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POSSIBLE AMENDMENTS TO THE HS AND EXPLANATORY NOTES TO CLARIFY THE CLASSIFICATION OF CO-ORDINATION COMPOUNDS

(Item II.2 on Agenda)

Reference documents :

40.212 (SSC/11)
40.460, Annex A/10 (SSC/11 - Report)
40.412 (HSC/18)
40.759 (SSC/12)
40.870, Annex A/13 (SSC/12 - Report)
41.100, Annex D/1, paragraph 22 (HSC/19 - Report)
41.663 (SSC/13)
41.687 (SSC/13)
41.690, Annex A/3 (SSC/13 - Report)
42.018 (HSC/21)
42.100, Annex D/1 (HSC/21 - Report)

I. BACKGROUND

1. At its 13th Session (December 1997), the Scientific Sub-Committee provisionally agreed to texts proposed by the Secretariat (Doc. 41.687) for amending the Nomenclature and the Explanatory Notes to clarify the classification of co-ordination compounds. However, the Sub-Committee agreed to retain these texts in square brackets (see Annex C/2 to Doc. 41.690) so that administrations could consider the impact of the amendments during the intersession. It was also agreed that the Secretariat should look into the possible insertion in the General Explanatory Note to Chapter 29 of references to examples of transition metal compounds, which would fall in heading 29.42.

2. On 29 December 1997, the Chairman of Scientific Sub-Committee sent a short note to the Secretariat, indicating that, "... in the draft Note 5 (c) (1) to Chapter 29, there seems to be a contradiction in the ... penultimate line, mentioning transition metals, when this text is compared with the draft text of new Note 8 to this Chapter. In Note 8 the transition elements being precious metals or radioactive compounds, have been excluded. This should also be done with the transition metals in Note 5 (c) (1) by saying :

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'... the case of compounds of phenols with transition metals (other than those to be classified as precious metals of heading 28.43 or as radioactive compounds of heading 28.44), which are classified in heading 29.42.'"

3. In a letter dated 23 March 1998, the Swiss Administration submitted further comments concerning this question. The Swiss comments are excerpted below.

II. COMMENTS BY THE SWISS ADMINISTRATION

4. "The Swiss Administration feels that the texts agreed to at the 13th Session of the Scientific Sub-Committee should be redrafted, in particular to clear up certain ambiguities and to clarify the classification of co-ordination compounds. We feel, on the other hand, that these texts should permit the classification of all co-ordination compounds, and not just classification of transition metal compounds. Finally, we wish to draw the Sub-Committee's attention to the possible implications of introducing the notion of co-ordination compounds in the Harmonized System.

Remarks concerning Annex C/2 to Doc. 41.690 (SSC/13 Report)

5. The texts given in the SSC/13 Report do not resolve the difficulties of classifying co-ordination compounds of metals other than transition metals, such as aluminium tris(2,4-pentanedionato-O,O').

6. In general, the new texts create a certain confusion between salts, on the one hand, and co-ordination compounds, on the other:

- A large number of compounds, generally considered as salts and classified according to Note 5 (c) (1) to Chapter 29 (e.g., copper acetate), would be transferred to heading 29.42 by virtue of new Note 8 to Chapter 29.

- A co-ordination compound could be a complex salt, that is, a salt in which at least one of the constituent ions is a complex entity. The classification of such compounds is governed by Note 5 (c) to Chapter 29.

- Certain salts are mentioned in HS headings, e.g., lactophosphates of heading 29.19. A transfer of certain lactophosphates to heading 29.42 would result in a contradiction.

7. Thus, the transfer to heading 29.42 of certain salts by virtue of new Note 8 creates an overlap between new Notes 5 (c) (1) and 8. The concept of salts has great importance in the context of Chapter 29, since salts are named in many HS texts. Thus, to us it would seem desirable to avoid overlaps as much as possible, even if one can always resort to the expression "Where the context otherwise requires", as found in Note 1 to Chapter 29.

8. Concerning new exclusion (b) in the Explanatory Note to heading 29.31 (page 412):

- The transfer of alkyl derivatives of transition metals to heading 29.42 is in contradiction with present Note 6 to Chapter 29, which covers compounds in which a metal is directly linked to a carbon atom. There would be, therefore, an overlap between Note 6 and new Note 8.

- It would seem curious to transfer fullerenes, metal carbonyls, metallocenes and co-ordination compounds of any metal to heading 29.42, when only the alkyl derivatives of transition metals are transferred to heading 29.42.

9. According to Note 8, heading 29.42 covers “compounds of organic acids ... with transition metals”. Thus, all compounds of organic acids (e.g., acetic acid, toluenesulphonic acids, dithiocarbamic acids, etc.) with transition metals are to be classified in heading 29.42. Although the term “organic acid” in Note 8 does not cover, in principle, esters of the inorganic acids of headings 29.19 or 29.20, the new exclusion in the Explanatory Note to heading 29.20 (page 394) would transfer such esters to heading 29.42, thereby implying that “esters of inorganic acids” are covered by the term “organic acids”; it would seem logical, therefore, to extend the exclusion to co-ordination compounds of phosphoric esters of heading 29.19 and to classify, e.g., iron glycerophosphate in heading 29.42. Thus, the term “organic acids” in Note 8 would include esters of inorganic acids of Sub-Chapter VIII. As already noted, however, the transfer of certain lactophosphates to heading 29.42 would be contrary to the text of heading 29.19, where these products are specifically named.

10. One might wonder whether Note 8 contradicts the text of heading 29.04 (“Sulphonated, nitrated or nitrosated derivatives of hydrocarbons, whether or not halogenated”), which covers organic acid compounds, including salts.

11. Note 8 does not specifically provide for the classification of complex compounds containing a non-transition metal (e.g., alkali metal), such as tripotassium trioxalatoferrate.

12. Since in a complex the ligand linked to the metal atom is generally found in its basic form (e.g., ethylenediamine), Note 8 should also refer to ... organic bases.

13. The choice of the transition metals in Note 8 seems to be arbitrary; in any event, it does not cover all metallic elements that are generally considered to be transition metals.

14. The text of heading 29.42 should not exclude products of heading 29.36 only; it should also exclude headings 29.37, 29.39 and 29.41. Indeed, co-ordination compounds are known in these headings (e.g., bacitracin zinc (INNM) in heading 29.41), and one cannot exclude the synthesis of such products (e.g., cocaine forms numerous salts) for avoiding international controls on narcotic drugs.

Conclusions

15. Given the complex and confusing situation resulting from the introduction of the concept of co-ordination compounds, it is necessary to redraft the texts agreed to at the 13th Session of the SSC. Two proposals by the Swiss Administration are reproduced in the Annexes .(see Annex B to this document).

