



HARMONIZED SYSTEM  
REVIEW SUB-COMMITTEE

-  
24<sup>th</sup> Session  
-

NR0192E1  
(+ Annex)  
O. Eng.

Brussels, 25 July 2001.

POSSIBLE AMENDMENT OF THE HS NOMENCLATURE AND  
EXPLANATORY NOTES REGARDING SILICONES  
(PROPOSAL BY THE US ADMINISTRATION)

(Item III.B.7 on Agenda)

I. BACKGROUND

1. On 9 July 2001, the Secretariat received a proposal from the US Administration to update the HS Nomenclature and Explanatory Notes regarding silicones. This proposal is based on comments submitted to the US Administration by the Silicone Environmental Health and Safety Council (SEHSC) of North America.

II. COMMENTS FROM THE US ADMINISTRATION

2. "According to the SEHSC", the chemical structure of a silicone chemical or polymer can be linear, cyclic or branched and it may be capable of being polymerized and/or cross-linked. Depending on the chemical structure of the final product, silicones can take a variety of physical forms, ranging from volatile, low-viscosity fluids to rubbery solids to hard resins. The choice of substituent groups on the [silicon] atom determines the physico-chemical properties and performance of the resulting material, as well as its final form. This chemistry has a large influence on how silicone products are classified..."
3. Given the global growth and technical advancement of the silicone industry over the past two decades, the development of new products and applications has resulted in a reported world market of approximately US\$7 billion. Applications are found in the aerospace, automotive, chemical, construction, electrical, electronics, food-processing, household care, industrial maintenance, leather-processing, health-care, paints/coatings, paper, personal-care, petrochemical, pharmaceutical, plastics and textile/nonwoven industries.

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4. In this connection, the US Administration proposes an amendment to the HS Nomenclature and several modifications to the Explanatory Notes covering silicon compounds and silicone polymers, as set out in the Annex hereto. In general, these proposals are intended only to make clear the classification of these goods in various Chapters of the Harmonized System. Given the technical nature of the proposals, the Review Sub-Committee may wish to submit these proposals to the Scientific Sub-Committee for consideration at its next session."

### III. SECRETARIAT COMMENTS

5. Given the technical nature of this question, the Secretariat agrees with the US Administration that this questions should be submitted to the Scientific Sub-Committee for consideration at its next session.

### IV. CONCLUSION

6. The Sub-Committee is invited to indicate whether this question should first be examined by the Scientific Sub-Committee.

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## I. AMENDMENTS TO THE NOMENCLATURE

### CHAPTER 39

#### Note 2.

Insert the following new subparagraphs (a), (e), (g), (ij), (l) and (m) in alphabetical sequence :

- “(a) Lubricating oils and greases containing petroleum oil-based components of heading 27.10 or 34.03;
- (e) Preparations based on colouring matter of heading 32.06;
- (g) Caulking compounds and other mastics of heading 32.14;
- (ij) Glues or adhesives put up for retail sale, not exceeding a net weight of 1 kg (heading 35.06);
- (l) Additives for mineral oils or other liquids used for the same purposes to eliminate or reduce undesirable properties, or to impart or enhance desirable properties (heading 38.11);
- (m) Prepared hydraulic fluids based on polyglycols, silicones or other polymers of Chapter 39 (heading 38.19);”.

Present subparagraphs (a) through (c) are redesignated as (b) through (d), respectively; present subparagraphs (d), (e) and (f) are redesignated as (f), (h) and (k), respectively; present subparagraphs (g) through (s) are redesignated as (n) through (z), respectively; and present subheadings (t), (u) and (v) are redesignated as (aa), (bb) and (cc), respectively.

## II. MODIFICATIONS TO THE EXPLANATORY NOTES

### CHAPTER 28

Page 249. Heading 28.04. Part (C). Item (5). First paragraph. First line.

Replace the expression “silicon carbide” by the word “carbon”.

Page 261. Heading 28.11. Part (M). Third paragraph. Penultimate sentence.

