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Item 4.6.6 of the provisional agenda

**1958 Agreement: Consideration of draft amendments
to existing Regulations submitted by GRSP****Proposal for Supplement 1 to the 02 series of amendments to
Regulation No. 129 (Enhanced Child Restraint Systems)****Submitted by the Working Party on Passive Safety***

The text reproduced below was adopted by the Working Party on Passive Safety (GRSP) at its sixtieth session (ECE/TRANS/WP.29/GRSP/60, para. 36). It is based on ECE/TRANS/WP.29/GRSP/2016/19 and ECE/TRANS/WP.29/GRSP/2016/23 as amended by Annex V to the report. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee AC.1 for consideration at their June 2017 sessions.

* In accordance with the programme of work of the Inland Transport Committee for 2016–2017 (ECE/TRANS/254, para. 159 and ECE/TRANS/2016/28/Add.1, cluster 3.1), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

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Supplement 12 to the 02 series of amendments to Regulation No. 129 (Enhanced Child Restraint Systems)

Table of content, insert the reference to new Annex 24, to read:

"24 Flammability of materials intended to be used in built-in child restraint systems"

Text of the Regulation,

Paragraph 2.3.2., amend to read

"2.3.2. "i-Size booster seat" (Non-Integral Universal Enhanced Child Restraint System) is a category of Enhanced Child Restraint Systems with integrated backrest and stowable ISOFIX attachments if any, primarily designed for use in all i-Size seating positions of a vehicle."

Paragraph 2.6., amend to read:

"2.6. "Integral Universal ISOFIX" is an ISOFIX Enhanced Child Restraint System comprising either a top-tether or a support-leg, to limit the pitch rotation of the Enhanced Child Restraint System, attached to, or supported by, the corresponding vehicle."

Paragraph 2.16., amend to read:

"2.16. "CRF pitch angle" is the angle between the bottom surface of the fixture "ISO/F2 as defined in Regulation No. 16 (Annex 17, Appendix 2, Figure 2) and the horizontal Z plane of the vehicle as defined in Regulation No. 14 (Annex 4, Appendix 2), with the fixture installed in the vehicle as defined in Regulation No. 16 (Annex 17, Appendix 2)."

Paragraph 2.17.1., amend to read:

"2.17.1. "ISOFIX Vehicle seat fixture" means a fixture, according to ISOFIX size envelopes whose dimensions are given in Figures 1 to 7 of Appendix 2 to Annex 17 to Regulation No. 16, used by an Enhanced Child Restraint System manufacturer to determine the appropriate dimensions of an ISOFIX Enhanced Child Restraint System and the location of its ISOFIX attachments."

Paragraph 2.57., amend to read:

"2.57. "Module", is a part of an ECRS that is separate from the ISOFIX attachments and is in direct contact with the child. A module can be used whether or not as a stand-alone to restrain a child in a car. A base is allowed to accept more than one module (Module A, Module B, etc.)."

Paragraph 4.6., amend to read:

"4.6. Marking for integral ECRS including ISOFIX connections attachments.
The marking shall be located on the part of the ECRS which includes the ISOFIX attachments.
One of the following information labels shall be permanently visible to someone installing the Enhanced Child Restraint System in a vehicle:"

Paragraph 4.6.2., amend to read:

"4.6.2. *Specific Vehicle ISOFIX ECRS.*

If the product includes ISOFIX attachments, the following information shall be permanently visible to someone installing the restraint in a vehicle:

The ISO ISOFIX logo followed by the reference(s) that is/are appropriate for the ISOFIX size fixture(s) into which the product fits. As a minimum, a symbol consisting of a circle with a diameter of minimum 13 mm and containing a pictogram, the pictogram shall contrast with the background of the circle. The pictogram shall be clearly visible either by means of contrast colors or by adequate relief if it is moulded or embossed.



ISO/F2, ISO/R3 and ISO/L1

The Specific vehicle ISOFIX Enhanced Child Restraint System shall have a permanently attached label visible to the person installing the Enhanced Child Restraint System in the car, containing the following information:

Specific Vehicle ISOFIX 

Paragraph 4.6.3., amend to read:

"4.6.3. An international approval mark as defined in paragraph 5.4.1. In case the ECRS containing module(s) this marking shall be permanently attached to the part of the ECRS which includes the ISOFIX attachments."

