



C L E P A
*European Association of
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agenda items 15 and 19)

**58th Session GRSP –
Geneva, 8-12/12/2015**

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

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UPDATING THE REFERENCES TO THE EUROPEAN STANDARD ON TOXICITY AND FLAMMABILITY



GRSP 57th session agreed to resume discussion in the 58th session on the basis of a revised proposal tabled by the expert from CLEPA in cooperation with the expert from OICA.

A recap of the considerations needed to discuss this topic:

- Child safety needs to balance flammability requirements with those related to toxicity. EN 71 standard was specifically written for this purpose and deals with products that are in close contact with children.
- This view is also shared by consumer testing, where chemical testing is conducted on child restraint parts that are likely to come into contact with the mouth of the child.
- Child care products already need to fulfill the EN71-2 standard
- GRSP's May 2015 session favoured the EN71 standard for alignment of R129 and R44.
- It is also important to define which testing methods and criteria are used.

Clepa is asking GRSP to consider these aspects.

FLAMMABILITY (SUMMARY OF 57TH GRSP)



In the last GRSP a request was made to CLEPA to show that the requirements for child protection are not lowered by the proposed reference to EN71-2 2011 § 4.4 vs the R44 method.

This is what we did:

- CLEPA compared the performance of materials used in current child seats.
- Accidentology does not show problems with the materials used today.
- A comparison was made, testing the materials against the R44 standard, and the EN71-2 standard.

Test method	Requirement
ECE 44 Trans/WP 28/78/rev1 aug 1997	250mm/min
EN 71-2 2011 § 4.4	30 mm/sec

SAMPLES TESTED

29 DIFFERENT MATERIALS

DNI = does not ignite
SE = Self extinguishing

NBR = No Burn Rate
IBE = extinguished after
removal of flame

#	Material	R44	EN71-2
1	100% PES	118 SE	2,2
2	100% PES	DNI	DNI
3	100% PES	SE	29,9
4	100 % PES	86,8	3,2
5	100 % PES	DNI	1,1
6	100 % PES	DNI	7,5
7	100% PES	SE/NBR	2,8
8	30% Acryl, 30% PES, 25% Nylon, 15% BW Florgewebe	54,4	19,0
9	30% Acryl, 30% PES, 25% Nylon, 15% BW Florgewebe	DNI	6,5
10	100 % PES	DNI	DNI
11	100 % PES	SE/NBR **	0,8
12	EPS 40 g/cm3 / 15 mm	SE	SE
13	EPS EPS 40 g/cm3 / 30mm	SE	SE
14	EPS 20 g/cm3 / 15 mm,	SE	SE
15	EPS 20 g/cm3 / 30 mm	SE	SE

#	Material	R44	EN71-2
16	100% Cotton	43	17,05
17	65% Polye 35% Cot	140	13,74
18	100% Polye	0	IBE
19	65% Polye 35% Ray	78	11,42
20	100% Poly	0	IBE
21	100% Polye	0	7,91
22	100% Polye Scraped	0	IBE
23	65% Polye 35% Ray	180	11,72
24	100% Polye	138,6	7,73
25	100% polye	152	9,43
26	100% Polyester	4,8	0
27	100% Polyester with 2mm foam laminated	0	0
28	100% Polyester with 6mm foam laminated	0	0
29	Neoprene	8,9	90

FLAMMABILITY



For each material, we conducted 2 tests, one to the R44 test, and another to the EN71-2 specifications.

We normalized the burning rate results to their respective limits. To do this, we assessed how much % of the maximum allowed burning rate is used.

- Example EN 71-2 2011 § 4.4 (Req 30 mm/sec)
 - Material A burned 22 mm in 1 sec, of a limit of 30 mm = 73% used, 27% 'buffer' remaining.

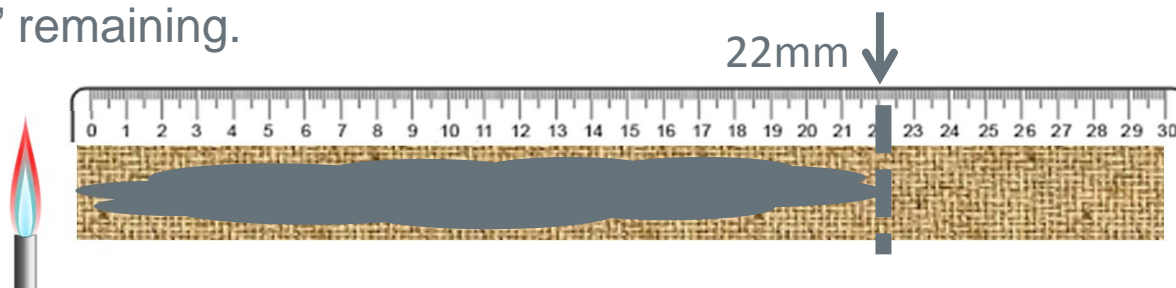


FLAMMABILITY



Comparing 2 different tests

Test 1 Material A burned 22 mm in 1 sec. The limit is 30 mm = 73% used, 27% 'buffer' remaining.

