

Transmitted by the experts from Norway and Sweden

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 118

UNIFORM TECHNICAL DESCRIPTION CONCERNING THE BURNING BEHAVIOUR OF
MATERIALS USED IN THE INTERIOR CONSTRUCTION OF CERTAIN CATEGORIES OF
MOTOR VEHICLES

Note: The text reproduced below was prepared by the experts from Norway and Sweden based on informal documents GRSG 90-32, GRSG 93-15, GRSG 92-18. (**additions in bold style**)

A. PROPOSAL

Paragraph 6., amend to read:

6. PART II: APPROVAL OF A COMPONENT WITH REGARD TO ITS BURNING BEHAVIOUR
- 6.1. Definitions

For the purpose of Part II of this Regulation,
- 6.1.1. "Type of a component" means components which do not differ in such essential respects as:
 - 6.1.1.1. the manufacturer's type designation,
 - 6.1.1.2. the intended use (seat upholstery, roof lining, etc.),
 - 6.1.1.3. the base material(s) (e. g. wool, plastic, rubber, blended materials),
 - 6.1.1.4. the number of layers in the case of composite materials, and
 - 6.1.1.5. other characteristics in so far as they have an appreciable effect on the performance prescribed in this Regulation.
- 6.1.2. "Burning rate" means the quotient of the burnt distance measured according to Annex 6 and/or Annex 8 to this Regulation and the time taken to burn this distance. It is expressed in millimetres per minute.
- 6.1.3. "Composite material" means a material composed of several layers of similar or different materials intimately held together at their surfaces by cementing, bonding,

cladding, welding, etc. When different materials are connected together intermittently (for example, by sewing, high-frequency welding, riveting), such materials shall not be considered as composite materials.

6.1.4. "Exposed face" means the side of a material which is facing towards the passenger compartment when the material is mounted in the vehicle.

6.1.5. "Upholstery" means the combination of interior padding and surface finish material which together constitute the cushioning of the seat frame.

6.1.6. "Interior lining(s)" means material(s) that (together) constitute(s) the surface finish and substrate of a roof, wall or floor.

6.2. Specifications

6.2.1. The following materials shall undergo the test described in Annex 6 to this Regulation:

- (a) material(s) used for the upholstery of any seat and its accessories (including the driver's seat),
- (b) material(s) used for the interior lining of the roof,
- (c) material(s) used for the interior lining of the side and rear walls, including separation walls,
- (d) material(s) with thermal and/or acoustic function,
- (e) material(s) used for the interior lining of the floor,
- (f) material(s) used for the interior lining of luggage-racks, heating and ventilation pipes,
- (g) material(s) used for the light fittings

The result of the test shall be considered satisfactory if, taking the worst test results into account, the horizontal burning rate is not more than 100 mm/minute or if the flame extinguishes before reaching the last measuring point.

6.2.2. The following materials shall undergo the test described in Annex 7 to this Regulation:

- (a) material(s) used for the interior lining of the roof,
- (b) material(s) used for the interior lining of the luggage-racks, heating and ventilation pipes situated in the roof,
- (c) material(s) used for the lights situated in the luggage-racks and/or roof.

The result of the test shall be considered satisfactory if, taking the worst test results into account, no drop is formed which ignites the cotton wool.

- 6.2.3. The materials used for the curtains and blinds (and/or other hanging materials) shall undergo the test described in Annex 8.

The result of the test shall be considered satisfactory if, taking the worst test results into account, the vertical burning rate is not more than 100 mm/minute.

- 6.2.4. **From 200x-xx-xx the the following materials shall undergo the test described in Annex 9 to this Regulation:**

- (a) material(s) used for the interior lining of the roof,
- (b) material(s) used for the interior lining of the side and rear walls, including separation walls,
- (c) material(s) with thermal and/or acoustic function,
- (d) material(s) used for the interior lining of luggage-racks, heating and ventilation pipes.

The result of the test in Annex 9 shall be considered satisfactory if the average value of CFE is less than 20 kW/m².

- 6.2.5. **From 200x-xx-xx the the following materials shall undergo the test described in Annex 10 to this Regulation:**

- (a) material(s) used for the interior lining of the roof,
- (b) material(s) used for the interior lining of the side and rear walls, including separation walls,
- (c) material(s) with thermal and/or acoustic function,
- (d) material(s) used for the interior lining of the floor,
- (e) material(s) used for the interior lining of luggage-racks, heating and ventilation pipes.

The result of the test in Annex 10 shall be considered satisfactory if the average value of the maximum smoke density (Dm) does not exceed 200 in any test condition, and gas concentrations measured at each test condition are less than specified below:

CO	1450 ppm	HBr	600 ppm
HCl	600 ppm	HCN	140 ppm
HF	600 ppm	SO ₂	120 ppm
NO _x	350 ppm		

6.2.6. From 200x-xx-xx the material(s) used for the interior lining of the floor shall undergo the test described in Annex 11 to this Regulation.

The result of test in Annex 11 shall be considered satisfactory if the average value of CHF is less than 6 kW/m².

6.2.7. From 200x-xx-xx the complete seats shall undergo the test described in Annex 12 to this Regulation.

The result of test in Annex 12 shall be considered satisfactory if the MARHE index is less than 50 kW.