Insert a new paragraph 4.7.3., to read:

"4.7.3. An impact shield that is not permanently attached to the child seat shall have a permanently attached label to indicate the make and model of the ECRS to which it belongs. The minimum size of the label shall be 40 x 40 mm"

Paragraph 5.4.3.1., amend to read:

"5.4.3.1. The words "R129" followed by a dash and the same approval number as the part of the ECRS which includes the ISOFIX attachments;"

Paragraphs 6.3.1.1. and 6.3.1.2., amend to read:

"6.3.1.1. The Enhanced 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+A1:2014 (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.

6.3.1.2. The flammability of Enhanced Child Restraint Systems submitted for approval shall be assessed by one of the following methods:

Method 1 is applicable only to non-built-in Enhanced Child Restraint Systems and Method 2 is applicable only to vehicle specific built-in Enhanced Child Restraint Systems.

Method 1

The Enhanced Child Restraint System manufacturer shall declare in writing that the flammability of materials used to manufacture the Enhanced 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.

“*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 shall be tested as a composite. When different materials are connected together intermittently, such materials shall not be considered as composite materials and therefore tested separately.

Tests confirming the validity of the declaration may be carried out at the discretion of the Technical Service.

Method 2

The applicant shall declare in writing that when testing materials in accordance with Annex 23 of this regulation, the materials used shall not burn, nor transmit a flame front across its surface, at a rate of more than 100 mm per minute. Each material used in an enhanced child restraint system shall conform to these requirements. However, the requirement concerning transmission of a flame front shall not apply to a surface created by cutting a test specimen for purposes of testing pursuant to Annex 23.

The requirements shall be met in both the "in-use" and in the "stowed" positions of the built-in Enhanced Child Restraint System.

If a material stops burning before it has burned for 60 seconds from the start of timing, and has not burned more than 51 mm from the point where the timing was started, it shall be considered to meet the burn-rate requirement specified above.

Tests confirming the validity of the declaration may be carried out at the discretion of the Technical Service."

Paragraph 6.3.2.1., amend to read:

"6.3.2.1. Internal geometric characteristics

The Technical Service conducting the approval tests shall verify that the internal dimensions of the Enhanced Child Restraint System conform to the requirements of Annex 18. The minimum dimensions for shoulder breadth, hip breadth and sitting height shall be fulfilled simultaneously for any stature within the size range declared by the manufacturer. Integral Enhanced Child Restraint System shall also fulfil the minimum and maximum dimensions of shoulder height, for any stature within the size range declared by the manufacturer.

Non-integral Enhanced Child Restraint System shall also fulfil the maximum dimensions of shoulder height, for any stature within the size range declared by the manufacturer"

Paragraph 6.3.2.2.1., amend to read:

"6.3.2.2.1. Integral Class Enhanced Child Restraint Systems

The maximum external dimensions for the width, height and depth of the Enhanced Child Restraint System and the locations of the ISOFIX anchorages system, with which its attachments shall engage, shall be defined by the ISOFIX Vehicle Seat Fixture as defined in paragraph 2.17.1. of this Regulation.

- (a) i-Size Forward facing Enhanced Child Restraint Systems shall fit within the ISO/F2x size envelope for a reduced-height forward-facing toddler CRS;
- (b) i-Size Rearward facing Enhanced Child Restraint Systems shall fit within the ISO/R2 size envelope for a reduced-size rearward-facing toddler CRS;
- (c) Specific vehicle ISOFIX Enhanced Child Restraint Systems shall fit:
 - (i) In vehicle(s) specified in a list or
 - (ii) At least in one of the ISO (R1, R2X, R2, R3, F2X, F2, F3, L1, L2) size envelopes as described in Annex 17 Appendix 2 of Regulation No. 16.

..."

