



C L E P A
*European Association of
Automotive Suppliers*

Informal document **GRSP-57-26**
(57th GRSP, 18-22 May 2015
Agenda item 10)

57th Session GRSP – Geneva 18
22/05/2015

**Toxicology and Flammability
Requirements in Child Restraint
Systems Regulations in UN R44 and
UN R129**



From Regulation No. 44 - Rev.3 - Child Restraint Systems (E/ECE/TRANS/505/Rev.1/Add.43/Rev.3)

Toxicology

- 6.1.5. The child restraint manufacturer has to declare in written form that the toxicity of materials used in the manufacture of restraint systems and accessible to the restrained child is in conformity with the relevant parts of EN 71:2009, part 3. Tests confirming the validity of the declaration may be carried out at the discretion of the test authority. This paragraph does not apply to restraint devices of groups II and III."

Flammability

- 6.1.6. The child restraint manufacturer has to declare in written form that the flammability of materials used to manufacture the restraint system is in conformity with the relevant parts of EN 71:2009 part 2. Tests confirming the validity of the declaration may be carried out at the discretion of the test authority."



R129 provisions already adopted vs R44 Toxicology

Toxicology- R44

- 6.1.5. The child restraint manufacturer has to declare in written form that the toxicity of materials used in the manufacture of restraint systems and accessible to the restrained child is in conformity with the relevant parts of [EN 71:2009, part 3](#). Tests confirming the validity of the declaration may be carried out at the discretion of the test authority. This paragraph does not apply to restraint devices of groups II and III."

Toxicology – R129

- 6.3.1.1. The Child Restraint System manufacturer shall declare in writing that the toxicity of materials used in the manufacture of restraint systems and accessible to the restrained child is in conformity with the relevant parts of [EN 71-3:1994/A1:2000/AC](#). Tests confirming the validity of the declaration may be carried out at the discretion of the test authority..



R129 provisions already adopted vs R44 Flammability

Flammability R44

- 6.1.6. The child restraint manufacturer has to declare in written form that the flammability of materials used to manufacture the restraint system is in conformity with the relevant parts of [EN 71:2009 part 2](#). Tests confirming the validity of the declaration may be carried out at the discretion of the test authority."

Flammability R129

- 6.3.1.2. The Child Restraint System manufacturer shall declare in writing that the flammability of materials used to manufacture the restraint system is in conformity with the relevant paragraphs of [EN 71-2:2011](#). Tests confirming the validity of the declaration may be carried out at the discretion of the Technical Service.

RATIONALE



- EN 71 2 and 3 contain various requirements for various materials
 - Need to specify the most appropriate materials that will cover those utilised in CRSs
- Need to define which of part of EN 71 -2 and 3 we are referring to ?
 - Test Method
 - Criteria
- Chemical Substances – Other reg requirements & consumer testing
- Clepa proposition derived from EN 71
- Different references to EN 71-3 and EN 71-2 in R44 and R129 => Need to align !



Defining The Appropriate Material EN 71-3: 2013

Table 1 — Cross-reference table for determining category

Toy Material	Category I	Category II	Category III
Coatings of paints, varnishes, lacquers, printing inks, polymers, foams and similar coatings			X
Polymeric and similar materials, including laminates, whether textile reinforced or not, but excluding other textiles			X
Paper and paper board			X
Textiles, whether natural or synthetic			X
Glass, ceramic, metallic materials			X
Other materials whether mass coloured or not (e.g. wood, fibre board, hard board, bone and leather)			X
Compressed paint tablets, materials intended to leave a trace or similar materials in solid form appearing as such in the toy (e.g. the cores of colouring pencils, chalk, crayons)	X		
Pliable modelling materials, including modelling clays and plaster [3]	X		
Liquid paints, including finger paints, varnishes, lacquers, liquid ink in pens and similar materials in liquid form appearing as such in the toy (e.g., slimes, bubble solution)		X	
Glue sticks		X	



EN 71-3 : 2013 – Migrations Limits for heavy metals & other materials

Element	Migration limit		
	Category I mg/kg	Category II mg/kg	Category III mg/kg
Aluminium	5 625	1 406	70 000
Antimony	45	11,3	560
Arsenic	3,8	0,9	47
Barium	1 500	375	18 750
Boron	1 200	300	15 000
Cadmium	1,3	0,3	17
Chromium (III)	37,5	9,4	460
Chromium (VI)	0,02	0,005	0,2
Cobalt	10,5	2,6	130
Copper	622,5	156	7 700
Lead	13,5	3,4	160
Manganese	1 200	300	15 000
Mercury	7,5	1,9	94
Nickel	75	18,8	930
Selenium	37,5	9,4	460
Strontium	4 500	1 125	56 000
Tin	15 000	3 750	180 000
Organic tin	0,9	0,2	12
Zinc	3 750	938	46 000



