



HARMONIZED SYSTEM
COMMITTEE

-
25th Session
-

NC0207E1

O. Eng.

Brussels, 14 February 2000.

AMENDMENT OF THE EXPLANATORY NOTE TO HEADING 38.16

(RESERVATION BY CANADA)

(Item VIII.7 on Agenda)

Reference documents :

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| 19.499 Annex XVIII (Technical Team) | 41.666 (SSC/13) |
| 21.046 (NC/33) | 41.690 Annex A/6 (SSC/13 – Report) |
| 21.150 Annexes K/32 and P/3 (NC/33 - Report) | 42.018 (HSC/21) |
| 40.030 (HSC/17) | 42.100 Annex E/1, para.10 (HSC/21 –Report) |
| 40.260 Annexe C/3, para. 4 (HSC/17 - Report) | 42.194 (SSC/14) |
| 40.081 (RSC/13) | 42.850 Annex A/4 (SSC/14 – Report) |
| 40.180 Annexes C/18 and H/14 (RSC/13 - Report) | NC0016E1, para. 8 to 10 (HSC/23) |
| 40.039 (HSC/17) | NC0090E2, Annex E/1, para. 6 to 9 (HSC/23 – Report) |
| 40.260 Annexes E/1 (para.56), M/13 and N/14 (HSC/17 - Report) | NC0130E1 (HSC/24) |
| 40.434 (HSC/18) | NC0160E2, Annexes G/11 and K/1 (HSC/24 – Report) |
| 40.600 Annex H/5 (HSC/18 – Report) | NS0003E1 (SSC/15) |
| 40.802 (SSC/12) | NS0014E2 Annex A/2 (SSC/15 – Report) |
| 40.870 Annex A/15 (SSC/12 – Report) | |

I. BACKGROUND

1. The Harmonized System Committee at its 23rd Session adopted Article 16 amendments to the texts of heading 25.18 and subheadings 2518.10 to 2518.30 and agreed to amend the second and third paragraphs of the Explanatory Note to heading 25.18 by corrigendum. It was further agreed that conforming amendments to the Explanatory Note to heading 38.16 should be studied as recommended by the Scientific Sub-Committee (see Annex E/1/2/Rev. to Doc. NC0090E2).
2. The Committee at its 24th Session examined the amendments to the Explanatory Note to heading 38.16 drafted by the Secretariat on the basis of the discussions held at the 14th Session of the Scientific Sub-Committee.

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3. The Canadian Delegate stated that sodium silicate and magnesium or zinc fluosilicates were not hydraulic binders and therefore the proposed amendment to the third line of the first paragraph of the Explanatory Note to heading 38.16 was not acceptable. Instead, the following sentence could be added at the end of the present first paragraph : "Products of this heading may also contain non-refractory binders such as hydraulic binders".
4. The same delegate also stated that there existed ramming mixes other than dolomite ramming mixes such as magnesite ramming mixes and therefore the amendment to Item (b) of the third paragraph of the Explanatory Note to heading 38.16 was also not acceptable. Instead, she proposed to delete "Ramming mixes" and substitute "Ramming mixes, including those with added hydraulic binders".
5. Another delegate, however, expressed the sense of the majority of the Committee that the amendments drafted by the Secretariat merely served to distinguish dolomite ramming mixes of heading 25.18 (which used non-hydraulic binding agents) from those of heading 38.16 which used hydraulic binding agents. The Secretariat proposal was thus complementary to the amendments to the Explanatory Note to heading 25.18 which the Committee approved at its 23rd Session.
6. The Committee finally agreed to adopt the texts proposed by the Secretariat (see Doc. NC0130E1 and Annexes G/11 and K/1 to Doc. NC0160E2, HSC/24 – Report).

II. SECRETARIAT ACTION

7. After the 24th Session of the Harmonized System Committee, taking into account the fact that Item (c) of the Explanatory Note to heading 38.16 described "gunning mixes" as "refractory aggregates mixed with hydraulic setting or other binders...", the Secretariat felt that it would be appropriate to submit the matter to the Scientific Sub-Committee for further study.
8. According to the technical literature available to the Secretariat (Ullmann's Encyclopedia of Industrial Chemistry, Fifth Edition, Volume A23, page 7, Tables 3 and 4), refractory compositions of heading 38.16 might contain both hydraulic and non-hydraulic binders and, in most cases, combinations thereof (see paras. 12 and 13 of Doc. NS0003E1). Therefore, the Secretariat also asked the Scientific Sub-Committee to express its views as to whether "dolomite ramming mixes (pisé de dolomie)" of heading 25.18 could be considered a "similar composition" of heading 38.16. If this is the case, it could be appropriate to transfer "dolomite ramming mixes (pisé de dolomie)" of heading 25.18, which are also used as refractory materials, to heading 38.16 during the next review cycle.