Delete and substitute :

“Finely powdered silica is used, e.g., as a filler for various types of natural and synthetic rubber and other elastomers, and as a thickening or thixotropic agent for various plastics, printing ink, paints and coatings and adhesives. Fumed silica (a colloidal form of silica made by combustion of silicon tetrachloride or trichlorosilane in hydrogen-oxygen furnaces) is also used in chemi-mechanical polishing of silicon wafers and as a free-flow or anti-settling agent for a variety of materials.”

**[N.B.–This proposal is intended to update the EN concerning the wide-ranging applications for silicon dioxide (silica).]**

Page 263. Heading 28.12. Part (A). Item (5). First paragraph.

Delete and substitute :

“**Silicon tetrachloride** ( $\text{SiCl}_4$ ). Obtained by the action of a stream of chlorine gas on a mixture of silica and coal, or on silicon, silicon bronze or ferro-silicon. Colourless liquid, specific gravity of about 1.5. Liberates suffocating white fumes (hydrochloric acid (HCl)) in the presence of atmospheric moisture. Decomposes in water with formation of gelatinous silica and liberation of HCl fumes. Used for preparing silica and very pure silicon, silicones and smoke screens.”

Page 338. Heading 28.51. Part (B). New Item (6).

Insert the following new Item (6) :

“(6) **Trichlorosilane** ( $\text{SiHCl}_3$ ). Obtained by the reaction of hydrogen chloride (HCl) with silicon, it is used in the manufacture of fumed silica and very pure silicon.”

**[N.B.–The Explanatory Note to heading 28.12 (page 263) specifically excludes trichlorosilane from heading 28.12 and indicates that it is covered in heading 28.51, whereas there is currently no mention of trichlorosilane in the Explanatory Note to heading 28.51.]**

## **CHAPTER 29**

Page 412. Heading 29.31. Item (3).

Delete and substitute :

“(3) **Organo-silicon compounds.** These are separate chemically defined compounds in which the silicon atom is directly combined with at least one organic radical. These compounds include organic silanes and siloxane oligomers; in some cases these products are polymerized to make silicones. The silanes include chlorosilanes (e.g., dimethyldichlorosilane), alkoxysilanes (e.g., methyltrimethoxysilane), alkyl or aryl silanes (e.g., diphenylsilanediol, tetramethylsilane) and other multifunctional (amino, nitrile, oxiranyl, oximo, acetoxy, etc.) silanes. The siloxane oligomers include

hexamethyldisiloxane, octamethyltrisiloxane, octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane and dodecamethylcyclohexasiloxane. The heading also includes hexamethyldisilazane and organo-disilanes.

This heading does not include inorganic silicon compounds, which are generally classifiable in Chapter 28 (e.g., silicon tetrachloride (SiCl<sub>4</sub>) in **heading 28.12** or trichlorosilane (SiHCl<sub>3</sub>) in **heading 28.51**). Silicic acid esters and their salts are classified in **heading 29.20**. Deliberate mixtures of separate chemically defined organo-silicon compounds are classified elsewhere in the Nomenclature, generally in **heading 38.24**. Silicone polymers in primary forms, as described in the General Explanatory Note to Chapter 39, are provided for in **heading 39.10**.”

**[N.B.–This proposal expands item (3) to specify more examples of commercially important organo-silicon compounds. The exclusionary paragraph is expanded to exclude inorgano-silicon compounds and silicic acid esters and their salts from 29.31.]**

## **CHAPTER 32**

Page 500. Heading 32.14.

1. Second paragraph. First sentence.

Delete the expression “they harden after application” and substitute the expression “they harden or cure after application”.

2. Part (I). First paragraph. First sentence.

At the end of the first sentence, insert the expression “(adhesive sealants)”.

3. Part (I). First paragraph. Second sentence.

After the expression “glues and other adhesives”, insert the expression “(heading 35.06)”.

Page 501. Heading 32.14. Part (I). Item (9).

Delete and substitute :

“(9) **Mastics based on plastics.** These are usually paste-like products containing substances necessary for curing (e.g., cross-linking agents) and other materials such as plasticizers, colouring matter and up to 80% by weight of fillers (e.g., clay, sand and other silicates, titanium dioxide, metallic powders). Some of these mastics are used after the addition of hardeners or cure after exposure to atmospheric moisture or by mixing of multiple components. They may be used to seal certain joints in construction or home repair, for sealing or repairing glass, metal or porcelain articles, as fillers or sealants for coachwork or, in the case of adhesive sealants, to bond various surfaces together.

