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SCIENTIFIC SUB-COMMITTEE

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Brussels, 11 November 1997.

CLASSIFICATION OF "ROZMRAZOVAC - 80 °C"

(Item II.11 on Agenda)

Reference documents :

40.922 (HSC/19)
40.932 (HSC/19)
41.100 Annex H/25 (HSC/19 - Report)

I. BACKGROUND

1. At its 19th Session (April 1997), the Harmonized System Committee, at the request of the Polish Administration, examined the classification of "Rozmrazovac - 80°C", described as a "concentrate of non-freezing fluid for windscreen defrosting" in sub-freezing temperatures. The product reportedly was intended for dilution with demineralized water to a proportion of 1:2 to 1:10. The Polish Administration provided two formulations of the product, as follows :

<u>Ingredients</u>	<u>Formulation 1</u>	<u>Formulation 2</u>
synthetic ethyl alcohol	83.6%	83.6%
laurylan N-28 (anionic surface active agent)	0.5%	0.5%
methyl ethyl ketone	0.18%	0.18%
colouring matter (P3R)	0.001%	0.001%
monoethylene glycol		1.1%
water	up to 100%	up to 100%

2. During the Committee's discussion, arguments were made for classification of this product as denatured alcohol heading 22.07, as a cleaning preparation of heading 34.02 or as a de-icing preparation of heading 38.20. However, the Committee decided that certain technical questions should be submitted to the Scientific Sub-Committee before this question could be considered further.

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II. SECRETARIAT COMMENTS

3. The following questions were referred by the Harmonized System Committee for consideration by the Scientific Sub-Committee :
 - (a) whether the substances, other than ethanol and water, in "Rozmrazovac - 80 °C" are simply denaturants or whether they render the preparations something other than denatured alcohol of heading 22.07;
 - (b) what minimum concentration of ethanol is necessary in these preparations for them to remain suitable for use as windscreen de-icing fluids;
 - (c) what additives would render mixtures particularly suitable for use as de-icing fluids.
4. Regarding the first question, Hawley's Condensed Chemical Dictionary (12th Edition) indicates that denatured alcohol is "ethanol to which another liquid has been added to make it unfit to use as a beverage (chiefly for tax reasons)". Hawley's lists a number of possible denaturants, including brucine, brucine sulfate, quassin plus *tert*-butanol, sucrose octaacetate plus *tert*-butanol, and *tert*-butanol by itself. In addition, the Explanatory Note to heading 22.07 (page 178) lists several other possible denaturants (for example, wood naphtha, methanol, acetone, pyridine, benzene, colouring matter). In any event, the denaturants used generally are subject to national legislation.
5. Thus, in the case of "Rozmrazovac", it is not clear whether "laurylan N-28" (anionic surface-active agent), methyl ethyl ketone (which is chemically related to acetone) or monoethylene glycol should be viewed as being simple denaturants or whether together they render the product suitable for some specific use.
6. As for the second question, the Secretariat would point out that two delegates at the Harmonized System Committee expressed the view that "Rozmrazovac" is not a de-icing fluid, but rather a cleaning preparation which, because of its ethanol content, does not freeze, but is not suitable for removing ice from, e.g., the windscreen of a vehicle. In this connection, the Secretariat has found that the formulations for some seventeen different commercially marketed windscreen de-icing preparations generally (but not always) include a substantial amount of isopropyl alcohol (19 to 35 %), sometimes in combination with ethanol or other alcohols (see Annex). In products with combined alcohols, either ethanol or isopropyl alcohol may predominate, depending on the individual formulation. In none of these examples is ethanol listed as the only alcohol in the formulation; in one case ("Sonax"), "alcohol" is listed, but it is not clear whether that refers to ethanol or some other alcohol or alcohol mixture.
7. The freezing points of isopropyl alcohol and ethanol, respectively, are -89.5 °C and -117.3 °C. It would seem that, in relatively pure form, these alcohols could be effective in removing ice from a windshield at even the coldest winter temperatures. When diluted with water, however, their efficacy in this respect would be expected to decline. Thus the Sub-Committee is asked to give its views as to the minimum concentration of ethanol necessary for removing ice from a windscreen.
8. Finally, concerning the third question, the Sub-Committee is asked to provide a list of additives which characterise commercial windscreen de-icing fluids. In each of the formulations referred to in paragraph 6 above, only one or two of the following substances were given as additives : "soap" or surface-active agent (0.5 - 2 %), "glass cleaner" or other

cleaning preparation, propylene glycol (2 %), methyl ethyl ketone (less than 0.2 %) or demineralised water (5 - 68 %) (see Annex).

III. CONCLUSION

9. The Sub-Committee is requested to give its views concerning the questions in paragraph 3 above, taking into account the Secretariat's comments.

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FORMULATIONS OF CERTAIN COMMERCIAL WINDSCREEN DE-ICING FLUIDSExamples provided by the Polish Administration

(a)	Isopropyl alcohol	19 %
	Ethyl alcohol	74 %
	Methyl ethyl ketone	0.18 %
	Etoxon	0.5 %
	Colouring matter	0.001 %
	Water	up to 100 %
(b)	Isopropyl alcohol	28 %
	Ethyl alcohol	65 %
	Methyl ethyl ketone	0.18 %
	Etoxon	0.5 %
	Colouring matter	0.001 %
	Water	up to 100 %
(c)	Isopropyl alcohol	37 %
	Ethyl alcohol	56 %
	Methyl ethyl ketone	0.18 %
	Etoxon	0.5 %
	Colouring matter	0.001 %
	Water	up to 100 %
(d)	Isopropyl alcohol	47 %
	Ethyl alcohol	46 %
	Methyl ethyl ketone	0.18 %
	Etoxon	0.5 %
	Colouring matter	0.001 %
	Water	up to 100 %

Examples found by the Secretariat in MOTOR Magazine (Dec. 1996), a Danish publication

- (a) "Q8" - no information on ingredients;
- (b) "Kvickly" - 35 % isopropyl alcohol, 2 % soap, 63 % demineralised water;
- (c) "DK-Benzin" - 35 % isopropyl alcohol, 2 % "cleaner" and demineralised water;
- (d) "Hydro Texaco" - 30 % isopropyl alcohol;
- (e) "Statoil" - water-based cleaner, isopropyl alcohol, glass cleaner;
- (f) "Shell" - 35 % isopropyl alcohol, 2 % cleaner, demineralised water;
- (g) "Micro" - no information on ingredients;
- (h) "Johannes Fog" - 30 % isopropyl alcohol, 2 % propylene glycol, 2 % cleaning preparation, 66 % demineralised water;

- (ij) "Favor" 30 % isopropyl alcohol, 2 % propylene glycol, 2 % cleaning preparation, 66 % demineralised water;
- (k) "Super Brugsen" - 35 % isopropyl alcohol, 2 % cleaner, 63 % demineralised water;
- (l) "Fotex" - 30 % isopropyl alcohol, 2 % cleaner, 68 % demineralised water;
- (m) "Bilka" - isopropyl alcohol;
- (n) "Sonax" - less than 5 % surface-active agent, alcohol, glycol;

[Note : All of these products, except one, remained liquid at temperatures as low as -22 °C. About half of them froze at -25 °C. Similarities among some formulations are due to the fact that they are manufactured by the same producer.]