16. In the first proposal [Proposal A], two variations are envisaged, one aimed at transferring **only transition metal compounds** to heading 29.42, the other transferring compounds of metals **other than alkali or alkaline-earth metals**. This latter variation is designed to avoid spreading out similar compounds over too many different headings.

- Note 5 (c) (1): the salts covered by Note 8 are expressly excluded.

- Note 5 (d): two possibilities are envisaged: (i) the exclusion of transition metal compounds only or (ii) the exclusion of compounds of metals other than alkali or alkaline-earth metals.

- Note 6: for the sake of simplicity and uniform classification, this Note is amended to exclude alkyl derivatives, fullerenes and complex compounds with the same metals. Two possibilities are envisaged, i.e., that the Note covers (i) compounds of metals other than transition metals or (ii) compounds of all metals other than alkali or alkaline-earth metals. The list of elements cited should correspond to the option chosen.

- Note 8: This Note is redrafted to cover all organic compounds, including alkylated metal derivatives, fullerenes, and other complex compounds, containing (i) transition metals only or (ii) metals other than alkali/alkaline-earth metals (both possibilities are envisaged).

- Text of heading 29.42: The exclusion is extended to cover headings 29.36, 29.37, 29.39 and 29.41.

- Numerous references in the Explanatory Notes must be modified according to the option chosen ...

17. The second proposal [Proposal B] ... reverts to the notion of the “cleavage” of metal-oxygen, metal-nitrogen, metal-sulphur and metal-halogen bonds, which had been discussed at the 11th and 12th Sessions of the SSC. This solution has the advantage of being simple, of maintaining the philosophy that has prevailed so far in the manner of classifying co-ordination compounds and of resulting in only a few changes to the present texts, which is why the Swiss Administration has a clear preference for this proposal.

Repercussions of introducing the notion of co-ordination compounds in Chapter 29

18. Repercussions of Proposal A :

- The Swiss Administration feels that either variation of this proposal could be in contradiction with the HS texts that mention, for example, “salts” or “sulphonated derivatives” (which are organic acids).

- The texts do not resolve the difficulties in classifying co-ordination compounds with metals that are not mentioned in Note 8.

- Whichever solution is chosen, even in the present agreed texts [those provisionally agreed to by SSC/13], numerous modifications of the legal and Explanatory Notes will prove necessary to eliminate references to compounds being transferred to heading 29.42 and to clarify to which type of metal (transition metal or other) the legal or Explanatory Note is applicable ....

- The scope of Note 5 (c) (1), and that of the WTO Pharmaceutical Agreement, could be altered profoundly with the introduction of the concept of co-ordination compounds. Indeed, the Agreement covers a list of products, as well as salts and esters of these products, as long as these are all classifiable in the same 6-digit subheading. Thus, all transition metal salts covered at present by the Pharmaceutical Agreement would be excluded therefrom. In this connection, it may be necessary to establish a list to cover these transferred products separately in Annex III of the Agreement, or even to modify the Agreement itself. In any event, it would be necessary to inform the WTO.

- We wonder whether industries interested in statistical data could be satisfied with the classification of similar products from the same industries in different headings ....

- The list of transition metals to be included in the Explanatory Notes would not coincide with the list of metals generally referred to as transition metals in specialised literature.

- The classification of tens (or hundreds?) of products in the HS Commodity Data Base would need to be reviewed.

19. Repercussions of Proposal B :

- Note 5 (c) is applicable to all salts; acid derivatives (e.g., sulphonates) are classified according to the heading texts; overlap among Notes 5, 6 and 8 are avoided.

- There is practically no effect on present texts if there is a new Note 8.

- There is practically no effect on classification decisions previously taken by the WCO.

- Given that compounds are classified according to their ligand, there is no spreading out of similar products because of classification according to the metal atom in the compound. On the other hand, all metal derivatives of compounds classified according to their <u>activity</u> (e.g., vitamins, hormones, antibiotics) are kept in the heading with the corresponding base molecule.

- The concept of co-ordination compounds becomes secondary in the HS; a detailed and technical definition such as that given in the Annex to Doc. 41.690 seems superfluous.

- The proposal follows a certain chemical logic by classifying similar compounds in the same heading (e.g., calcium and iron glycerophosphates, diethylmercury and tetraethyl lead) and by respecting the fundamental structure of Chapter 29."

* * *

20. In connection with its various proposals, the Swiss Administration also submitted a tabular scenario of how the classification of various selected compounds might vary (or not vary) under each proposal (see Annex C). The chemical structures of some of these compounds were also provided (see Annex D).

III. SECRETARIAT COMMENTS

Proposed legal amendments provisionally agreed by SSC/13

21. For ease of reference, the texts provisionally agreed to by the Scientific Sub-Committee at its 13th Session are reproduced in Annex A to this document.

22. In reviewing the proposed amendments to Notes 5 (c) (1) and 5 (d) and proposed new Note 8 to Chapter 29, as provisionally agreed to by SSC/13 (see Annex A), the Secretariat notes that the aim of these proposals is to direct the classification of compounds of phenols, alcohols and organic acids with transition metals to heading 29.42. The Secretariat understands that the reason for such classification is that the bonding in these transition metal “salts” is usually somewhere between ionic and covalent in nature and, as such, they may be viewed as co-ordination compounds that would be covered by heading 29.42 under the proposed amendments.

23. Present **Note 5 (c) (1)** provides for the classification of inorganic salts of “acid-, phenol- or enol-functions compounds or organic bases, of Sub-Chapters I to X or heading No. 29.42”. The amendments to this Note proposed by SSC/13 would make an exception for compounds of phenols with transition metals (which are directed to 29.42). However, it would appear that transition metal “salts” of acid- or enol-function compounds would not be excepted under the proposed amendment and thus would be classifiable according to the appropriate acid- or enol-function. This is in contradiction to the proposed Note 8 (see paragraph 26 below), which directs classification of all compounds of organic acids with transition metals to heading 29.42. It would seem appropriate to delete the specific mention of "phenols" in the proposed exception to Note 5(c)(1), which could be reworded as : "except in the case of compounds with transition metals …".

24. With regard to the note from the Chairman of the Scientific Sub-Committee (see paragraph 2 above), the Secretariat would point out that the present text of Note 5 (c) to Chapter 29 includes the introductory phrase “Subject to Note 1 to Section VI and Note 2 to Chapter 28,”. Given that the Notes cited in this phrase specifically provide for the classification of precious metal compounds in heading 28.43 and radioactive compounds in heading 28.44, the Secretariat does not see any need to amend proposed new Note 5 (c) (1) in this regard.

