



SCIENTIFIC SUB-COMMITTEE

NS0003E1

-  
15th Session  
-

O. Eng.

Brussels, 2 December 1999.

AMENDMENTS TO THE EXPLANATORY NOTES CONCERNING RAMMING MIXES

(Item II.2 on Agenda)

Reference documents :

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

I. BACKGROUND

1. The Scientific Sub-Committee at its 14<sup>th</sup> Session noted that the binding agents used in “pisé de dolomie” of heading 25.18 were “non-hydraulic” agents whereas the binding agents used in the products falling in heading 38.16 were “hydraulic” . In this connection, it was pointed out that, according to an ISO definition, the English equivalent of the French term “pisé” was “ramming mix” without any reference to whether or not the binding agents were “hydraulic”. The Sub-Committee, therefore, agreed that the expression “dolomite ramming mix” in the English texts of heading 25.18 and subheading 2518.30 should be used as equivalent to the French expression “pisé de dolomie”.
2. The Sub-Committee also examined draft amendments to the Explanatory Note to heading 25.18.

File No. 2595

3. To avoid confusion in distinguishing between “dolomite ramming mix” and the “ramming mixes” of heading 38.16, which appear in the Explanatory Note to that heading, the Sub-Committee agreed to recommend to the Harmonized System Committee the deletion of the expression “ramming mixes” from the Explanatory Note to heading 38.16 and to describe these products in a different way, and also to insert the term “hydraulic” between the words “added” and “binder” in the penultimate line of the first paragraph of the Explanatory Note.
4. In order to clarify the nature of binders to be used in “dolomite ramming mixes”, the Sub-Committee also agreed that the term “hydraulic” should be inserted between the words “different” and “binding” in the penultimate line of the third paragraph of the draft Explanatory Note amendments (see Annexes A/4 and C/2 to Doc. 42.850, SSC/14 –Report).
5. The Harmonized System Committee at its 23<sup>rd</sup> Session adopted the 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 the Explanatory Note to heading 38.16 should be studied as recommended by the Sub-Committee (see Annex E/2/Rev. to Doc. NC0092E2).
6. The Harmonized System Committee at its 24<sup>th</sup> Session examined the amendments to the Explanatory Notes to heading 38.16 drafted by the Secretariat on the basis of the discussions held at the 14<sup>th</sup> Session of the Scientific Sub-Committee.
7. One 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, it was proposed to add the following sentence at the end of the present first paragraph : “Products of this heading may also contain non-refractory binders such as hydraulic binders”.
8. 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”.
9. 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 23<sup>rd</sup> Session.
10. 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’S ACTION AND COMMENTS

11. After the 24<sup>th</sup> 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 study the matter further.

12. In respect of the question of whether the products of heading 38.16 could contain non-hydraulic binders as well as hydraulic binders, the Secretariat found that following major binders and additives could be used for refractory mixes (Ullmann's Encyclopedia of Industrial Chemistry, Fifth Edition, Volume A23, page 7, Tables 3 and 4) :

Major binders for refractory mixes  
(often used in combination with water and as binder combinations)

Clays (plastic clays, ball clays)  
High-alumina cements, calcium aluminate cements  
Monoaluminium phosphate (solution)  
Inorganic phosphates, mainly sodium  
Alkali silicates  
Ethyl silicate  
Magnesium sulfate  
Aluminum sulfate  
Colloidal silica (silica sol)  
Pitch, tar  
Various synthetic resins  
Variety of organic temporary binders and organometallic binders  
Boron oxide, other boron compounds  
Frits, glass

Special additives (normally <5%)

Powders of nonoxides and salts  
Reactive aluminas  
Fine silica flour (silica fume)  
Metal powders  
Steel fibers  
Organic fibers  
Organic grained materials  
Various organic compounds  
Ethylene glycol

13. The above information suggests that refractory cements, mortars, concretes and similar compositions of heading 38.16 may contain both hydraulic and non-hydraulic binders and, in most cases, combinations thereof. If this is the case, then it would be appropriate to further amend the third line of the first paragraph of the Explanatory Note to this heading by replacing the expression "an added hydraulic binder" with the expression "added hydraulic binders or a combination of hydraulic and non-hydraulic binders". The Sub-Committee is invited to express its views in this respect.
14. As to the question of whether or not sodium silicate and magnesium or zinc fluosilicates were hydraulic binders (see paragraph 7 above), the following information was found in the technical references available to the Secretariat :

- (1) "Hawley's Condensed Chemical Dictionary, Twelfth Edition, R. J. Lewis, Sr., VNR Company, New York"

**Magnesium fluosilicate.** ...soluble in water, ... used as concrete hardeners.

**Sodium silicate.** (water glass). ... soluble in steam under pressure, white powders of varying degrees of solubility, or liquids cloudy or clear and varying from highly fluid to extreme viscosity, ... used as binder for abrasive wheels, foundry cores and molds, waterproofing mortars and cements, flame retardant, chemical equipment lining.

**Zinc fluorosilicate.** (zinc silicofluoride). ... soluble in water, ... used as concrete hardener.

- (2) "Chemical Technology, Professor F. A. Henglein, Pergamon Press, London, Page 819"

BINDING AGENTS FOR MORTARS  
*Tabulation of mortars*

A. Air mortars (not water-resistant)		
B. Hydraulic mortars (hydraulic binding agent)	(1) Hydraulic binding agents, <b>primarily silicates</b>	(a) Hydraulic binding agents (b) Binding agents with latent hydraulic materials
	(2) Alumina cements	(a) Sintered      (b) Molten

- (3) "Ullmann's" (see paragraph 12 above)

Alkali silicates [are] normally used as solution [as binders for refractory mixes], hardening at room temperature by CO<sub>2</sub> reaction or by hardener, thermosetting > 150 °C.

15. The Secretariat's deduction, therefore, is that the above information does not explicitly state that sodium silicate and magnesium and zinc fluosilicates are hydraulic binders used for refractory mixes, but implies that they have, more or less, certain hydraulic properties since they bind the other substances in refractory mixes by the addition of water. The Sub-Committee is requested to clarify this point as well.
16. Finally, the Sub-Committee is invited to express its views as to whether "dolomite ramming mixes (pisé de dolomie)" of heading 25.18 could be considered to be a "similar composition" of heading 38.16, on the basis of the information given above. 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. CONCLUSION

17. Taking into account the Secretariat comments above, the Sub-Committee is requested to express its views as to whether :
- (a) The products of heading 38.16 might contain only "hydraulic" binders or both "hydraulic and non-hydraulic binders or a combination thereof" and, if the latter is the case, whether the Explanatory Note to heading 38.16 should be further amended as suggested by the Secretariat (see paragraph 13 above);
  - (b) Sodium silicate and magnesium or zinc fluosilicates are "hydraulic" binders (see paragraph 15 above); and
  - (c) "Dolomite ramming mixes" of heading 25.18 should be transferred to heading 38.16 during the next review cycle, due to their similarity to the products of heading 38.16 in composition and use (see paragraph 16 above).