Paragraph 6.3.5.1., amend to read:

"6.3.5.1. Support-leg and support-leg foot geometrical requirements

The support leg, including its attachment to the Enhanced child restraint systems and the support-leg foot shall lie completely within the support leg dimension assessment volume (see also figures 1 and 2 of annex 19 of this Regulation), which is defined as follows:

- (a) In width by two planes parallel to the X'-Z' plane separated by 200 mm, and centered around the origin; and
- (b) In length by two planes parallel to the Z'-Y' plane and positioned at distances of 585 mm and 695 mm forward of the origin along the X' axis; and
- (c) In height by a plane parallel to the X'-Y' plane, positioned at a distance of 70 mm above the origin and measured perpendicular to the X'-Y' plane. Rigid, non-adjustable parts of the support leg shall not extend beyond a plane parallel to the X'-Y' plane, positioned at a distance of 285 mm below the origin and perpendicular to the X'-Y' plane.

The support-leg may protrude the support-leg dimension assessment volume, providing it remains within the volume of the relevant CRF."

Paragraph 6.6.4.1.6.2., amend to read:

"6.6.4.1.6.1.1. Without the anti-rotation device in use, unless:

- (a) a mechanism or;
- (b) a visual and audible warning signal.

is provided to prevent incorrect use of the anti-rotation device.

6.6.4.1.6.1.2. Without the shoulder strap positioner in use, unless:

- (a) a mechanism or;
- (b) a visual and audible warning signal.

is provided to prevent incorrect use of the shoulder strap positioner."

Paragraph 7.1.3.1.1.5.1., amend to read:

"7.1.3.1.1.5.1. The deceleration of the trolley shall be achieved by using the apparatus prescribed in Annex 6 to this Regulation or any other device giving equivalent results. This apparatus shall be capable of the performance specified in paragraph 7.1.3.4. and hereafter specified:

For frontal impact, the trolley shall be so propelled that, at the beginning of the test, its velocity is 50 ± 2 km/h and its acceleration curve is within the hatched area of the graph in Annex 7, Appendix 1.

For rear impact, the trolley shall be so propelled that, at the beginning of the test, its velocity is 30 ± 2 km/h and its acceleration curve is within the hatched area of the graph in Annex 7, Appendix 2.

Tests performed at a higher speed and/or with an acceleration that exceeds the upper boundary of the hatched area shall be considered satisfactory if the child restraint system meets the performance requirements for the test.

Tests performed at a lower acceleration shall be considered satisfactory only if the acceleration curve crosses the lower boundary of the hatched area for a cumulative period of up to 3 ms.

In fulfilling the above requirements, the Technical Service shall use a mass of trolley (equipped with its seat), as specified in paragraph 1. of Annex 6, greater than 380 kg."

Paragraph 7.2.8., amend to read:

"7.2.8. The complete seat, or the component fitted with ISOFIX attachments (e.g. ISOFIX base) if it has a release button, is attached rigidly to a test rig in such a way that ISOFIX attachments are vertically aligned as shown in Figure 3. A 6 mm diameter bar, 350 mm long, shall be attached to the ISOFIX attachments. A mass of 5 kg shall be attached to the extremities of the bar."

Paragraph 7.2.8.2., amend to read:

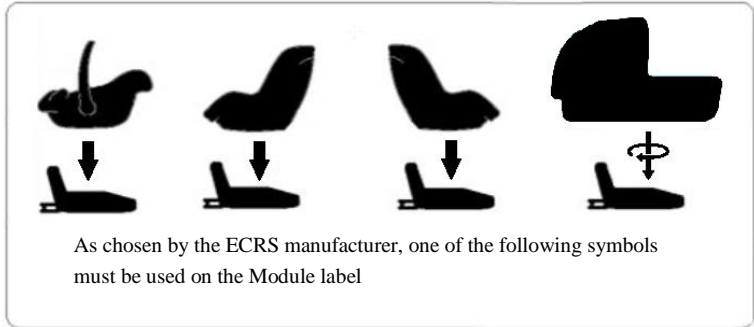
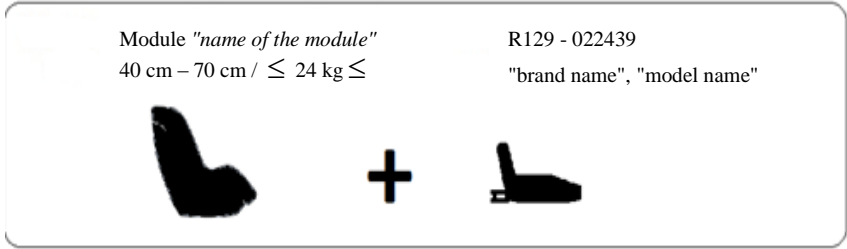
"7.2.8.2. The ISOFIX attachments opening force shall be applied using a dynamometer or similar device in the normal manner and direction as indicated in the manufacturers user manual. The contact end shall be a polished metal hemisphere with radius 2.5 ± 0.1 mm for a release button or a polished metal hook with a radius of 25 mm."