25. Present **Note 5 (d)** provides for the classification of metal alcoholates in the same manner as does Note 5 (c) (1) for the compounds covered in that Note. Since ethanol is classified in Chapter 22 and not in Chapter 29, Note 5 (d) specifically provides for the classification of metal “ethanolates” (or ethoxides) in heading 29.05. The amendment to Note 5 (d) proposed by SSC/13 would make an exception for transition metal alcoholates. However, there is no indication in the proposed Note itself that excepted compounds would be classified in heading 29.42. Therefore, if the Sub-Committee wishes to pursue an exception in this Note, a reference to classification in heading 29.42 should be inserted.

26. Proposed **new Note 8**, as drafted by SSC/13, would direct the classification of compounds of organic acids with transition metals to heading 29.42. In fact, Note 8 was originally drafted to exclude transition metal salts of carboxylic acids from heading 29.42 (see Annex to Doc. 41.663), but was revised by SSC/13 to include such salts. This revision had been suggested by the Canadian Administration (Doc. 41.687, paragraph 1 (d)), because it was not clear from the literature which transition metal salts had ionic bonding and which had co-ordinate bonding; as such, it was preferable to classify them all together under one heading, i.e., 29.42. While this inclusion may simplify the classification of transition metal salts of organic acids, the Secretariat is concerned as to how the scope of other headings of Chapter 29 might be affected by the transfer of these compounds to heading 29.42.

27. Indeed the transfer of goods to heading 29.42 from other headings as a result of the amendments provisionally approved by SSC/13 would be widespread and would involve numerous amendments to the Nomenclature and Explanatory Notes.

28. From the Nomenclature standpoint, the Secretariat would point out that present subheading 2915.23 covers compounds of acetic acid with a transition metal, i.e., cobalt acetates; this is also noted by the Swiss Administration in paragraph 6 above. Under the proposed amendments, these products would be transferred to heading 29.42. On the basis of partial country data, the Secretariat estimates that annual trade in this subheading ranged from US$8 million to US$22 million during the 1992-95 period. As such, it would be necessary to provide a separate new subheading for this item under heading 29.42 in the proposed legal amendments.

29. Under the Explanatory Note proposal set out in Annex A, references to iron carbonyl and nickel carbonyl (now classified in heading 29.31) would be transferred to the new Explanatory Note to heading 29.42. Further, the proposed new exclusions in the Explanatory Notes to headings 29.20 (page 394) and 29.31 (page 412) direct the classification of certain transition metal compounds to heading 29.42. Though the Secretariat can understand the Swiss Administration's point in paragraph 8 above that this transfer would be contrary to present Note 6 to Chapter 29, it should be noted that Note 3 to Chapter 29 eliminates a possible conflict between Note 6 and Note 8 to Chapter 29. However, it would be appropriate to introduce suitable amendments to Note 6 to Chapter 28.. In any event, under the SSC/13 proposals, a large number of product references that now appear in other headings would also need to be deleted or transferred to the Explanatory Note to heading 29.42, depending upon the Sub-Committee's intended scope of heading 29.42. These references include the following :

- GEN (page 346, Item G(2)(i)) - n-butyl copper phthalate
- EN 29.06 (page 363, last sentence) - metal alcoholates of cyclic alcohols
- EN 29.07 (page 364, 5th paragraph) - metal alcoholates of phenols or phenol-alcohols
- EN Sub-Ch. VII (page 382, Part (F)) - salts of carboxylic acids
- EN 29.15 (page 383, Item (I)(b)) - nickel formates
- EN 29.15 (pages 383-4, Item (II)(b)) - cobalt, copper, lead, chromium and iron acetates
- EN 29.15 (page 385, Item (VIII)(b)(5)) - copper stearates
- EN 29.16 (page 387, Item (C)(1)) - [salts of benzoic acid]
- EN 29.17 (page 388, Item (A)(1)) - iron oxalate, ammonium-iron oxalate

- EN 29.18 (page 390, Item (A)(1)) - magnesium, zinc, antimony, iron, mercury and bismuth lactates
- EN 29.18 (page 391, Item (A)(2)(e)) - antimony potassium tartrate and iron potassium tartrate
- EN 29.18 (page 391, Item (A)(3)) - Aluminium and iron citrates
- EN 29.18 (page 392, Part (B)(I)) - Bismuth salicylate
- EN 29.18 (page 392, Item (B)(VII)(1)) - Basic bismuth gallate
- EN 29.19 (page 393, Item (1)(b)) - Iron glycerophosphate

[N.B.: see also paragraph 9 above, where Switzerland argues that "esters of inorganic acids" may be covered by the term "organic acids" for the purposes of proposed new Note 8 in the SSC/13 proposal.]

- EN Sub-Ch. X (page 408, General, first paragraph) - [mercury and lead compounds]
- EN 29.30 (page 410, Items (B)(1) and (B)(2)) - [thiocarbamic acid salts], dithiocarbamates (e.g., zinc dibutyldithiocarbamate)
- EN 29.31 (page 411, Item (1)) - diethylmercury, diphenylmercury, phenylmercury acetate
- EN 29.31 (page 412, Item (2)) - Tetraethyllead
- EN 29.33 (page 417, Item (D)(5)) - metal complex compounds of 8-hydroxyquinoline
- EN 29.34 (page 420, 2d paragraph) - mercury and copper nucleates

30. Further, with regard to proposed Note 8, as agreed by SSC/13, the Swiss Administration takes the view in paragraph 10 above that the new Note may overlap with heading 29.04, which covers organic sulphonic acids and their derivatives. Switzerland also points out in paragraph 11 above that the proposed Note does not cover complex compounds of non-transition metals and, in paragraph 12 above, suggests that a reference might be included to organic "bases" to cover ligands. These suggestions would further expand the scope of heading 29.42 resulting in extensive transfers from other headings.

31. In paragraph 13 above, Switzerland states that the choice of transition metals listed in proposed Note 8 seems to be arbitrary. In this connection, the Secretariat would remind the Sub-Committee that this list was derived by starting with a complete list of transition metals and eliminating those already provided elsewhere in the Nomenclature (i.e., precious metals, radioactive metals, non-radioactive isotopes, scandium, yttrium and the rare-earth metals). For a more detailed explanation, the Sub-Committee is referred to Doc. 41.663, paragraph 6. It should also be noted that the original intention of the proposed Note 8 was as an exclusion which was subsequently made an inclusion (see paragraph 26 above).