III. NOTE FROM THE CANADIAN ADMINISTRATION

9. On 23 December 1999, the Secretariat received the following note from the Canadian Administration :
10. "I am writing with regard to the decision taken by the Harmonized System Committee at its 24th Session to amend the Explanatory Note to heading 38.16. In accordance with

Article 8.2 of the Harmonized System Convention, the Canadian Administration requests that this decision be referred to the Council.

11. It has come to our attention that the subject matter of our reservation has been tabled for the upcoming Scientific Sub-Committee in January 2000. In order to ensure that our reservation does not prevent discussion of this issue at SSC/15, we request that our reservation be referred directly back to the upcoming 25th Session of the HSC for re-examination in accordance with paragraph 2 (a) (ii) of Council Decision No. 298. This way, the conclusions of the SSC can be discussed at the same time as our reservation...".
12. As requested by Canada, the detailed paper outlining the reasons for the Canadian reservation as well as additional technical information was circulated at the 15th Session of the Scientific Sub-Committee as an information paper.
13. The paper outlining the reason for reservation is set out in Annex I to this document. The technical information submitted will be available to the delegates during the meeting. Furthermore, the views expressed by the Delegate of Canada at the 15th Session of the Scientific Sub-Committee are summarized in paragraphs 16 to 18 below.

IV. CONCLUSIONS OF THE SCIENTIFIC SUB-COMMITTEE

14. At its 15th Session, the Chairman informed the Scientific Sub-Committee about the reservation entered by the Canadian Administration, adding that this matter would be re-examined by the Harmonized System Committee at its 25th Session in March 2000.
15. The Delegate of Canada pointed out that, since heading 38.16 covered "refractory" cements, mortars, concretes and similar compositions, for all products of this heading, the binding agents used had to be refractory in nature. Nevertheless, certain products of the heading could also contain hydraulic or non-hydraulic binders to keep them in place before pre-burning. In this connection, she noted that sodium silicate, magnesium fluosilicate and zinc fluosilicate mentioned in the first paragraph of the Explanatory Note to heading 38.16 were non-hydraulic but refractory binding agents. In fact, only the aluminous cements mentioned in the third paragraph of that Explanatory Note had both hydraulic and refractory properties. However, their hydraulic binding function was not relevant to the refractory nature of the compositions of heading 38.16, because aluminous cements performed their binding action by forming ceramic bonds at high temperatures.
16. She also explained that water and hydrated substances had deteriorating effects in manufacturing refractory materials and industry avoided, as far as possible, the use of hydraulic binders in refractory mixes. Therefore, her administration was of the view that it was technically incorrect to insert the term "hydraulic" in the penultimate line of the first paragraph of the Explanatory Note to heading 38.16, since the binding agents used in the products of this heading should be distinguished on the basis of their refractory properties.
17. She further noted that dolomite ramming mixes (pisé de dolomie) of heading 25.18 used the same types of binding systems as other refractory preparations and could not be distinguished from dolomite-based ramming mixes of heading 38.16 on the basis of binders, adding that it was very difficult to determine how a binding agent would function in refractory compositions.

