

## **Proposal for Supplement 3 to the 02 series of amendments and Supplement 1 to the 03 series of amendments to Regulation No. 118 (Burning behaviour)**

### **I. Proposal**

*Annex 8, paragraph 2.3.*, amend to read:

"2.3. The test apparatus may be placed in a fume cupboard assembly ~~provided that the internal volume is at least 20 times, but not more than 110 times, greater than the volume of the test apparatus and provided that: no single height, width, or length dimension of the fume cupboard is greater than 2.5 times either of the other two dimensions.~~ **The size and shape of the fume cupboard shall be such that the test results are not affected.** Before the test, the vertical velocity of the air through the fume cupboard shall be measured 100 mm in front of and behind the final position where the test apparatus will be located. It shall be between 0.10 and 0.30 m/s in order to avoid possible discomfort, by combustion products, to the operator. It is possible to use a fume cupboard with a natural ventilation and an appropriate air velocity."

*Annex 8, paragraph 3.1.*, amend to read:

"3.1. The samples dimensions are: 560 x 170 mm.

If the dimensions of a material do not permit taking a sample of the given dimensions the test shall be carried out **taking a sample having the dimensions at least 375 x 170 mm. The size of the sample, in accordance with the Technical Service, on the fitted size of the material which** shall be mentioned in the test report."

### **II. Justification**

1. Annex 8 (Test to determine the vertical burning rate of materials) limits the dimensions and shape of the fume cupboard. These dimensions depend on the volume of the test apparatus. The test apparatus on Annex 8 is not a box shaped as in Annex 6 (Test to determine the horizontal burning rate of materials). Thus the volume of the test apparatus cannot be clearly defined. Nowadays the test method of Annex 8, which is based on standard EN ISO 6941 for measuring flame spread in textiles, is used for all kinds of materials. With many rubber and plastic materials vertical burning is much more violent than with textiles. Location of the test apparatus should be big enough for heat and smoke production from the test samples and such that the test is not affected by any reduction of oxygen concentration. It is also important to extinguish the sample safely after the test. The exact volume and shape limits of the fume cupboard are not essential.

2. Therefore, the volume and shape limits of the fume cupboard could be deleted from paragraph 2.3. of Annex 8. These requirements could be replaced with performance based requirement that size and shape of fume cupboard shall not affect to test results.

3. Paragraph 6.2.7.4. allows that elements for which it is not possible to extract a sample in the prescribed dimensions as specified in paragraph 3.1. of Annex 6, paragraph 3. of Annex 7, and paragraph 3.1. of Annex 8, are not required to undergo the tests described in Annexes 6 to 8.

4. Annex 6 sets explicit minimum dimensions to the sample in the horizontal burning test. This would also be necessary with vertical burning test in Annex 8. Current text of Annex 8 may lead to different interpretations among Contracting Parties. Suitability of the sample size for Annex 8 was discussed between type-approval authority Finnish Transport Safety Agency (Trafi) and technical service VTT Expert Services Ltd. In order to attach the sample to the pins of the specimen holder, the width of the sample must be at least 170 mm. The pins for supporting the specimen are 5 mm, 10 mm, 190 mm, 370 mm, 550 mm, and 555 mm above the bottom edge of the specimen holder. If the length of specimen is at least 375 mm, the sample can be attached to 5, 10, 190, and 370 mm pins. Then the first (245 mm) marker thread can be used for measuring the burning rate. So, in order to measure the flame propagation, the length of the sample must be at least 375 mm.

5. Therefore, the minimum size of the sample 375 x 170 mm is proposed to paragraph 3.1. of Annex 8.

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