32. Finally, in paragraph 14 above, the Swiss Administration takes the view that the **text of heading 29.42** should specifically exclude not only products of heading 29.36, but also products of headings 29.37, 29.39 and 29.41, where co-ordination compounds are also known to exist.

Swiss proposals

33. Two alternative proposals (Proposal A and Proposal B) by Switzerland (see paragraphs 16 and 17 above) to amend the HS Nomenclature or Explanatory Notes are reproduced in Annex B to this document. The tabular classification scheme submitted by

Switzerland (see paragraph 20 above) is excerpted in Annex C, and selected chemical structures pertaining to this table are reproduced in Annex D.

34. With regard to Annex C, the Secretariat would only point out that the Swiss Administration seems to view magnesium as an alkaline-earth metal. However, for the purposes of the HS, magnesium is treated as a base metal of Chapter 81. Thus, for items 27 and 32 in the table, column (c) should probably read "29.42". Furthermore, with respect to items 27 and 28, the Secretariat wonders whether these compounds might be regarded as salts of nicotinic acid classifiable at present in heading 29.39, rather than in heading 29.33.

35. The Swiss Proposal A would expand the exception to **Note 5 (c) (1)** proposed by SSC/13 (i.e., compounds of phenols with transition metals) to cover either (i) all compounds of the transition metals listed in Note 8 or (ii) all compounds of metals other than those of alkali or alkaline-earth metals.

36. As noted in paragraph 25 above, the amendment to **Note 5 (d)** proposed by SSC/13 would make an exception for transition metal alcoholates. The Swiss Proposal A would either confirm this exception or expand the exception to cover alcoholates of all metals other than alkali and alkaline-earth metals.

37. Though SSC/13 did not propose any amendment to present **Note 6**, the Swiss Proposal A includes two possible options for doing so. First, the Note could be amended to make an exception for all transition metal compounds falling in headings 29.30 and 29.31. Second, the exception could include all such compounds of metals other than alkali or alkaline-earth metals.

38. The Swiss Proposal A would expand the coverage of proposed **Note 8** to include either (i) all organic compounds of transition metals (not just compounds of organic acids, as proposed by SSC/13) or (ii) all organic compounds of metals other than alkali or alkaline-earth metals. This latter option would mean that, in addition to the transition metals named in the SSC/13 draft of new Note 8, compounds of the following metals would also be covered: beryllium, magnesium, aluminium, zinc, gadolinium, germanium, cadmium, indium, tin, antimony, mercury, thallium, lead and bismuth. Switzerland also proposes inserting references to metal alkyls, metal fullerenes and metal complex compounds as examples. However, the Secretariat wonders whether a limited list of such references would be necessary or desirable in the text of Note 8; it may be preferable to include such examples in the Explanatory Notes instead.

39. As noted in paragraph 32 above, the **text of heading 29.42** provisionally approved by SSC/13 would exclude products of heading 29.36 (vitamins). The Swiss Administration proposes to extend the exception to cover headings 29.37, 29.39 and 29.41, where co-ordination compounds are also to be found (e.g., bacitrin zinc (INNM) in heading 29.41). Under this proposal, heading 29.42 would read as follows:

> "Co-ordination compounds (excluding products of headings Nos. 29.36, 29.37, 29.39 or 29.41); other organic compounds."

40. In the Secretariat's view, the most recent Swiss Proposal A (Annex B) would involve product transfers to an even greater extent than that foreseen under the amendments

provisionally agreed to by SSC/13. The Secretariat wonders whether such large scale transfers for the purpose of grouping compounds, based on chemical strcuture would be justified from the trade perspective especially when they alter the long standing classification practices. As already noted by Switzerland in paragraph 18 above (4th indent), the effects on the WTO Pharmaceutical Agreement may be substantial. Further, the implications for trade statistics should also be considered. Given these concerns, it may be preferable to retain the status quo rather than to proceed with this proposal.

41. The alternative proposal by the the Swiss Administration (see proposal B at Annex B) seems simpler. In this proposal, Notes 5 and 6 to Chapter 29 would not be amended. Instead an **alternative new Note 8** would govern the classification of co-ordination compounds "except where the context otherwise requires". In short, this Note would provide that, except for compounds having metal-carbon bonds (which would fall in heading 29.31), co-ordination compounds would be classified according to the organic "fragment" of the "cleaved" compound, i.e., by disregarding the co-ordinating metal atom(s).

42. The Secretariat would remind the Sub-Committee that this "cleavage" approach to classification was previously discussed by the SSC, but that, at its 12th Session, the SSC had agreed that legal amendments should be pursued with a view to classifying all co-ordination compounds in one heading, preferably heading 29.42 (see Doc. 40.870, Annex A/13, paragraph 10). Nevertheless, it has been demonstrated that a "cleavage" approach was workable for the classification of oxygen-function amino-compounds of heading 29.22 (see Subheading Explanatory Note for Subheadings 2922.11 to 2922.50, page 400a). In the Secretariat's view, it is possible that a similar approach might be deemed workable for co-ordination compounds, as well. This has the added advantages that the transfer of products will be limited.

Possible approaches

43. Owing to the complicated and technical nature of these proposals, the SSC has proceeded cautiously and, in piece-meal fashion, has proposed legal amendments to solve specific problems as they arose during the discussions. However, as demonstrated by the foregoing comments and additional proposals by Switzerland, the overall result at this point appears to be incomplete or contradictory.

44. As the proposal by SSC/13 now stands, the classification of phenols with transition metals (Note 5 (c) (1)) and compounds of organic acids with transition metals (Note 8) would be directed to heading 29.42. However, as noted by Switzerland in its comments above, there seem to be several potential legal contradictions arising from that proposal. For reasons discussed by the Secretariat in paragraph 40 above, the Swiss Proposal A also presents problems of its own.

45. Apart from these concerns, the question remains as to whether the Sub-Committee intends to classify <u>all organic transition metal compounds</u> or <u>all organic compounds of metals other than alkali or alkaline-earth metals</u> (as proposed by Switzerland in paragraph 16 above), in heading 29.42. If so, the Secretariat would recommend a somewhat different approach to the legal amendments proposed by SSC/13 or in the Swiss Proposal A. Under this new approach, present Notes 5 (c) (1), 5 (d) and 6 would not be amended at all. Instead, proposed new Note 8 would be reworded to read as follows :

"8 Notwithstanding the provisions of Chapter Notes 5 (c) (1), 5 (d) and 6, and subject to Note 1 to Section VI and Note 2 to Chapter 28, for the purposes of heading No. 29.42, the expression “co-ordination compounds” includes all compounds formed between [transition metals] [metals other than alkali or alkaline-earth metals] and organic compounds of Sub-Chapters I to X or heading 29.42. For the purposes of this Note, compounds of the following metals are included: [beryllium, magnesium, aluminium,] titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, [zinc, gadolinium, germanium,] zirconium, niobium, molybdenum, [cadmium, indium, tin, antimony,] hafnium, tantalum, tungsten [,] [and] rhenium [, mercury, thallium, lead and bismuth].”