18. She concluded that for the reasons summarised above, if the Harmonized System Committee wished to maintain a reference to hydraulic binders, subject to agreement by the Scientific Sub-Committee, the first paragraph of the Explanatory Note to heading 38.16 could be amended as follows (the proposed changes are underlined for convenience only) :
- “... calcined dolomite, with an added refractory binder (for example, sodium silicate, magnesium or zinc fluosilicates). Many of the products of this heading also contain non-refractory binders such as hydraulic binding agents.”
19. The Delegate of Germany explained that dolomite ramming mixes were special products with a basis of a high quantity of dolomite and some non-hydraulic organic binders such as tar, pitch or resins. According to a new ISO standard regarding ramming mixes which she had obtained from industry, the bond was of a non-hydraulic nature. As such, dolomite ramming mixes should be classified in heading 25.18. They could be distinguished from refractory compositions of heading 38.16, which contained hydraulic binders as well as a wide variety of other binders and additives, whether refractory or not. For example, refractory mortars and refractory concretes would always contain hydraulic binders. Therefore, in her view, it would be appropriate to amend the penultimate line of the first paragraph of the Explanatory Note to heading 38.16 by replacing the expression “an added binder” with the expression “a variety of added binders”.
20. The Chairman drew the attention of the Sub-Committee to the fact that, on the basis of the amendments to heading 25.18 already adopted by the Council, all dolomite ramming mixes (pisé de dolomie) had to be classified in heading 25.18.
21. On the basis of the above discussion, the Sub-Committee agreed to propose to the Harmonized System Committee that :
- (a) The first paragraph of the Explanatory Note to heading 38.16 be amended as proposed by Canada in paragraph 18 above;
 - (b) Item (b) of the same Explanatory Note be amended by deleting “Ramming mixes” and substituting “Ramming mixes, other than dolomite ramming mixes,”
 - (c) Reference to an “added non-hydraulic binder” in the new exclusion (a) to the same Explanatory Note (see Annex K/1 to Doc. NC0160B2) be deleted; and
 - (d) Exclusion (b) of the Explanatory Note to heading 25.18 be deleted.
22. The Sub-Committee also confirmed the Canadian view that sodium silicate, magnesium fluosilicate and zinc fluosilicate were non-hydraulic binders.
23. Finally, the Sub-Committee generally agreed with the Secretariat’s view that dolomite ramming mixes (pisé de dolomie) of heading 25.18 could be transferred to heading 38.16 during the next review cycle due to their similarity to the preparations of heading 38.16 in composition and use. Taking into account the fact that the matter would be re-examined by the Harmonized System Committee in March of this year, the Secretariat invited administrations to submit their further comments and proposals, if any, to the Secretariat as soon as possible.

V. SECRETARIAT'S COMMENTS

24. By the time of the preparation of this document, the Secretariat had not received any further comments or proposals from administrations.
25. On the basis of the advice given by the Scientific Sub-Committee, the Secretariat has drafted the suitable amendments to the Explanatory Notes to headings 25.18 and 38.16. The texts drafted are set out in Annex II to this document.

VI. CONCLUSION

26. Taking into account the arguments put forward by the Canadian Administration and the conclusions of the Scientific Sub-Committee in this regard, the Committee is requested to examine the draft amendments set out in Annex II to this document.
27. The Committee is also requested to express its views as to whether it agrees with the Scientific Sub-Committee that dolomite ramming mixes (pisé de dolomie) of heading 25.18 could be transferred to heading 38.16 during the next review cycle due to their similarity to the preparations of heading 38.16 in terms of composition and use.

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CANADIAN RESERVATION :
AMENDMENT OF THE EXPLANATORY NOTE TO HEADING 38.16

I. BACKGROUND

1. When examining draft amendments to the legal texts and Explanatory Notes to heading 25.18 concerning dolomite ramming mixes, the Scientific Sub-Committee (14th Session) recommended that the terms "non-hydraulic" and "hydraulic" be added in the Explanatory Notes to headings 25.18 and 38.16, respectively, in order to distinguish between the two groups of ramming mixes in the HS (Annex A/4 to Doc. 42.850). Based on this recommendation, the Harmonized System Committee agreed to amend the Explanatory Notes by corrigendum (Annex E/1 to Doc.NC0090E2, and Annex G/11 to Doc. NC0160E2).
2. At the 23rd and 24th Sessions of the HSC, the Canadian Administration expressed its concerns about the inclusion of the terms "non-hydraulic" and "hydraulic" in the proposed Explanatory Notes stating that they would not provide a clear demarcation between the ramming mixes of headings 25.18 and 38.16. Our administration accepted the amendments to heading 25.18 even though, in our opinion, they are a potential source of confusion. However, when the HSC also agreed to amend the Explanatory Notes to heading 38.16 to include the term "hydraulic" in the penultimate line of the first paragraph of the Explanatory Note, the Canadian Administration decided to enter a Reservation as the accepted wording was technically incorrect.