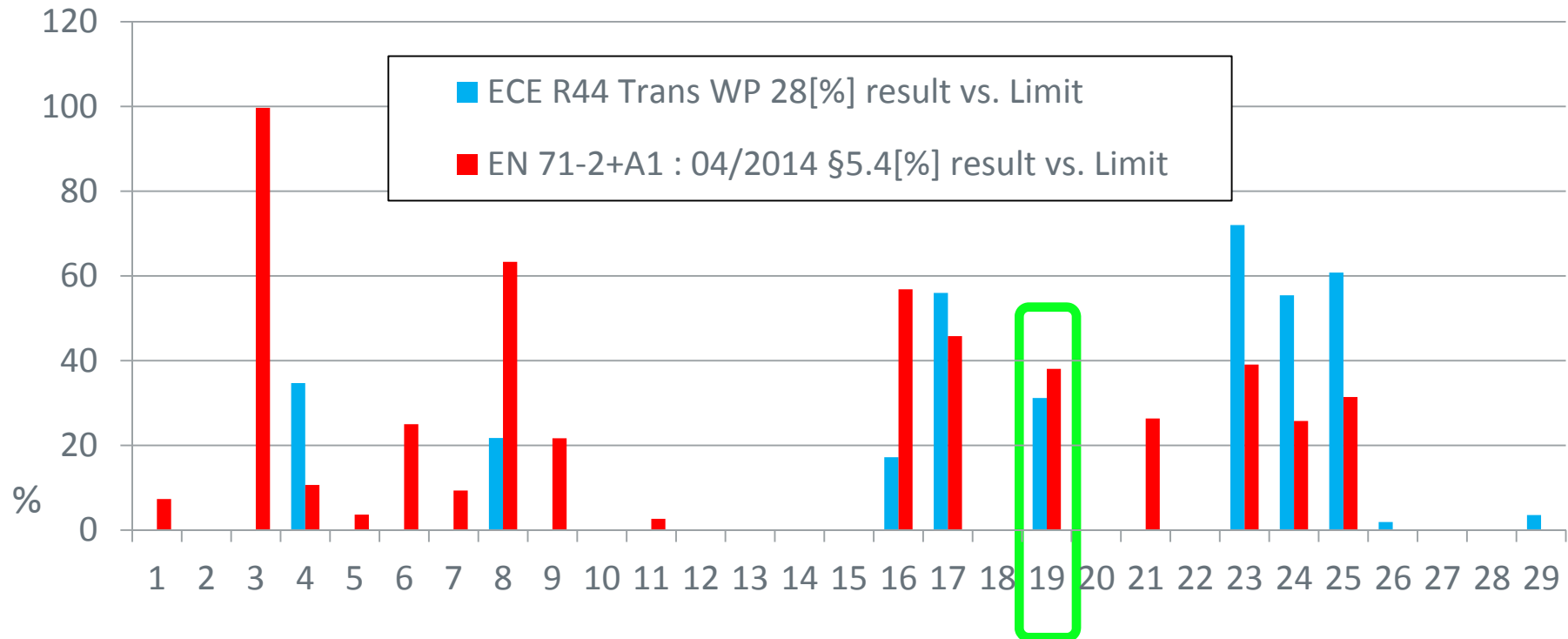


Test 2 Same material (A) burned 180 mm in 1 min. The limit is 250 mm = 72% used, 28% 'buffer' remaining.



These test show that for this material, both tests are equal in severity (72% vs 73%)

