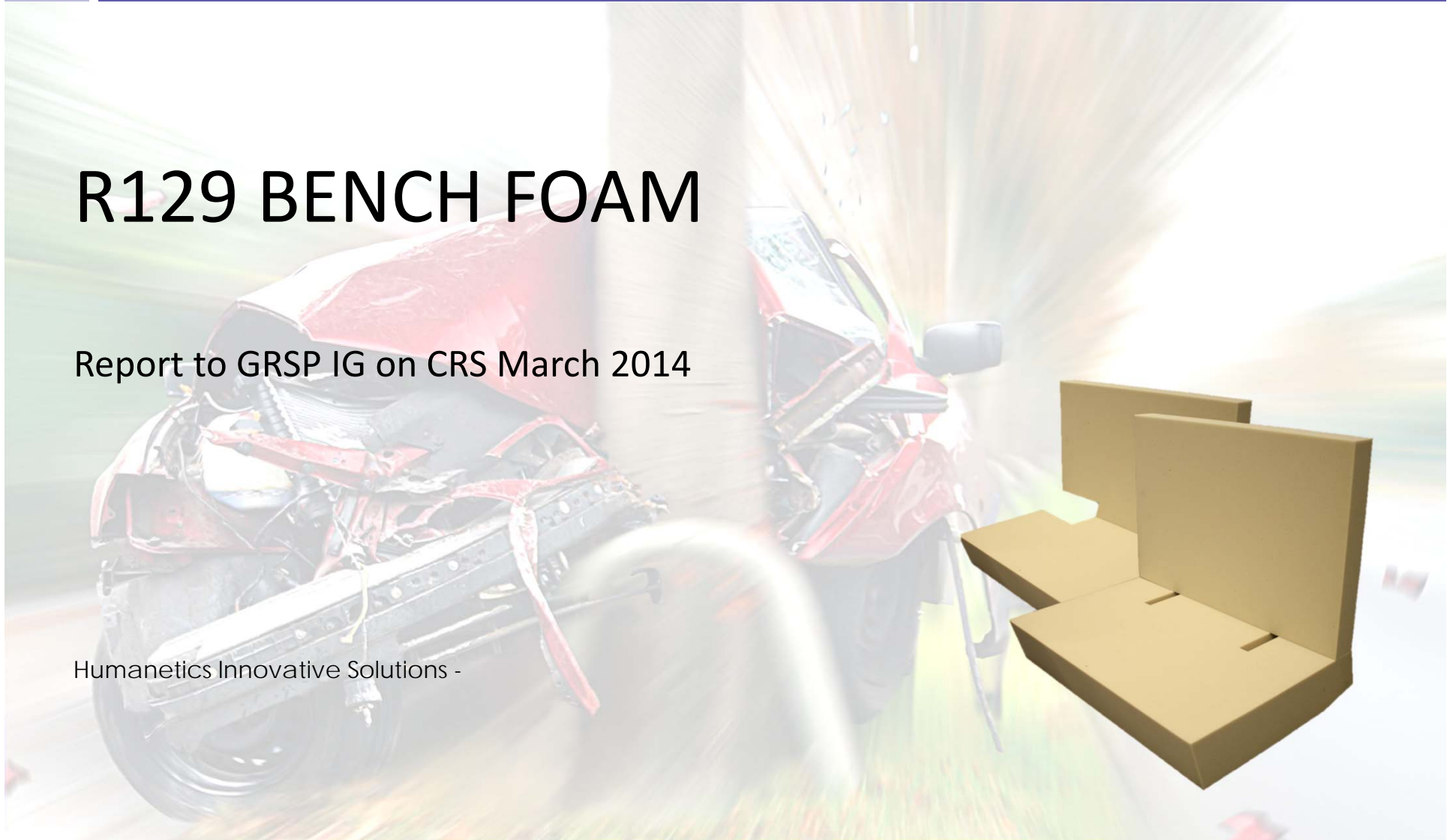


# R129 BENCH FOAM

Report to GRSP IG on CRS March 2014

Humanetics Innovative Solutions -

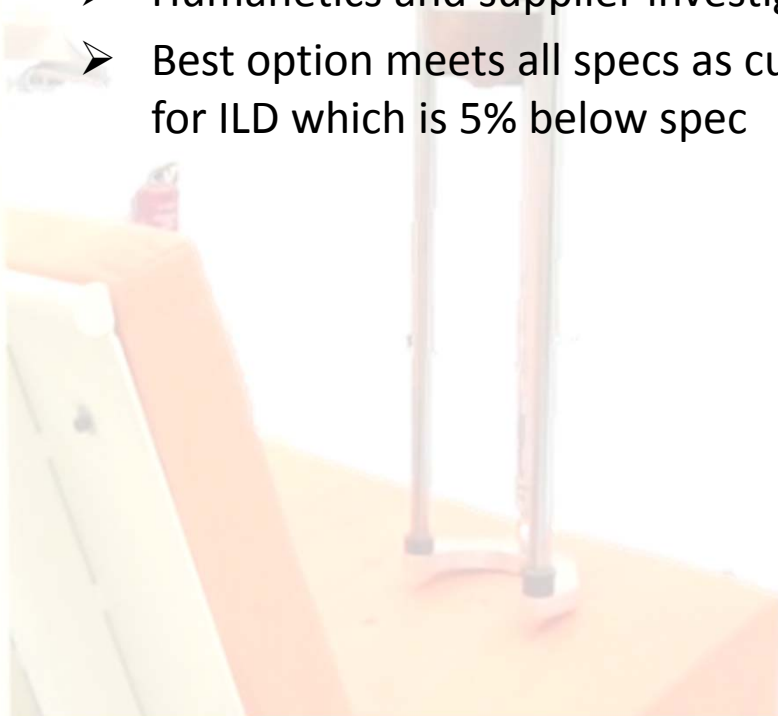


# Introduction



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- Bench foam specified in Annex 6 Description of Trolley
  - Input provided to GRSP group in various meetings between Jan 2010 and March 2011
  - Foam type used identical to NPACS
- In July 2013 Humanetics was informed that supply of foam material is discontinued due to low volume
- Humanetics and supplier investigated alternatives
- Best option meets all specs as currently in Annex 6 except for ILD which is 5% below spec



	<i>Standard</i>	<i>Value</i>	<i>Unit</i>
Density	EN ISO 845	68-74	Kg/m <sup>3</sup>
Compression resistance	EN ISO 3386/1 (40 % compression)	13	kPa
Indentation Load Deflection (ILD)	EN ISO 2439B (40 % compression)	500 (+/15%)	N
Tensile strenght	EN ISO 1798	≥ 150	kPa
Ultimate elongation	EN ISO 1798	≥ 120	%
Compression set	EN ISO 1856 (22hr/50 %/70 °C)	≤ 3	%

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# New and old material characteristics

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		Old Foam			New Foam	
	Norm				Average	
Density (D)	EN ISO 845	68-74	kg/m <sup>3</sup>	PN-EN ISO 845	71,2	kg/m <sup>3</sup>
Compression Resistance	EN ISO 3386/1	13	kPa	PN-EN ISO 3386-1	13,3	kPa
Indentation Load Deflection (ILD)	EN ISO 2439B 40%	500 +/-15%	N	PN-ISO 2439	479,5	N
Tensile Strength	EN ISO 1798	≥ 150	kPa	PN-EN ISO 1798	267,9	kPa
Ultimate Elongation	EN ISO 1798	≥ 120	%	PN-EN ISO 1798	138,6	%
Compression Set	EN ISO 1856	≥ 3	%	PN-EN 8307	1,6	%
	(22hr./50%/70°C)					

