1	10,0
EUPHRASIA OFFICINALIS EXTRACT	84625-36-5	Euphrasia Officinalis Extract is an extract of the aerial parts of the euphrasia, Euphrasia officinalis, Scrophulariaceae	tonic / soothing / astringent / antimicrobial / skin conditioning	1	11,0
RUSCUS ACULEATUS ROOT EXTRACT	84012-38-4	Ruscus Aculeatus Root Extract is an extract of the roots of the Butcheerbroom, Ruscus aculeatus, Liliaceae	astringent / refreshing / skin conditioning / soothing / stabilising / tonic	1	11,0
EUGENIA CARYOPHYLLUS OIL	8000-34-8	Eugenia Caryophyllus Oil is the volatile oil steam distilled from the dried flower buds of the clove, Eugenia caryophyllus, Myrtaceae. It consists chiefly of eugenol.	tonic	1	15,0
EUGENIA CARYOPHYLLUS BUD OIL	84961-50-2	"Clove Oil". Eugenia Caryophyllus Bud Oil is an essential oil steam-distilled from the dried flower buds of the Clove, Syzygium aromaticum, syn. Eugenia caryophyllus, Myrtaceae. It contains eugenol	masking / perfuming	1	9,0
EUGENIA CARYOPHYLLATA	8015-97-2			1	10,0
EUCALYPTUS STAIGERIANA		Essential eucalyptus oil		1	19,0
SALIX ALBA BARK EXTRACT	84082-82-6	Salix Alba Bark Extract is and extract of the bark of the white willow, Salix alba, Salicaceae	astringent / tonic / skin conditioning / soothing	1	20,0
ROSA DAMASCENA FLOWER WATER	90106-38-0	Rosa Damascena Flower water is an aqueous solution of the steam of the distillate obtained from the flowers of the Damask Rose, Rosa damascena, Rosaceae	masking / skin conditioning / skin protecting	1	2,0