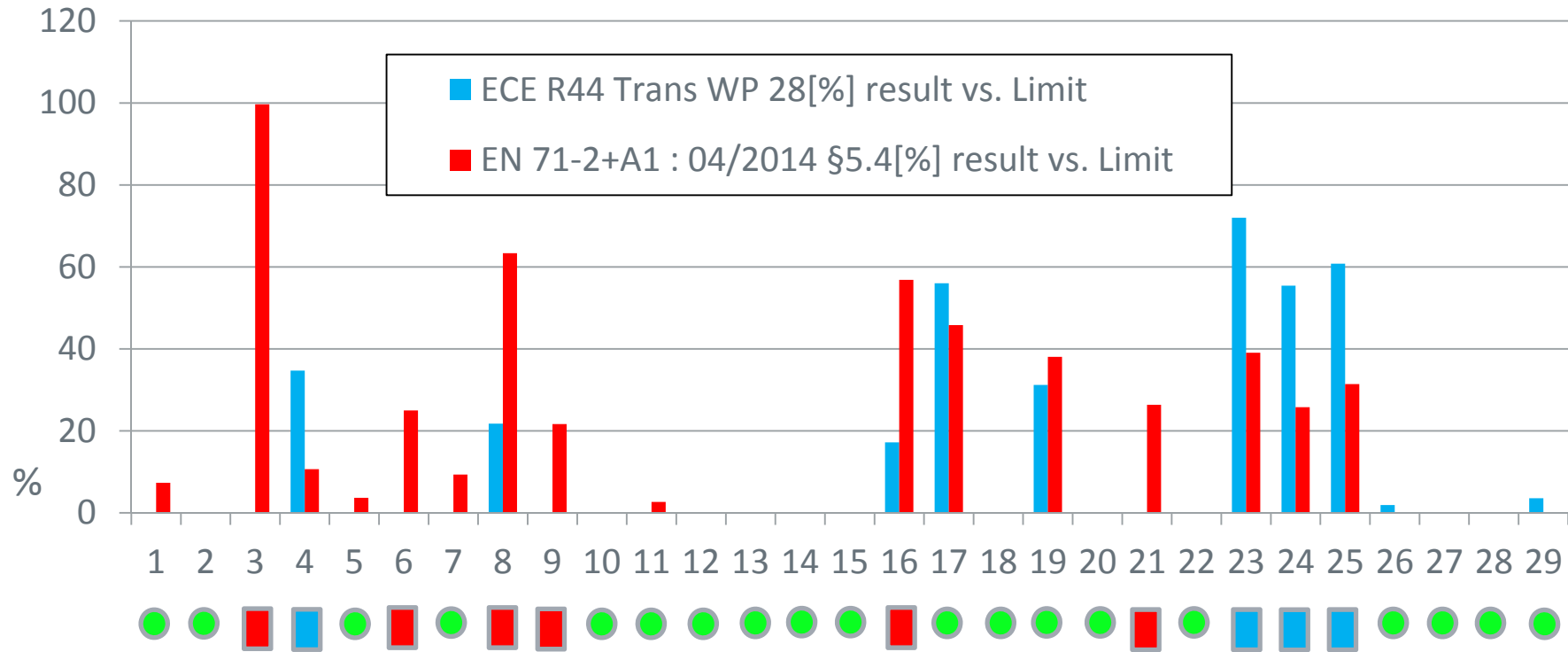
A RELATIVE COMPARISON OF R44 vs EN71-2



29 materials are tested twice:

- For each material 2 tests are conducted, the green rectangle indicates such a 'pair'.
- No bar means no value; "Self Extinguished" or "no burn"
- Sample 3 fails EN71-2 (100% burn), but passes R44 (no burn)

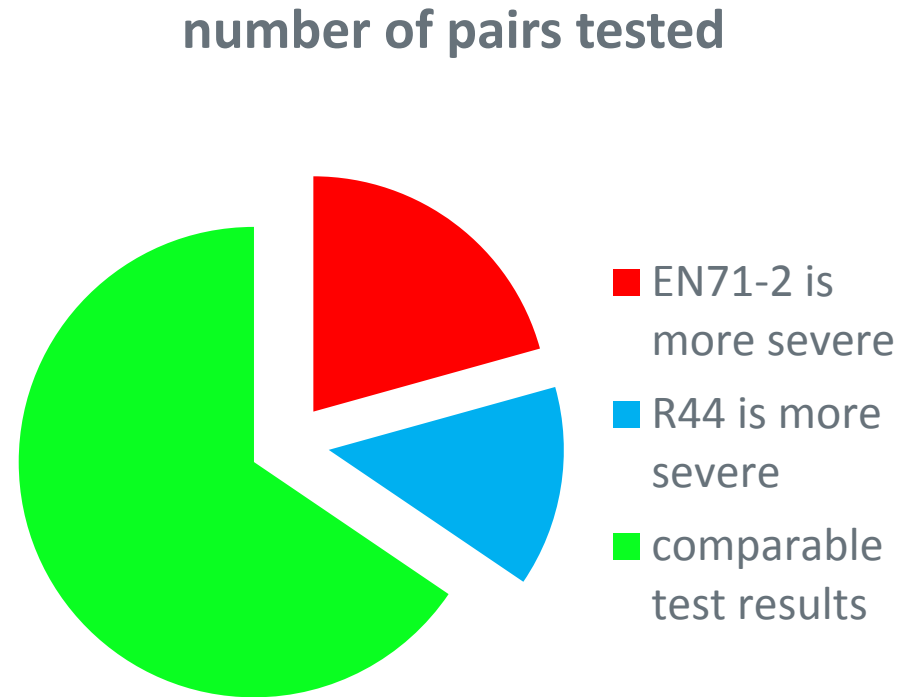
A RELATIVE COMPARISON OF R44 vs EN71-2



- Green circle indicates comparable R44 / EN71-2 result pair (19)
- Blue square indicates a difference in results; R44 is more stringent (4)
- Red square indicates a difference in results; EN71 is more stringent (6)

ARE REQUIREMENTS FOR CHILD PROTECTION LOWERED WITH THE PROPOSED EN71-2 2011 § 4.4 VS THE R44 METHOD?

- 19 tests show comparable results.
- 6 tests show that EN71-2 is more severe
- 4 tests show that R44 is more severe



HOW TO TEST SANDWICH MATERIALS?

Composite material

- “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. In such a case the material is tested as a composite.

Non composite material

- When different materials are connected together intermittently (for example, by sewing, high-frequency welding, riveting), such materials shall not be considered as composite materials and therefore tested separately

CONCLUSIONS



Although the 2 tests are not a literal translation of each other, they do not lower or increase the overall protection for children against fire hazard.

- For child safety there is a need to balance flammability requirements with those related to toxicity
- Clepa is asking GRSP to consider its May's proposal in light of these explanatory notes