Paragraph 7.2.8.4., amend to read:

"7.2.8.4. The ISOFIX attachments opening force to be measured shall be that needed to disengage the first attachment."

Annex 2, Arrangements of the module mark in combination with an approval mark, the figures, to be deleted and insert new figures, to read:

"...



..."

Annex 8, paragraph 1.1., amend to read:

"1.1. The dummies prescribed in this Regulation are described in this annex, in technical drawings¹ and in the user manuals. The abdominal pressure sensors prescribed in this Regulation are described in this annex, in technical drawings and in the user manuals.

¹ The configurations of each dummy or abdominal pressure sensors are described and deposited in a transitory way on the website of the informal working group on Child Restraint Systems:<https://www2.unece.org/wiki/display/trans/Q-Dummy+drawings>"

Annex 21, amend to read:

"...
 Load application device II
 ..."

Stretch length	(+/- 5 mm)				
	Q 0	Q 1	Q 1,5	Q 3	Q 6
Main belt (A)	1 740 mm	1 850 mm	1 900 mm	2 000 mm	2 000 mm
Hip belt (B)	530 mm	560 mm	600 mm	630 mm	660 mm
Lower dimension (C)	125 mm	150 mm	150 mm	170 mm	200 mm
Mid dimension (D)	270 mm	300 mm	350 mm	380 mm	380 mm

..."

Insert a new Annex 24, to read:

"Annex 24

Flammability of materials intended to be used in built-in child restraint systems

1. Definitions

"Occupant compartment air space" means the space within the occupant compartment that normally contains refreshable air.

2. Material selection (see Figure 1 below)

2.1. Any portion of a single or composite material which is within 13 mm of the occupant compartment air space shall meet the requirements in Paragraph 6.1.6.

2.1.1. Any material that does not adhere to other material(s) at every point of contact shall meet the requirements of paragraph 6.1.6. when tested separately

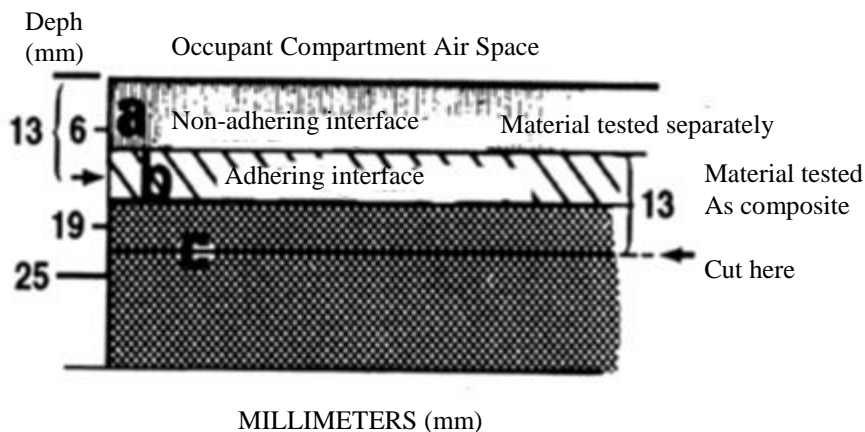
2.1.2. Any material that adheres to other materials at every point of contact shall meet the requirements of paragraph 6.1.6. when tested as a composite with the other material(s).

Material A has a non-adhering interface with material B and is tested separately.

Part of material B is within 13 mm of the occupant compartment air space, and materials B and C adhere at every point of contact; therefore, B and C are tested as a composite.

The cut is in material C as shown in Figure 1, to make a specimen 13 mm thick.