46. In this connection, the Secretariat has listed the metal elements in order of atomic number. The metals listed in square brackets are those that would be added to the SSC/13 list if all metals other than alkali or alkaline-earth metals are to be covered (second variant of the Swiss Proposal A). The “notwithstanding” clause would obviate the need to amend present Notes 5 and 6, and the “subject to” clause is consistent with the introduction to present Note 5 in providing that organic compounds of precious metals, radioactive metals, other isotopes of metals, rare-earth metals, yttrium and scandium are excluded from Chapter 29. The second sentence in the draft listing metals could even be deleted.

47. It should be noted that either of the approaches in the above proposal would result in substantial transfer of products from other headings of Chapter 29 to the new heading 29.42. It would also be necessary to provide new subheadings like in the case of "cobalt acetates" (see paragraph 28 above).

48. As discussed in paragraphs 41 and 42 above, the Swiss Proposal B could possibly be a workable alternative. If the Sub-Committee is in favour of pursuing this proposal, it is also requested to examine the legal texts proposed by the Swiss Administration.

49. Whether the Sub-Committee takes the new Secretariat approach or the approach of the Swiss Proposal B, the Secretariat feels that it is important to have a legal definition of “co-ordination compounds”.

50. The last alternative would, of course, be to retain the status quo with regard to legal texts and to provide guidance for classification of co-ordination compounds in the Explanatory Notes.

III. CONCLUSIONS

51. The Sub-Committee is requested to give its views concerning what general approach should be taken concerning this question, i.e., :

(a) continue with the approach agreed to so far by SSC/13 or alternatively Swiss proposals A or B) ; or

(b) pursue the idea of classifying by ligand (i.e., the “cleavage” approach), as proposed by Switzerland in its Proposal B.

52. If the Sub-Committee wishes to pursue approach (a) above, it is asked to consider the following :

(i) whether the scope of compounds of organic acids with metals to be classified in heading 29.42 as coordination compounds should be restricted to compounds of phenols, alcohols and organic acids with transition metals; or should all organic transition metal compounds be transferred to heading 29.42. In this regard, the Sub-Committee is also asked to consider the Swiss suggestion to further expand the scope by including compounds of all metals other than alkali/alkaline-earth metals;

(ii) whether the legal texts should be amended as proposed by Switzerland in its Proposal A (see Annex B); or the texts provisionally approved by the Sub-Committee (see Annex A) should be further modified (see paragraphs 23 and 25 above). In this regard, the Sub-Committee is also invited to consider the alternative proposal by the Secretariat in paragraph 45 above;

(iii) whether separate identification for cobalt acetates should be provided under amended heading 29.42 or whether subheading 2915.23 should simply be deleted (see paragraph 28 above);

(iv) whether the Explanatory Note references cited in paragraph 29 above should be simply deleted or transferred to the new Explanatory Note to amended heading 29.42;

53. Depending on its decision on the approach, the Committee is requested to finalize the legal texts and provide guidance to the Secretariat for drafti7ng suitable amendments to the Explanatory Notes.

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ANNEXE A

REMANIEMENTS A APPORTER EVENTUELLEMENT A LA NOMENCLATURE ET AUX NOTES EXPLICATIVES EN VUE DE PRECISER LE CLASSEMENT DES COMPOSES DE COORDINATION

(Point II.2 de l'ordre de jour)

ANNEX A

POSSIBLE AMENDMENTS TO THE HS AND THE EXPLANATORY NOTES TO CLARIFY THE CLASSIFICATION OF CO-ORDINATION COMPOUNDS

(Item II.2 on Agenda)

PROCEDURE DE L'ARTICLE 16

A. AMENDEMENT DE LA NOMENCLATURE

[CHAPITRE 29

Note 5 c) 1°).

Nouvelle rédaction :

"1°) Les sels inorganiques des composés organiques tels que les composés à fonction acide, à fonction phénol ou à fonction énol, ou les bases organiques, des Sous-Chapitres I à X ou du n° 29.42, sont à classer dans la position dont relève le composé organique correspondant, sauf dans le cas des composés du phénol avec des métaux de transition, qui sont à classer dans le n° 29.42;".

Note 5 d).

Nouvelle rédaction :

"d) Les alcoolates métalliques, autres que les alkoxydes des métaux de transition, sont à classer dans la même position que les alcools correspondants, sauf dans le cas de l'éthanol (n° 29.05).".

Nouvelle Note 8.

Insérer la nouvelle Note de Chapitre suivante :

"8.- Le n° 29.42 comprend les composés des acides organiques (même comprenant d'autres groupes fonctionnels) avec des métaux de transition qui contiennent un cation de titane, de vanadium, de chrome, de manganèse, de fer, de cobalt, de nickel, de cuivre, de zirconium, de niobium, de molybdène, de hafnium, de tantale, de tungstène ou de rhénium.".

N° 29.42.

Nouvelle rédaction :

"**29.42** 2942.00 **Composés de coordination, (autres que les produits du n° 29.36); autres composés organiques.**".]

ARTICLE 16 PROCEDURE

A. AMENDMENTS TO THE NOMENCLATURE

[CHAPTER 29

Note 5 (c) (1).

Delete and substitute :

"(1) Inorganic salts of organic compounds such as acid-, phenol- or enol-function compounds or organic bases, of Sub-Chapters I to X or heading No. 29.42, are to be classified in the heading appropriate to the organic compound, except in the case of compounds of phenols with transition metals, which are classified in heading 29.42; and".

Note 5 (d).

Delete and substitute :

"(d) Metal alcoholates, other than alkoxides of transition metals, are to be classified in the same heading as the corresponding alcohols, except in the case of ethanol (heading No. 29.05).".

New Note 8.

Insert the following new Chapter Note :

"8.- Heading No. 29.42 includes compounds of organic acids (whether or not other functional groups are present) with transition metals containing one of the cations titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zirconium, niobium, molybdenum, hafnium, tantalum, tungsten or rhenium.".

Heading 29.42

Delete and substitute :

"**29.42** 2942.00 **Co-ordination compounds (excluding products of heading No. 29.36); other organic compounds.**".]

B. MODIFICATION DES NOTES EXPLICATIVES

[CHAPITRE 29.

Page 342.