6.2.48. Materials which are not required to undergo the tests described in Annexes 6 to 8 12 are:

6.2.48.1. parts made of metal or glass;

6.2.48.2. each individual seat accessory with a mass of non-metallic material less than 200 g. If the total mass of these accessories exceeds 400 g of non-metallic material per seat, then each material must be tested;

6.2.48.3. elements of which the surface area or the volume does not exceed respectively:

6.2.48.3.1. 100 cm² or 40 cm³ for the elements which are connected to an individual seating place;

6.2.48.3.2. 300 cm² or 120 cm³ per seat row and, at a maximum, per linear metre of the interior of the passenger compartment for these elements which are distributed in the vehicle and which are not connected to an individual seating place;

6.2.48.4. electric cables;

6.2.48.5. 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 **and referenced sample sizes specified in referenced test standards in Annexes 9-12.**

Insert new Annexes 9-12 after Annex 8 (see next page):

Annex 9

TEST TO DETERMINE LATERAL FLAME SPREAD ON TRANSPORT PRODUCTS IN VERTICAL CONFIGURATION

- 1. General**
The standard ISO 5658-2 (2006)¹ evaluates the lateral surface spread of flame of a material subject to thermal radiation.
- 2. Sampling and test procedure**
The test shall follow ISO 5658-2 (2006) in all aspects concerning apparatus, calibration, sampling and test procedure.
- 3. Test results**
Test results shall be reported according to paragraph 13 in ISO 5658-2.

1/ ISO 5658-2 Reaction to fire tests - spread of flame - Part 2: Lateral spread on building and transport products in vertical configuration, 2nd ed 2006-09-15, International Standardisation Organisation, Geneva, 2006.

Annex 10

TESTS TO DETERMINE SMOKE GENERATION AND TOXICITY OF SMOKE GASES FROM A BURNING MATERIAL

- 1. General**
The standard ISO 5659-2 (2006)² together with toxicity assessment measures the smoke and toxic gas generation from a test sample subject to thermal radiation.
- 2. Test for smoke opacity**
The test shall follow ISO 5659-2 (2006) in all aspects concerning apparatus, calibration, sampling and test procedure.
- 2.1 Test conditions**
Three test specimens shall be tested subject to constant irradiation at one of the following test conditions, depending on application:
 - 1. for materials used for the interior lining of floors (materials (d) in 6.2.1) test at an irradiance of 25 kW/m² in the presence of pilot flame.**
 - 2. for all other materials where smoke test is required (materials (a), (b), (c), (e) in 6.2.1) test at an irradiance of 50 kW/m² in the absence of pilot flame.**
- 3. Test for toxicity of smoke gases**
A toxicity analysis shall be made during test of the second and third sample in the test condition defined in 2.1. The sampling of smoke gas shall be made continuously from the geometrical centre of the chamber during 3 minutes around the smoke maximum determined in the first test of three. The sampling flow shall not exceed 2 litres/min and suitable measures shall be taken to heat the sampling system to avoid condensation. The analysis method shall be FTIR (Fourier Transformed Infrared) and shall follow the guidelines in ISO 19702³.

The results for each test shall be expressed as average of the two highest measurements during the 3 minutes.

2/ ISO 5659-2 Plastics - Smoke generation - Part 2: Determination of optical density by a single chamber test, 2nd ed 2006-12-01, International Standardisation Organisation, Geneva, 2006.

3/ ISO 19702, Toxicity testing of fire effluents - Guidance for analysis of gases and vapours in fire effluents using FTIR gas analysis.

Annex 11

TEST TO DETERMINE LATERAL FLAME SPREAD ON TRANSPORT PRODUCTS IN HORIZONTAL CONFIGURATION

- 1. General**
The standard ISO 9239-1 (2002)⁴ evaluates the lateral surface spread of flame of a flooring material subject to thermal radiation.
- 2. Sampling and test procedure**
The test shall follow ISO 9239-1 (2002) in all aspects concerning apparatus, calibration, sampling and test procedure.
- 3. Test results**
Test results shall be reported according to paragraph 9 in ISO 9239-1.

4/ ISO 9239-2, Reaction to fire tests for floorings - Part 1: Determination of the burning behaviour using a radiant heat source, International Organisation for Standardization, 2002.

Annex 12

TESTS TO DETERMINE THE BURNING BEHAVIOUR OF SEATS

1. **General**
Complete seats are tested according to prCEN TS 45545-2 (2008)⁵ where a seat is subjected to a flaming ignition source and the resulting heat release rate is measured.
2. **Test for burning behaviour of seats**
The test shall follow prCEN TS 45545-2 (2008) in all aspects concerning apparatus, calibration, sampling and test procedure. Only one specimen needs to be tested.
- 2.1 **Test conditions**
The seat shall be tested in a vandalised condition according to Annex A in prCEN TS 45545-2.

B. JUSTIFICATION

The background and justification will be presented in detail by an expert at GRSG 94. See also GRSG 93-15, GRSG 92-18.

5/ prCEN TS 45545-2 Railway applications - Fire protection of railway vehicles - Part 2: Requirements for fire behaviour of materials and components, CEN, February 2008.