**Table 1 Annex 6**

	Standard	Value	Unit
Density	EN ISO 845	68-74	Kg/m3
Compression resistance	EN ISO 3386/1 (40 % compression)	13	kPa
Indentation Load Deflection (ILD)	EN ISO 2439B (40 % compression)	500 (+/15%)	N
Tensile strength	EN ISO 1798	≥ 150	kPa
Ultimate elongation	EN ISO 1798	≥ 120	%
Compression set	EN ISO 1856 (22hr/50 %/70 °C)	≤ 3	%

# New and old material characteristics

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- The ILD is a measure for the “firmness” or stiffness of the foam
  - Measured by loading a rectangular block of foam by a circular indenter up to 40% deflection
  - In R129 the ILD 40% of 500 +/-15% is used to represent rear seats in cars
  - Specification based on NPACS study
- Prepared service bulletin to inform customers
- Propose to update seat bench specifications in Annex 6 of R129



**HUMANETICS**

## Foam Bench Cushions

ECE Regulations No. 44 and No. 129  
Publication Date: March, 2014

Foam cushion material for use in ECE regulation No. 44 and No. 129 has been problematic due to a shortage of foam products that meet all of the regulated specifications.

### O.K.A Seat Cushion for ECE No. 44

The O.K.A foam seat cushion set is used in child restraint system tests and is regulated under the United Nations Economic Commission for Europe (ECE) Regulation No. 44, Uniform Provisions Concerning the Approval of Restraining Devices for Child Occupants of Power-Driven Vehicles.

The foam used to produce the cushions has compression, density and strength specifications previously certified before shipment to customers. The foam vendor for the O.K.A seat cushion set discontinued their product line in 2013 without prior notification, forcing Humanetics to search for a new supplier. Humanetics has informed the Governments in Europe as well as the representatives of the GRSP of the discontinued material supply.

Recently a new foam has been identified that has a lower density than the specification, but comparisons show it to be the closest available replacement. Previous Humanetics' studies of cushion foam with varying stiffness characteristics have yielded no significant kinematical differences in the child restraint system or the dummy. Since Regulation No. 44 is being phased out, no new studies of this kind will be conducted using the replacement foam. Humanetics will provide the O.K.A cushions using this new foam to those customers who want them, but will not certify nor guarantee absolute conformance to ECE R44. Supplies of the seat covers that are used with the foam sets are not affected.

Part numbers affected:	
Part Number	Description
O.K.A	ECE-44 SEAT CUSHION (includes cushion set, cover, manual)
O.K.A	CUSHION FOAM SET

### O.K.A-ECE-R129 Seat Cushion for ECE No. 129

The O.K.A-ECE-R129 foam seat cushion set is used in child restraint system tests and is regulated under (ECE) Regulation No. 129, Uniform provisions concerning the approval of enhanced Child Restraint Systems used on board of motor vehicles (ECRS).

As with ECE R44, the foam material used to produce the R129 cushion has regulated specifications but has also been discontinued by the manufacturer. Finding a replacement foam with an equivalent set of material characteristics has been problematic as well. Humanetics has identified a close match and has informed the proper GRSP working group of the findings.

Currently the R129 cushion set is available for purchase, but will yield a slightly lower force when compressing slowly (the ILD value in R129). This lower value is expected to show no significant kinematical differences in the child restraint system or the dummy.

Part number affected:	
Part Number	Description
O.K.A-ECE-R129	ECE-129 SEAT CUSHION SET

For further inquiries please contact Humanetics Customer Service or your account manager.

Rev 1, March 20

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A pink humanoid robot is positioned in a laboratory or industrial setting. The robot has a pink head with a small square on its forehead, a blue neck, and a blue and pink torso. It is standing on a white surface. In the background, there is a large piece of machinery with a bright blue light beam emanating from it. The overall scene is dimly lit, with the light beam providing a focal point.

Thank you!

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