1. Note 5 c) 1°).

Nouvelle rédaction :

"1°) Les sels inorganiques des composés organiques tels que les composés à fonction acide, à fonction phénol ou à fonction énol, ou les bases organiques, des Sous-Chapitres I à X ou du n° 29.42, sont à classer dans la position dont relève le composé organique correspondant, sauf dans le cas des composés du phénol avec des métaux de transition, qui sont à classer dans le n° 29.42;".

2. Note 5 d).

Nouvelle rédaction :

“d) Les alcoolates de métaux, autres que les alkoxydes de métaux de transition, sont à classer dans la même position que les alcools correspondants, sauf dans le cas de l’éthanol (n° 29.05).”.

3. Nouvelle Note 8.

Insérer la nouvelle Note de Chapitre suivante :

“8.- Le n° 29.42 comprend les composés des acides organiques (même comprenant d'autres groupes fonctionnels) avec des métaux de transition qui contiennent un cation de titane, de vanadium, de chrome, de manganèse, de fer, de cobalt, de nickel, de cuivre, de zirconium, de niobium, de molybdène, de hafnium, de tantale, de tungstène ou de rhénium.".

Page 394. N° 29.20. Dernier paragraphe (exclusion).

Nouvelle rédaction :

“La présente position **ne couvre pas** les composés de coordination, y compris les alkoxydes de métaux de transition, comme par exemple le tétra-*n*-butoxyde de titane, dénommé également titanate de tétrabutyle (**n° 29.42**).”

B. AMENDMENTS TO THE EXPLANATORY NOTES

[CHAPTER 29

Page 342.

1. Note 5 (c) (1).

Delete and substitute :

"(1) Inorganic salts of organic compounds such as acid-, phenol- or enol-function compounds or organic bases, of Sub-Chapters I to X or heading No. 29.42, are to be classified in the heading appropriate to the organic compound, except in the case of compounds of phenols with transition metals, which are classified in heading 29.42; and".

2. Note 5 (d).

Delete and substitute :

"(d) Metal alcoholates, other than alkoxides of transition metals, are to be classified in the same heading as the corresponding alcohols, except in the case of ethanol (heading No. 29.05).".

3. New Note 8.

Insert the following new Chapter Note 8 :

"8. - Heading No. 29.42 includes compounds of organic acids (whether or not other functional groups are present) with transition metals containing one of the cations titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zirconium, niobium, molybdenum, hafnium, tantalum, tungsten or rhenium.".

Page 394. Heading 29.20. Last paragraph (exclusion).

Delete and substitute :

"This heading **excludes** co-ordination compounds, including transition metal alkoxides, e.g., titanium tetra-*n*-butoxide (also known as tetrabutyl titanate) (**heading 29.42**)."

Page 412. N° 29.31. Dernier paragraphe (exclusion).

Nouvelle rédaction :

"La présente position **ne comprend pas** :

a) Les thiocomposés organiques dont la molécule comporte un ou plusieurs atomes de soufre directement liés à l'atome (aux atomes) de carbone (voir la Note 6 du présent Chapitre). Sont exclus les composés dont la molécule comporte, outre des atomes de soufre directement liés à l'atome (aux atomes de carbone), d'autres éléments non métalliques ou métalliques directement liés à l'atome (aux atomes) de carbone (par exemple, le fonofos (ISO)) (**n° 29.30**).

b) Les dérivés alkylés de métaux de transition, les fullerènes métalliques et les composés complexes de métaux (y compris les métallocènes et les métaux carbonyles, comme par exemple le ferrocène et le fer carbonyle) (**n° 29.42**)."

Page 446. N° 29.42.

Nouvelle rédaction :

"**29.42 - COMPOSES DE COORDINATION (AUTRES QUE LES PRODUITS DU N° 29.36); AUTRES COMPOSES ORGANIQUES.**".

A.- COMPOSES DE COORDINATION

Les composés de coordination (complexes) contiennent un ion central (d'ordinaire un métal de transition) et un ou plusieurs ligands organiques qui, ensemble, forment un complexe dont les liaisons ne sont ni covalentes ni ioniques mais intermédiaires entre ces deux types. Le complexe peut être cationique, anionique ou non-ionique suivant la somme des charges de l'atome central et du ou des ligands. Sont inclus dans la présente position les composés en cage, y compris les complexes internes et externes de fullerène.

Les composés de coordination couverts par la présente position couvrent notamment :

1) **Les composés complexes contenant de simples ligands donneurs** : le ligand partage une ou plusieurs paires d'électrons avec l'atome de métal. Les ligands peuvent comporter une seule liaison ou plusieurs liaisons. Un ligand comportant une seule liaison est relié au métal par un seul de ses atomes. Un ligand comportant plusieurs liaisons est relié au métal par plusieurs de ses atomes (composés complexes d'éthylènediamine, par exemple). Les composés de coordination dont les ligands comportent plusieurs liaisons sont appelés chélates.

   La présente partie comprend notamment :

   a) les composés complexes d'éthylènediamine
   b) les composés complexes de dicétonates chélatés
   c) les alkoxydes de métaux de transition
   d) les composés des acides organiques (même comprenant d'autres groupes fonctionnels) avec des métaux de transition
   e) les composés complexes du fluorure de bore avec l'acide acétique, l'éther diméthylique ou le phénol
   f) l'acéto-arsénite de cuivre *(vert de Schweinfurt)*
   g) les gluconates antimonio-sodiques (antimoine tri- ou pentavalent).

Page 412. Heading 29.31. Last paragraph (exclusion).

Delete and substitute :

"This heading **excludes** :

(a) Organo-sulphur compounds whose molecules have sulphur atom(s) directly linked to carbon atom(s) (see Note 6 to this Chapter). It excludes compounds whose molecules contain, in addition to sulphur atom(s) directly linked to carbon atom(s), other non-metal or metal atom(s) directly linked to carbon atom(s) (e.g., fonofos (ISO)) (**heading 29.30**).

(b) Transition metal alkyls, metal fullerenes and metal complexes (including metallocenes and metal carbonyls, e.g., ferrocene, iron carbonyl) (**heading 29.42**)."

Page 446. Heading 29.42.

Delete and substitute :

"**29.42 - CO-ORDINATION COMPOUNDS (EXCLUDING PRODUCTS OF HEADING No. 29.36); OTHER ORGANIC COMPOUNDS.**".

(A) CO-ORDINATION COMPOUNDS

Co-ordination (complex) compounds comprise a central atom or ion (usually a transition metal) and one or more organic ligands, which together form a complex with bonding that is neither covalent nor ionic, but intermediate between the two types. The complex may be cationic, anionic or non-ionic, depending on the sum of the charges of the central atom and the ligand. The heading also includes polytopal (cage) compounds, such as internal and external fullerene complexes.

