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**Sub-Committee of Experts on the
Transport of Dangerous Goods**
(Nineteenth session,
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GLOBAL HARMONIZATION OF SYSTEMS OF CLASSIFICATION AND LABELLING OF CHEMICALS

United Nations/ILO Working Group on the Harmonisation of the Classification Criteria for Physical Hazards (aerosols)

Transmitted by the European Aerosol Federation (FEA)

For the twenty-first session of the Committee of Experts (Geneva, 4-13 December 2000), the European Aerosol Federation submitted a proposal for the determination of aerosol flammability criteria. At this session, there was considerable discussion and industry representatives have been requested to come forward with proposals to find a possible solution for the remaining issues to complete a globally harmonised classification system.

In discussions with the Consumer Specialty Products Association (CSPA), FEA has made a considerable effort to come to a compromise proposal and finally together with CSPA submitted a joint position paper (ST/SG/AC.10/C3/2001/8) addressing three of the outstanding items. FEA made a significant concession to try and integrate the use of the Chemical Heat of Combustion criterion in a classification scheme for aerosols. However, FEA has always stressed that although this criterion may be relevant for fire fighting purposes in storage, it is much less appropriate for classification for transport or for supply and use¹.

However, FEA was completely unaware of a further submission to the UN (ST/SG/AC.10/2001/9) which had been prepared by CSPA in parallel to the ongoing discussions and which is in complete contrast to the considerable efforts FEA had made in order to come to a compromise industry position. CSPA appears to be going back to its original discussions and reopening already agreed points.

CSPA is again questioning the relevance of the test methods to determine if the aerosol contents could be ignited, which had been jointly submitted by FEA and CSPA (ST/SG/AC.10/C.3/2000/34). The Working Group has already explicitly confirmed the relevance of these tests in the eighteenth session (ST/SG/AC.10/C.3/36, Annex 4, note 9). This was confirmed during the twenty first session of the Committee of Experts (ST/SG/AC.10/27, Annex 5) and FEA has always supported this approach.

In order to assist the Secretariat, FEA, in consultation with CSPA, had slightly revised the draft test methods, on the basis of the minor amendments that were suggested at the eighteenth session. The revised texts were resubmitted separately for consideration by the

¹ Heat of Combustion is the amount of energy that is liberated when one mole of a given substance is completely oxidised. However, it is not particularly a flammability prediction criterion.

UN/ILO Working Group at the twenty-first session of the Committee of Experts. Unfortunately, they have not yet been officially presented to the Working Group, but FEA is now re-submitting them in a separate information paper for formal approval.

As stated above, FEA fully agrees with the decision taken by the Working Group that classification of aerosol flammability should be based on a test regime consisting of three tests (ignition distance test, enclosed space ignition test, foam flammability test). **Aerosols should be classified as “Flammable” if any of these tests give a positive result** (ST/SG/AC.10C.3/36, Annex 4). FEA believes that these tests are not only relevant in Europe, but in fact such a test regime is understood and used in several non-European aerosol markets such as Australia, South Africa, Argentina, Japan and Eastern Europe. It should be noted that together with Europe, these markets represent about 70 percent of the world wide aerosol production.

The **Ignition Distance Test** measures at which distance from the aerosol actuator a flame can ignite the spray. In doing so, it not only indicates how intrinsically flammable the contents are, but also takes into account how these contents are made available to a flame source. The further away the spray can be ignited the greater the risk as the probability of exposure is increased.

The **Enclosed Space Ignition Test** assesses the flammability of products emitted from aerosol dispensers according to their propensity to ignite in an enclosed or confined space, in the presence of an ignition source. Again, it not only indicates how intrinsically flammable the contents are, but also how these contents are made available to a flame source. As well as observing if ignition does or doesn't occur, this test also measures the discharge time to achieve ignition. From this the time equivalent to achieve ignition in a unit volume of one cubic metre can be calculated. The shorter the time required to achieve ignition, the greater the risk as the exposure needed to reach a hazardous situation (a flammable atmosphere) is less, and the probability of exposure increases. On the one hand this test identifies the risk which in practice may occur in consumer use, whilst by using the criterion of deflagration density it perfectly describes the potential risk in transport.

The **Foam Flammability Test** determines the flammability of an aerosol spray emitted in the form of a foam, mousse, gel or paste. The information generated by the test includes whether the product ignites, the maximum flame height in cm and the duration of the flame in seconds. The longer the duration of the flame and the higher the flame, the greater the risk.

With regard to the outstanding items, FEA has been unable to reach full agreement with CSPA on the values. Therefore, FEA would like to submit the attached flow charts as proposals (Attachments 1 & 2) for consideration by the Working Group. This incorporates the points already agreed and offers viable solutions to the outstanding items.

In preparing this proposal, FEA has tried to take into account points for consideration raised in the "Note by the Secretariat" (ST/SG/AC.10/C.3/2001/22). Some of these points have already been addressed in the joint position paper (ST/SG/AC.10/C3/2001/8) submitted by FEA and CSPA. For example, this includes points 3, 6, 8, 9 (a).

The attached proposal attempts to take into account some of the other issues to be considered. Such as 10(a), where FEA is of the firm opinion that the value for Extremely Flammable in the Ignition Distance Test should be 45cm or more and this represents sufficient risk in practice and differentiation from 15cm for a need to alert any user to a higher classification. Similarly, FEA agrees with the point raised under 10(b) and addresses it in the attached. We also believe that if a product meets the conditions for a particular criterion, there should not be an option to reclassify it in a lower criterion.

Spray Aerosols - Flow Chart

→ Flammable Contents (FC) Flash Point equal or less than 93°C (HoC = Chemical Heat of Combustion)	FC 1% or less & HoC less than 20kJ/g = Non-flammable								
	1% To 85%	Ignition Distance Test	less than 15 cm Non-flammable →	Space Test	Time equivalent more than 300 s/m ³	Deflagration Density * 600 g/m ³ or more	= Non-flammable		
			15 cm or more Flammable →		Enclosed	equal or less than 300 s/m ³		less than 600 g/m ³	= Flammable
					150 s/m ³ or more	less than 600 g/m ³	= Flammable		
			45 cm or more = Extremely Flammable		less than 150 s/m ³	equal or less than 100 g/m ³	= Extremely Flammable		
FC 85% or more OR HoC is 30 kJ/g or more = Extremely Flammable									

* Transport Consideration only

Foam Aerosols - Flow Chart

<p>Flammable Contents (FC)</p> <p>Flash Point equal or less than 93°C</p> <p>(HoC = Chemical Heat of Combustion)</p>	<p>FC 1% or less & HoC less than 20kJ/g</p> <p>= Non-flammable</p>		<p>Flame duration</p>	<p>Flame Height</p>	
	<p>1%</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Foam Flammability Test</p>	<p>less than 2 sec</p>	<p>less than 4 cm</p>	<p>= Non-flammable</p>
	<p>To</p>		<p>2 sec or more</p>	<p>4 cm or more</p>	<p>= Flammable</p>
	<p>85%</p>		<p>2 sec or more</p>	<p>20 cm or more</p>	<p>= Extremely Flammable</p>
			<p>7 sec or more</p>	<p>4 cm or more</p>	<p>= Extremely Flammable</p>
<p>FC 85% or more OR HoC is 30 kJ/g or more</p> <p>= Extremely Flammable</p>					