

TSG Meeting

MPA February 5 – 6 2015

Bench Seat Cushion Drop Tests
Agenda item 3.2

IL VALORE DELLA QUALITA'



GRUPPO
IMQ

KEY TO SUCCESS

Summary of Results

Reg 44 and R129 Bench foam

Drop test on uncovered foam

Drop test on covered foam

Mass and density of foam

Table of Results

Reg 44: Drop test on uncovered foam

Reg	ID	Foam status	Peak deceleration			Peak indentation			
			[g's]			[mm]			
			Left	Middle	Right	Left	Middle	Right	
ECE44	15HU001	Uncovered	16,0	15,9	16,2	72,5	72,0	72,7	
ECE44	HU13_1		15,4	15,3	14,9				
ECE44	HU13_2		14,4	14,5	14,2				
ECE44	RS13X1		17,0	16,7	16,6	81,0	77,0	77,0	
ECE44	RS13X2		17,0	17,2	17,2	81,0	81,0	81,0	
ECE44	RS13X3		17,1	17,1	17,1	80,0	80,0	81,0	
ECE44	IDI		16,1	16,4	16,0	69,5	68,6	69,8	
Average			16,1	16,1	16,0	76,8	75,7	76,3	
Standard Deviation			1,0	1,0	1,1	4,1	4,0	4,0	
Average			16,1			76,3			
Standard Deviation			1,1			4,9			

Table of Results

Reg 44: Drop test on covered foam

Reg	ID	Foam status	Peak deceleration			Peak indentation		
			[g's]			[mm]		
			Left	Middle	Right	Left	Middle	Right
ECE44	IDI	With Cover	18,3	18,1	17,8	61,9	63,0	63,9
ECE44	15HU001		17,1	16,8	16,9	65,5	61,6	62,9
ECE44	MPA		18,7	18,3	18,5			
ECE44	FTSS12		17,1	17,4	16,4			
ECE44	HU14		18,2	18,8	18,8			
Average			17,9	17,9	17,7	63,7	62,3	63,4
Standard Deviation			0,7	0,8	1,0			
Average			17,8			63,1		
Standard Dev.			0,8			1,4		

Table of Results

Reg 44: Masses and densities

Foam ID	Reg	Part	Weight	Density	Volume
			[g]	[kg/m ³]	[m ³]
HU13-1	ECE44	Seat	2308,0	41,3	0,1
HU13-2	ECE44		2242,0	40,1	0,1
15HU001	ECE44		2077,0	37,1	0,1
RS13	ECE44		2307,0	41,3	0,1
IDI	ECE44		2292,0	41,0	0,1
Average			2245,2	39,9	
Standard Deviation			97,8	1,9	
HU13-1	ECE44	Back	1203,0	40,5	0,0
HU13-2	ECE44		1227,0	41,3	0,0
15HU001	ECE44		1160,0	39,1	0,0
RB12	ECE44		1237,0	41,7	0,0
IDI	ECE44		1227,0	41,3	0,0
Average			1210,8	40,7	
Standard Deviation			31,0	1,2	

Conclusion

Reg	Foam status	Results	Peak deceleration [g]	Peak indentation [mm]	Density [Kg/m ³]
44	Uncovered	Average	16,1	76,3	40,3
		Standard Dev	1,1	4,9	1,5
		Tolerance 15% (8.3.3)	2,4	11,4	43 (*)
	With Cover	Average	17,8	63,1	
		Standard Dev	0,8	1,4	
		Tolerance 15% (8.3.3)	2,7	9,5	
(*) nominal value					

Proposal

Reg	Foam status	Results	Peak deceleration [g]	Peak indentation [mm]	Density [Kg/m ³]
44	Uncovered		16 ± 2	78 ± 5	40 ± 5
	Covered		18 ± 2	63 ± 3	

Acceleration Covered	
1s	0,8
2s	1,6
3s	2,4
Indentation Covered	
1s	1,4
2s	2,8
3s	4,3

Density	
1s	1,5
2s	3,0
3s	4,5

1s	68,4%
2s	95,4%
3s	>99%

IL VALORE DELLA QUALITA'



GRUPPO
IMQ

KEY TO SUCCESS

Table of Results

Reg 129: Drop tests covered foam

Reg	ID	Foam status	Peak deceleration			Peak indentation			
			[g's]			[mm]			
			Left	Middle	Right	Left	Middle	Right	
ECE129	15CS000	With Cover	23,1	22,9	23,0	51,6	53,1	50,6	
ECE129	15CS001		22,5	22,9	24,1	55,9	53,7	55,9	
ECE129	HU13		26,7	26,6	26,2				
ECE129	HU14		25,3	24,9	24,0				
ECE129	33102107		23,7	23,6	22,5				
ECE129	33102107		23,4	24,1	24,0				
ECE129	33102107		23,7	23,8	24,0				
ECE129	33102107		23,9	24,0	24,0				
ECE129	33102107		23,7	23,7	24,1				
ECE129	33102107		24,0	24,3	24,2				
Average			24,0	24,1	24,0	53,8	53,4	53,3	
Standard Deviation			1,2	1,1	1,0				
Average			24,4			53,5			
Standard Deviation			1,5						

IL VALORE DELLA QUALITA'



GRUPPO
IMQ

KEY TO SUCCESS

Table of Results

Reg 129: Masses and densities

Foam ID	Reg	Part	Weight	Density	Volume
			[g]	[kg/m ³]	[m ³]
15CS001	ECE129	Seat	4210,0	75,3	0,1
15CS000	ECE129	Seat	4190,0	74,9	0,1
15CS000	ECE129	Back	2180,0	73,5	0,0
Average			3526,7	74,6	
Standard deviation			1166,3	1,0	

Conclusion

Reg	Foam status	Results	Peak deceleration [g]	Peak indentation [mm]	Density [Kg/m ³]
129	With Cover	Average	24,4	53,5	74,6
		Standard Dev	1,5		1
		Tolerance 15%	3,7	8,0	68÷74

IL VALORE DELLA QUALITA'



GRUPPO
IMQ

KEY TO SUCCESS

Proposal

Reg	Foam status	Results	Peak deceleration [g]	Peak indentation [mm]
129	Covered		24 ± 4	

Acceleration Covered	
1s	1,5
2s	3,1
3s	4,6

1s	68,4%
2s	95,4%
3s	>99%

IL VALORE DELLA QUALITA'



GRUPPO
IMQ

KEY TO SUCCESS