REACH Regulation

- ❑ Substances Of Very High Concern - 161 substances
 - ❑ Moving demands each year

	Name	EC Number	CAS Number	Date of Inclusion	Reason for Inclusion	Decision number	IUCLID 5 Substance Dataset
1	Bis (2-ethylhexyl)phthalate (DEHP)	204-211-0	117-81-7	2014/12/17; 2008/10/28	Equivalent level of concern having probable serious effects to the environment (Article 57 f); Toxic for reproduction (article 57c)	ED/108/2014	
						ED/67/2008	
2	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	247-384-8	25973-55-1	17/12/2014	PBT (Article 57 d); vPvB (Article 57 e)	ED/108/2014	
3	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	223-346-6	3846-71-7	17/12/2014	PBT (Article 57 d); vPvB (Article 57 e)	ED/108/2014	
4	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	239-622-4	15571-58-1	17/12/2014	Toxic for reproduction (Article 57 c)	ED/108/2014	
5	Cadmium fluoride	232-222-0	7790-79-6	17/12/2014	Carcinogenic (Article 57 a); Mutagenic (Article 57 b); Toxic for reproduction (Article 57 c); Equivalent level of concern having probable serious effects to human health (Article 57 f)	ED/108/2014	



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Toxicity – 2015 EU Consumer Testing Protocol

- PAH substances
- Phthalate plasticisers
- Organic tin and phenolic compounds
- Formaldehyde
- Flame retardants , phosphatic and brominated
- Heavy metals

How to deal with flammability

- Add flame retardant to the material that is in contact with the child
- But flame retardant may involve substances that
 - are or will be judged dangerous to child safety
 - That do not fulfil REACH requirements and or EN 71-2 requirements
 - That do not fulfil consumer testing existing and new demands



EN 71-3 : 2013 – Test Method

7.3.3.4 Textiles, whether natural or synthetic (see H.7)

If possible obtain a test portion of not less than 100 mg of the textile material by cutting into test pieces.

Each test piece shall have at least one dimension of approximately 6 mm when possible (see H.6). The use of pre-prepared reference materials for visual size comparison is recommended.

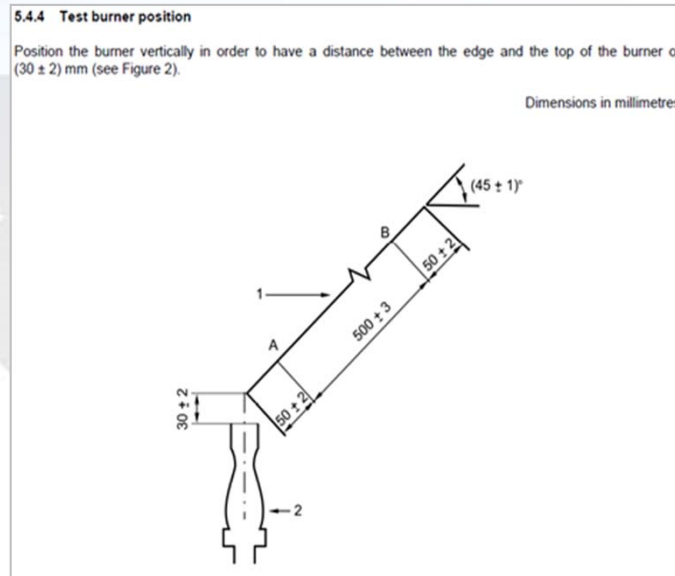
If a sample is not uniform in its material or colour, a test portion shall be obtained from each different material present in a mass greater than 100 mg. A test portion present in a mass between 10 mg and 100 mg shall not be tested separately but shall be tested together with the material to which it is attached. Test portions taken from patterned textiles shall be representative of the whole material.



EN 71-2:2011-09

Test Method

5.4 Test relating to flowing elements of toys to be worn on the head (except those covered by 4.2.2 and 4.2.3), hoods, head-dresses, etc. and masks not covered by 4.2.4 which partially or fully cover the head (e.g. fabric and cardboard masks, eye masks, face masks), toy disguise costumes and toys intended to be entered or worn by a child (see A.9)





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EN 71-2:2011-09

Requirement

4.3 Toy disguise costumes and toys intended to be worn by a child in play (see A.5)

These include, for example, cowboy suits, nurses' outfits and long flowing capes not attached to headwear covered by 4.2.5.

When tested in accordance with 5.4, the rate of spread of flame of the test sample shall not exceed 30 mm/s or the test sample shall self-extinguish.