II. HEADING 38.16

3. Heading 38.16 provides for refractory cements, refractory mortars, refractory concretes and similar refractory compositions. The word "refractory" refers to the characteristic of goods that are capable and intended to be used at temperatures of the order of 1,500°C and higher (general Explanatory Notes to Chapter 69, page 997). Cement refers to a binding agent; mortar refers to a preparation of a binding agent and an aggregate having a fine particle size; and concrete refers to a preparation of a cement and a mixture of aggregates having both fine and coarse particle sizes. For all of the products classifiable in heading 38.16, a "refractory binder" is essential.
4. Some of the preparations of heading 38.16 are used in the metallurgical industries as part of the refractory furnaces. For example, ramming mixes and gunning mixes are used to fill voids between refractory bricks or to produce surface coatings. These mixes are normally applied with special equipment to produce a densely packed material. Once these mixes are applied to the furnace, they are slowly heated to high temperatures in an operation known as a pre-burn to produce the desired refractory filling or coating. These goods must contain refractory binders that will maintain the filling's or coating's integrity when it comes in contact with molten metals.
5. "Refractory binding agent" refers to a binder that can withstand refractory temperatures and is intended to be used at these temperatures. Typically, these agents must be heated once (pre-burn) to develop permanent ceramic bonds of the type described in the general

Explanatory Notes to Chapter 69, page 996, specifically diffusion, chemical transformation or partial fusion. The ceramic bonds provide the binding strength that is required to withstand the harsh conditions encountered in metallurgical operations (high temperatures and contact with molten metal). The ability to form ceramic bonds constitutes the essential characteristic of the goods of heading 38.16.

6. A significant number of the goods of heading 38.16 also contain room temperature binders, either hydraulic or non-hydraulic, to keep them in place (green strength) prior to the pre-burn. "Hydraulic binding agent" refers to an agent that binds via reactions with water (hydration reactions). Typical examples include hydraulic cements and plaster of Paris. These goods set (react) when placed in contact with water and hence, they are never stored in water. For example, when Portland cement comes in contact with water, it must be used within a short delay or it must be discarded.
7. Common examples of refractory binding agents are sodium silicate, phosphoric acid/phosphates and aluminous cement. Sodium silicate is commonly shipped as an aqueous solution and does not set in water. It is NOT a hydraulic binding agent. Technical literature indicates that at elevated temperatures, sodium silicate is a source of highly reactive sodium ions that react with the refractory aggregates. The resulting reactive site is available for the formation of silica bridging. Magnesium fluosilicate and zinc fluosilicate function as refractory binders in a similar manner in that fluorine acts as the reactive ion.
8. Aluminous cement is a common refractory binding agent and is mentioned in the third paragraph of the Explanatory Notes to heading 38.16 as a heat-resistant hydraulic cement. This material is unique in that it displays both hydraulic and refractory binding properties. The scientific literature clearly indicates that these properties are derived from different chemical reactions. A good summary article can be found in the "Transactions of the British Ceramic Society", Vol. 81, No. 2, 1982, pages 35 to 42 (attached in Annex 1).
9. Figure 7 on page 40 of this article indicates that hydration reactions occur at temperature below 110°C. This statement is valid for all other hydraulic binders. Dehydration reactions occur between temperatures of 110°C and approximately 400°C. Recrystallization occurs at higher temperatures and corresponds to the ceramic bonding mentioned in the Explanatory Notes to Chapter 69. Figure 9, page 41 of the same article indicates that aluminous cements lose their strength as they are heated above 100°C. Aluminous cement develops its greatest strength once permanent ceramic bonds are formed, as a result of heating to temperatures above 1100°C.
10. Clearly, the hydraulic binding action of the aluminous cement (pertaining to the formation of the hydrated species) is not relevant to the refractory function of the goods of heading 38.16. It is the ceramic bonding characteristics of the constituents within the aluminous cement that provide the permanent binding action for the preparations of heading 38.16.
11. Water, both as moisture and chemically bound water (from hydrated species such as hydraulic binders), must be carefully removed by slow heating rates during the pre-burn. Otherwise, the refractory coating or filling will either delaminate or contain voids and channels that will fill with molten metal which will greatly reduce the life expectancy of the refractory layer. The trend today is to reduce the amount of water and hydrated species in refractory mixtures to a minimum and thus, the popularity of dry and semi-dry gunning mixes.