Page 502. Heading 32.14. Exclusions.

Insert the following new exclusions (e) and (f) :

“(e) Solutions described in Note 4 to this Chapter (**heading 32.08**).

(f) Prepared glues and other prepared adhesives (**heading 35.06**).”

Present exclusions (e), (f) and (g) are redesignated as (g), (h) and (ij), respectively.

**CHAPTER 35**

Page 534a. Heading 35.06. Exclusions. New last paragraph.

Insert the following new last paragraph :

“The heading also **excludes** silicone preparations and other products having the character of mastics, fillings, etc., of **heading 32.14**.”

**CHAPTER 39**

Page 589. Note 2.

Insert the following new subparagraphs (a), (e), (g), (ij), (l) and (m) in alphabetical sequence :

“(a) Lubricating oils and greases containing petroleum oil-based components of heading 27.10 or 34.03;

(e) Preparations based on colouring matter of heading 32.06;

(g) Caulking compounds and other mastics of heading 32.14;

(ij) Glues or adhesives put up for retail sale, not exceeding a net weight of 1 kg (heading 35.06);

(l) Additives for mineral oils or other liquids used for the same purposes to eliminate or reduce undesirable properties, or to impart or enhance desirable properties (heading 38.11);

(m) Prepared hydraulic fluids based on polyglycols, silicones or other polymers of Chapter 39 (heading 38.19);”.

Present subparagraphs (a) through (c) are redesignated as (b) through (d), respectively; present subparagraphs (d), (e) and (f) are redesignated as (f), (h) and (k), respectively; present subparagraphs (g) through (s) are redesignated as (n) through (z), respectively; and present subheadings (t), (u) and (v) are redesignated as (aa), (bb) and (cc), respectively.

Page 592. General. Abbreviations for polymers.

Immediately following the entry for “PBT Polybutylene terephthalate”, insert the following new abbreviation entry :

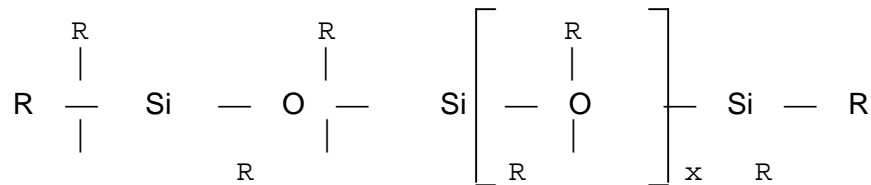
“PDMS Polydimethylsiloxane”.

Page 595. General. Scope of headings 39.01 to 39.11. Subparagraph (d).

Delete and substitute :

“(d) **Silicones** are organo-silicon polymers in which the silicon atoms are bound to each other through oxygen atoms, the silicon valences not taken up by oxygen being saturated by at least one organic group (heading 39.10).

The following is the general structural formula for silicones,  $R_nSiO_{(4-n)/2}$ :



(where R = hydrogen, an organic group or an -O-Si- linkage)”

**[N.B.–definition and structure obtained from Noll, Walter, *Chemistry and Technology of Silicones*, 1968; see also proposal for EN page 610, heading 39.10, first paragraph, below.]**

Page 596. General. Primary forms. First paragraph. Subparagraph (1).

Replace the term “curing” by the term “curing” (two instances).

Page 597. General. Primary forms.

1. First paragraph (exclusions). New subparagraph (c).

Insert the following new exclusionary subparagraph (c) :

“(c) Caulking compounds or other mastics (**heading 32.14**).”

Page 610. Heading 39.10.

1. First paragraph. New first sentence.

Insert the following new first sentence :

“Silicones are organo-silicon polymers in which the silicon atoms are bound to each other through oxygen atoms, the silicon valences not taken up by oxygen being

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saturated by at least one organic group (see General Explanatory Note, Scope of headings 39.01 to 39.11).”

**[This proposal is made in connection with that for EN page 595 (see above).]**

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