The co-ordination compounds covered by this heading include :

(1) **Complexes with simple donor ligands** : the ligand shares one or more electron pairs with the metal atom. Ligands can be unidentate or multidentate. A unidentate ligand is connected to the metal through only one of its atoms. A multidentate ligand is connected to the metal through more than one of its atoms (e.g., ethylenediamine complexes). Co-ordination compounds with multidentate ligands are known as chelates.

This part includes, *inter alia*:

(a) Ethylenediamine complexes.
(b) Diketonate chelate complexes.
(c) Alkoxides of transition metals.
(d) Compounds of organic acids (whether or not other functional groupes are present) with transition metals.
(e) Boron trifluoride complexes with acetic acid, dimethyl ether or phenol.
(f) Copper acetoarsenite (Schweinfurt green).
(g) Sodium antimonylgluconate and **sodium stibogluconate** (tri- or pentavalent antimony).

2) **Les complexes métalliques** : composés dans lesquels les électrons du ligand (des ligands) participent à la liaison. Le ligand donne des électrons au métal, mais comporte également des orbitales réceptrices qui peuvent accepter des électrons du métal (back-bonding). Comme ces ligands peuvent accepter des électrons, ils sont appelés ligands acides. Les molécules et ions organiques qui peuvent former des composés complexes métalliques comprennent notamment l'oxyde de carbone, les oléfines, les ions cyclopentadiényl (métallocènes) et les ions tropylium.

La présente partie couvre notamment :

a) le ferrocène
b) le fer carbonyle et autres métaux carbonyles

3) **Autres composés organométalliques** : autres composés à liaisons carbone - métal

La présente partie comprend notamment :

a) les dérivés alkylés de métaux de transition
b) les fullerènes métalliques

B.- AUTRES COMPOSES ORGANIQUES

La présente partie couvre les composés organiques de constitution chimique définie présentés isolément qui ne peuvent être classés ailleurs.

1) **Cétènes**. Comme les cétones, ils se caractérisent par un groupement carbonyle (>C=O). Toutefois, dans les cétènes, le groupement carbonyle est lié à l'atome de carbone voisin par une double liaison (cétène, diphénylcétène, par exemple).

La présente position **exclut** toutefois le dicétène qui est une lactone du **n° 29.32**.

2) **Di-iodure de dithymol**.

3) **Méthacrylochlorure de chrome**.

Toutefois, la présente position **ne comprend pas** les produits compris par la Note 1 de la Section VI ou d'autres composés de coordination du **n° 29.36** tels que la vitamine B_{12} et ses dérivés.".]

x

x x

(2) **Metal complexes** : complexes in which the electron system of the ligand(s) is involved in bonding. The ligand donates electrons to the metal but also has acceptor orbitals which can accept electrons from the metal (back-bonding). Because these ligands can accept electrons, they are called acid ligands. Organic molecules and ions which can form metal complexes include carbon monoxide, olefins, cyclopentadienyl ions (metallocenes), tropylium ions, etc.

This part includes, *inter alia* :

(a) **Ferrocene**.
(b) **Iron carbonyl, nickel carbonyl,** etc.

(3) **Other organometallic compounds :** other compounds with carbon-metal bonds.

This part includes, *inter alia* :

(a) **Transition metal alkyls**.
(b) **Metal fullerenes**.

(B) OTHER ORGANIC COMPOUNDS

This part covers separate chemically defined organic compounds not classified elsewhere.

(1) **Ketenes**. Like ketones, these are characterised by a carbonyl group (>C=O). However, in ketenes, the carbonyl group is linked to the neighbouring carbon atom by a double bond (e.g., ketene, diphenylketene).

This heading however **excludes** diketene which is a lactone of **heading 29.32**.

(2) **Dithymol di-iodide**.

(3) **Methacrylate chromic chloride**.

However, this heading **does not include** products covered by Note 1 to Section VI or other co-ordination compounds of **heading 29.36**, such as vitamin B_{12} and its derivatives.".]

x

x x

PROPOSALS BY THE SWISS ADMINISTRATION
(new texts underscored)

PROPOSAL A

Note 5 (c) (1) (New wording)

"Inorganic salts of organic compounds such as acid-, phenol- or enol-function compounds or organic bases, of Sub-Chapters I to X or heading No. 29.42, are to be classified in the heading appropriate to the organic compound, except in the case of compounds covered by Chapter Note 8; and"

Note 5 (d) (New wording)

"Metal alcoholates, **[other than alkoxides of transition metals,] [with alkali or alkaline-earth metals]** are to be classified in the same heading as the corresponding alcohols, except in the case of ethanol (heading No. 29.05)."

Note 6 (New wording)

"The compounds of headings Nos. 29.30 and 29.31 are organic compounds the molecules of which contain, in addition to atoms of hydrogen, oxygen or nitrogen, atoms of other non-metals or of metals [, other than transition metals,] [alkali or alkaline-earth metals] (such as sulphur, arsenic, mercury or lead) directly linked to carbon atoms."

New Note 8

"Heading No. 29.42 includes, *inter alia*, organic compounds with [transition metals containing one of the cations titanium, vanadium, chromium, magnesium, iron, cobalt, nickel, copper, zirconium, niobium, molydenum, hafnium, tantalum, tungsten or rhenium] [metals other than alkali or alkaline-earth metals], including metal alkyls, metal fullerenes and metal complexes."

New text of heading 29.42

"Co-ordination compounds (excluding products of headings Nos. 29.36, 29.37, 29.39 and 29.41); other organic compounds"

New exclusion for Explanatory Note to heading 29.19 (page 393)

"This heading does not cover compounds mentioned in Note 8 to Chapter 29 **(heading No. 29.42).**"

Exclusion for Explanatory Note to heading 29.20 (page 394) (New wording)

"This heading does not cover the compounds mentioned in Note 8 to Chapter 29, including transition metal alkoxides, e.g., titanium tetra-n-butoxide (also known as tetrabutyl titanate) (**heading 29.05**).

Exclusion for Explanatory Note to heading 29.31 (page 412) (New wording)

"This heading **excludes** organo-sulphur compounds whose molecules have sulphur atom(s) directly linked to carbon atom(s) (see Note 6 to this Chapter). It **excludes** compounds whose molecules contain, in addition to sulphur atom(s) directly linkced to carbon atom(s), other non-metal or metal atom(s) directly linked to carbon atom(s) (e.g., fonofos (ISO) (**heading 29.30**). The heading also **excludes** the compounds mentioned in Note 8 to this Chapter, including metallocenes and metal carbonyls, e.g., ferrocene, iron carbonyl) (**heading 29.42**).