Figure 1



3. Test procedure
 - 3.1. The test is conducted in a metal cabinet for protecting the test specimens from drafts. The interior of the cabinet is 381 mm long, 203 mm deep, and 356 mm high. It has a glass observation window in the front, a closable opening to permit insertion of the specimen holder, and a hole to accommodate tubing for a gas burner. For ventilation, it has a 13 mm clearance space around the top of the cabinet, ten holes in the base of the cabinet, each hole 19 mm in diameter and legs to elevate the bottom of the cabinet by 10 mm, all located as shown in Figure 2.
 - 3.2. Prior to testing, each specimen is conditioned for 24 hours at a temperature of 21° C, and a relative humidity of 50 per cent, and the test is conducted under those ambient conditions.
 - 3.3. The test specimen is inserted between two matching U-shaped frames of metal stock 25 mm wide and 10 mm high.

The interior dimensions of the U-shaped frames are 51 mm wide by 330 mm long.

A specimen that softens and bends at the flaming end so as to cause erratic burning is kept horizontal by supports consisting of thin, heat-resistant wires, spanning the width of the U-shaped frame under the specimen at 25 mm intervals.

A device that may be used for supporting this type of material is an additional U-shaped frame, wider than the U-shaped frame containing the specimen, spanned by 10-mil wires of heat-resistant composition at 25 mm intervals, inserted over the bottom U-shaped frame.
 - 3.4. A bunsen burner with a tube of 10 mm inside diameter is used.

The gas adjusting valve is set to provide a flame, with the tube vertical, of 38 mm in height. The air inlet to the burner is closed.
 - 3.5. The gas supplied to the burner has a flame temperature equivalent to that of natural gas.
4. Preparation of specimens
 - 4.1. Each specimen of material to be tested shall be a rectangle 102 mm wide by 356 mm long, wherever possible.

The thickness of the specimen is that of the single or composite material used in the vehicle, except that if the material's thickness exceeds 13 mm, the specimen is cut down to that thickness measured from the surface of the specimen closest to the occupant compartment air space.

Where it is not possible to obtain a flat specimen because of surface curvature, the specimen is cut to not more than 13 mm in thickness at any point.

The maximum available length or width of a specimen is used where either dimension is less than 356 mm or 102 mm.
 - 4.2. The specimen is produced by cutting the material in longitudinal as well as transvers direction.

The specimen is oriented so that the surface closest to the occupant compartment air space faces downward on the test frame.

- 4.3. Material with a napped or tufted surface is placed on a flat surface and combed twice against the nap with a comb having seven to eight smooth, rounded teeth per 25 mm.
5. Test
- 5.1. Mount the specimen so that both sides and one end are held by the U-shaped frame, and specimen is not more than 51 mm, so that the sides of the specimen cannot be held in the U-shaped frame, place the specimen in position on wire supports as described in 2.3, with one end held by the closed end of the U-shaped frame.
- 5.2. Place the mounted specimen in a horizontal position, in the center of the cabinet.
- 5.3. With the flame adjusted according to 2.4, position the bunsen burner and specimen so that the center of the burner tip is 19 mm below the center of the bottom edge of the open end of the specimen.
- 5.4. Expose the specimen to the flame for 15 seconds.
- 5.5. Begin timing (without reference to the period of application of the burner flame) when the flame from the burning specimen reaches a point 38 mm from the open end of the specimen.
- 5.6. Measure the time that it takes the flame to progress to a point 38 mm from the clamped end of the specimen. If the flame does not reach the specified end point, time its progress to the point where flaming stops.
- 5.7. Calculate the burn rate from the formula:

$$B = 60 \times (D/T)$$

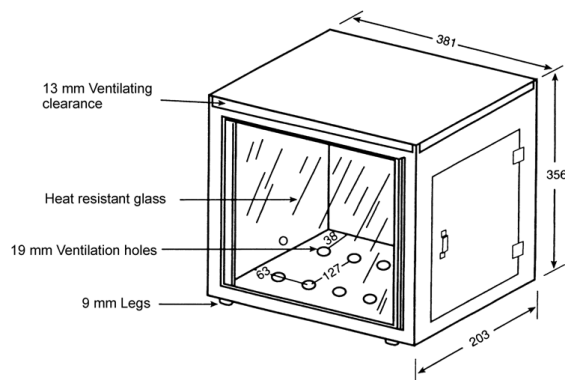
Where:

B = Burn rate in millimeters per minute

D = Length the flame travels in millimeters, and

T = Time in seconds for the flame to travel D millimeters.

Figure 2
All dimensions in millimeters (mm)



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