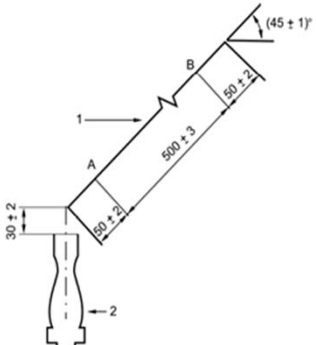
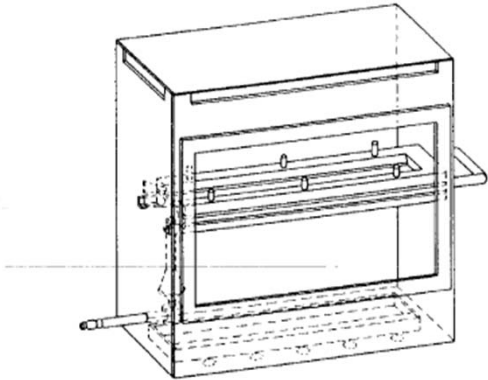


Rate of flame : Moved From 200 mm/min to 100 mm/min in § 6.2.1.

Rate of flame : Moved to 30 mm/s : 1800 mm/min

Position the burner vertically in order to have a distance between the edge and the top of the burner of (30 ± 2) mm (see Figure 2).

Dimensions in millimetres



Sample orientation : Horizontal

Sample orientation : 45°



TRANS/WP29./78/REV 3

REFERING TO R 34 & R118



- **R118**

- **Scope :**

- 1.1. This Regulation applies to the burning behaviour (ignitibility, burning rate and melting behaviour) of interior materials used in vehicles of categories M3, Classes II and III 1/, carrying more than 22 passengers, not being designed for standing passengers and urban use (city buses).



CLEPA
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Clepa proposition

ECE/TRANS/WP.29/GRSP/2015/6

Toxicity

- "6.1.5. The child restraint manufacturer has to declare in written form that the toxicity of materials used in the manufacture of restraint systems and accessible to the restrained child is in conformity with the relevant parts of EN 71:2009, part 3. Tests confirming the validity of the declaration may be carried out at the discretion of the test authority. This paragraph does not apply to restraint devices of groups II and III.
- **6.1.5 The Child Restraint System manufacturer shall declare in writing that the toxicity of materials used in the manufacture of restraint systems and accessible to the restrained child is in conformity with the relevant parts of EN 71-3:2013 (paragraph 4.2., Table 2, Category III for specific requirements and paragraph 7.3.3. for test methodology). Tests confirming the validity of the declaration may be carried out at the discretion of the Technical Service. This paragraph does not apply to restraint devices of groups II and III."**



CLEPA

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Clepa proposition

ECE/TRANS/WP.29/GRSP/2015/6

Flammability

- "6.1.6. The child restraint manufacturer has to declare in written form that the flammability of materials used to manufacture the restraint system is in conformity with the parts of EN 71:2009 part 2. Tests confirming the validity of the declaration may be carried out at the discretion of the test authority.
- **The Child Restraint System manufacturer shall declare in writing that the flammability of materials used to manufacture the Child Restraint System is in conformity with the method of section 5.4 of EN 71-2:2011+A1:2014 with a maximum rate of spread of flame of 30 mm/s. Tests confirming the validity of the declaration may be carried out at the discretion of the Technical Service. Where fabrics are assembled together, these shall be tested as a composite."**



Comparing R118 & Clepa Proposition

Using existings parts that in contact with the child

Various manufacturers have tested fabrics , energy absorbing elements , harness components including EPS , Polyester , , Polyamid, Coton , PU , and composite

Manufacturer	Sample	Flamme retardant	Regulation 118		Test EN 71-2 2011 + A1: 04/2014 §5.4
			Burning rate mm/min	Burning rate mm/sec	Burning rate mm/sec
A	1	No	118 /Self Extinguishing	2.0 Self Extinguishing	2,2
A	2	yes	Do Not Ignite	Do Not Ignite	Do Not Ignite
A	3	yes	Self extinguishing	Self extinguishing	29,9
A	4	no	86,8	1,4	3,2
A	5	yes	Do Not Ignite	Do Not Ignite	1,1
A	6	yes	Do Not Ignite	Do Not Ignite	7,5
A	7	no	54,4	0,9	19,0
A	8	yes	Do Not Ignite	Do Not Ignite	6,5
B	9	No	43	0,7	17,05
B	10	No	140	2,3	13,74
B	11	Yes	0	0,0	ignited but extinguished
B	12	No	78	1,3	11,42
B	13	No	0	0,0	7,91
B	14	No	180	3,0	11,72
B	15	No	138,6	2,3	7,73
B	16	No	152	2,5	9,43
C	17	Yes	4,8	0,1	0
C	18	Yes	8,9	0,1	90



Above limits



More demanding



Close

CONCLUSIONS



- For child safety need to balance flammability requirements with those related to toxicity
- Important to refer to EN 71 regulation as it deals with intems in contact with child
- Important also to define exactly which testing methods and corresponding criteria
- Need to align both R129 and R44
- Clepa is asking GRSP to consider its proposition in light of these explanatory notes