PROPOSAL B

New Note 8 to Chapter 29

"Except where the context otherwise requires, co-ordination compounds shall be classified according to the following rules :

- Where necessary, co-ordination compounds should be considered as being fragmented by "cleaving" the metal-oxygen, metal-nitrogen, metal-sulphur or metal-halogen bond(s) and should be classified according to the fragment falling in Chapter 29, in the heading occurring last in numerical order.

- Compounds with a metal-carbon bond fall in heading 29.31. Metal-carbon bonds include those between a metal atom and the carbon atom of a carbonyl group (for example, iron carbonyl) or those between a metal and and an unsaturated hydrocarbon (for example, ferrocene or polytopal cage compounds such as fullerenes)."

x

x x

COMMENTS BY THE SWISS ADMINISTRATION
Classification Scenario

	Chemical	(a)	(b)	(c)	(d)
1	iron di(toluene-4-sulphonate)	29.04	29.42	29.42	29.04
2	zinc di(toluene-4-sulphonate)	29.04	29.04	29.42	29.04
3	aluminium tributanolate	29.05	29.05	29.42	29.05
4	titanium tetra-n-butoxide	29.05	29.42	29.42	29.05
5	calcium diphenolate	29.07	29.07	29.07	29.07
6	copper diphenolate	29.07	29.42	29.42	29.07
7	aluminium tris(4-hydroxybenzenesulphonate)	29.08	29.08	29.42	29.08
8*	aluminium tris(2,4-pentanedionato-O,O')	29.14	29.14	29.42	29.14
9	sodium acetate	29.15	29.15	29.15	29.15
10	copper acetate	29.15	29.42	29.42	29.15
11*	basic copper acetate	29.15	29.42	29.42	29.15
12	lead acetate	29.15	29.42	29.42	29.15
13*	basic lead acetate	29.15	29.42	29.42	29.15
14	calcium oxalate	29.17	29.17	29.17	29.17
15	nickel oxalate	29.17	29.42	29.42	29.17
16	tripotassium trioxalatoferrate	29.17	29.42	29.42	29.17
17	sodium citrate	29.18	29.18	29.18	29.18
18*	iron citrate	29.18	29.42	29.42	29.18
19	sodium iron citrate	29.18	29.42	29.42	29.18
20	calcium glycerophosphate	29.19	29.19	29.19	29.19
21*	iron glycerophosphate	29.19	29.42	29.42	29.19
22*	zinc O,O,O',O'-tetrabutylbis(di-thiophosphate)	29.20	26.20	29.42	29.20
23	sodium feredetate (INN)	29.22	29.42	29.42	29.22
24*	ferrocholinate (INN)	29.23	29.42	29.42	29.23
25	nickel bis(diethyldithiocarb-amate	29.30	29.42	29.42	29.30
26*	zinc bis(diethyldithiocarb-amate)	29.30	29.30	29.42	29.30
27*	magnesium dinicotinate	29.33	29.33	29.33	29.33
28	iron dinicotinate	29.33	29.42	29.42	29.33
29	bacitracin zinc (INNM)	29.41	29.41	29.41	29.41
30*	budotitane (INN)	29.14	29.42	29.42	29.14
31*	pyrithione zinc (INN)	29.33	29.33	29.42	29.33
32	methylmagnesium chloride	29.31	29.31	29.31	29.31
33*	meralein sodium (INN)	29.31	29.31	29.42	29.31
34*	sodium timerfonate (INN)	29.31	29.31	29.42	29.31
35*	N-(ethylmercury)toluene-4-sulfonanilide	29.35	29.35	29.42	29.35
36*	phenylmercury dimethyldithiocarbamate	29.31	29.31	29.42	29.31

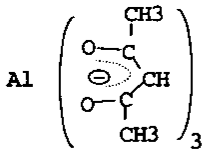
* See chemical structure in Annex D.
(a) = present
(b) = Swiss Proposal A (transition metals)
(c) = Swiss Proposal A (non-alkali/alkaline-earth metals)
(d) = Swiss Proposal B

x

x x

SELECTED CHEMICAL STRUCTURES
(See Annex C)

(8)



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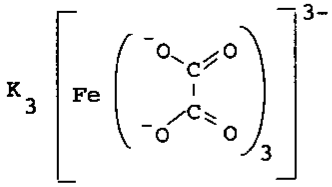
(13) $Pb(CH3COO)_2 . 3PbO . H_2O$

(16)



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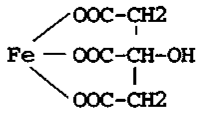

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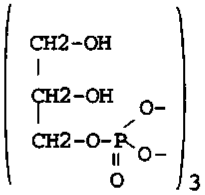

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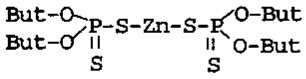

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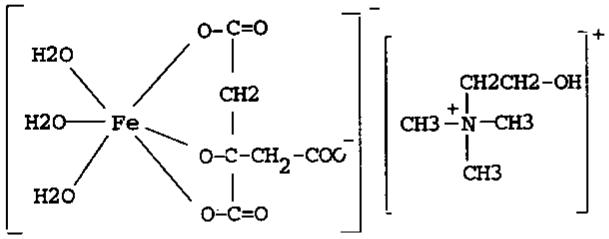

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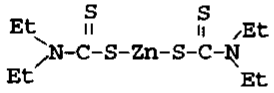

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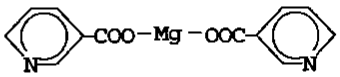

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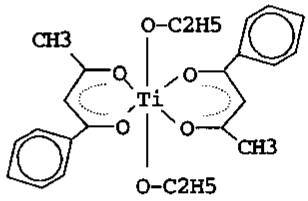

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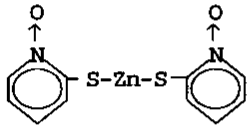

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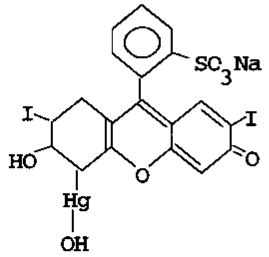

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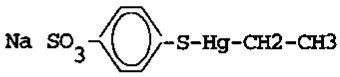

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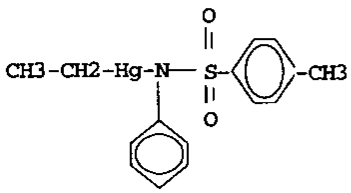

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