III. ACTION REQUESTED

12. Based on the information presented above, the Canadian administration requests that the addition of the term "hydraulic" to the first paragraph of the Explanatory Notes to heading 38.16 not be implemented as it is technically incorrect.
13. This change was proposed as a means of distinguishing between the dolomite ramming mixes of heading 25.18 and the other (non-dolomite) ramming mixes of heading 38.16. Dolomite ramming mixes are those ramming mixes that contain dolomite as the main aggregate. They are distinguished from other ramming mixes by the identity of the aggregate only. They use the same types of binding systems as other ramming mixes and indeed other refractory preparations. Dolomite ramming mixes cannot be distinguished from other ramming mixes on the basis of the binder.
14. Canada considers that the present Explanatory Notes to heading 38.16 are correct and do not need to be changed. However, if the HSC wishes to maintain a reference to hydraulic binders, then we propose the following change to the first paragraph of the Notes (the proposed additions are underlined for convenience only) :

... calcined dolomite, with an added refractory binder (for example, sodium silicate, magnesium or zinc fluosilicates). Many of the products of this heading also contain non-refractory binders (green strength additives) such as hydraulic binding agents.
15. If the HSC does not agree with the proposal contained in paragraph 14, then we request that this issue be re-submitted to the Scientific Sub-Committee so that they can review the issue based on the additional information that we have supplied.

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Annexe II au Doc. NC0207B1
Annex to

(CSH/25/mars 2000)
(HSC/25/March 2000)

ANNEXE II

MODIFICATION DES NOTES EXPLICATIVES EN CE QUI
CONCERNE LES MELANGES DE DAMAGE

(Point VIII.7 de l'ordre du jour)

ANNEX II

AMENDMENTS TO THE EXPLANATORY NOTES
CONCERNING RAMMING MIXES

(Item VIII.7 on Agenda)

MODIFICATION DES NOTES EXPLICATIVES
A EFFECTUER PAR VOIE DE CORRIGENDUM

CHAPITRE 25.

Page 204 a. N° 25.18. Dernier paragraphe. Exclusions.

Nouvelle rédaction :

“Par contre, la dolomie concassée pour servir au bétonnage ou à l’empierrement des routes ou comme ballast pour voies ferrées relève du **n° 25.17.**”

CHAPITRE 38.

Page 576. N° 38.16.

1. Premier paragraphe. Troisième et quatrième lignes.

Nouvelle rédaction :

“quartzites en poudre, chaux, dolomie calcinée, additionnées d’un liant réfractaire (silicate de sodium, fluosilicate de magnésium ou de zinc, par exemple). Un grand nombre des produits couverts par la présente position contiennent également des liants non réfractaires comme les liants hydrauliques.”

2. Troisième paragraphe. Alinéa b).

Remplacer "**mélanges de damage**" par "**mélanges de damage**, autres que le pisé de dolomie".

3. Dernier paragraphe. Exclusions.

Nouvelle rédaction :

"La position **ne comprend pas** :

a) Les pisés de dolomie (**n° 25.18**).

b) Les pâtes carbonées du **n° 38.01.**"

AMENDMENTS TO THE EXPLANATORY NOTES
TO BE MADE BY CORRIGENDUM

CHAPTER 25.

Page 204a. Heading 25.18. Last paragraph. Exclusions.

Delete and substitute :

"However, the heading **does not cover** crushed dolomite for concrete aggregates, road metalling or railway ballast (**heading 25.17**)."

CHAPTER 38.

Page 576. Heading 38.16.

1. First paragraph. Third and fourth lines.

Delete and substitute :

"quartzites, chalk, calcined dolomite, with an added refractory binder (for example, sodium silicate, magnesium or zinc fluosilicates). Many of the products of this heading also contain non-refractory binders such as hydraulic binding agents."

2. Third paragraph. Item (b).

Delete "**Ramming mixes**" and substitute "**Ramming mixes**, other than dolomite ramming mixes".

3. Last paragraph. Exclusions.

Delete and substitute :

"The heading **does not cover** :

(a) Dolomite ramming mixes (**heading 25.18**).

(b) Carbonaceous pastes of **heading 38.01**."
