

Manufacturer's certificate

Technical Report

Impact resistance

Re: Fatigue test in compression related to the resistance to the impact on a fender made of Ethylene-vinyl acetate polymer, model ref. B.60 E.V.A. Bumper, fixed on a wood table with bolt 8x80mm and washers

Test realized with a hydraulic press of 40 tons and a flat stainless steel punch plate 55*22 cm.



photo 01

Test method:

The fender have been submitted to progressive loads up to 3.500 kg

- 1) The press has begun a first compression of 500 kg / 5 KNw and the punch in the fender is penetrated for 2 centimeters, making to compress only the first leaning hump.
- 2) *the* next pressure of 1.000 kg / 9,80 KNw has begun the deformation of the fender and the punch has begun to penetrate the fender for 4 cm (photo 02)



Photo 02

- 3) the pressure has been increased to 2.500 kg / 24,51 KNw and the punch has penetrate the fender for 6 cm



photo 04

- 4) the pressure has been increased to 4000 kg / 39,22 KNW and the punch has penetrate the fender for 10 cm

(photo 04-05)

- 5) Then the test was repeated several time with the maximum pressure applied of 4000 kg / 39,22 KNw



(Photo 05)



photo 06

Results:

the tests have daily been repeated for a week.

After these tests of compression, the fenders have not suffered perennial deformations, there have been no cuts or yieldings or tears.

the fender after an initial phase of light deformation, it returns to his initial form.

Also the points of fixing have not introduced breakups after the perpendicular tests of compression. (Photo 06 – 06 bis)



photo 06 bis

LAB TEST REPORT

Component:	<u>EVA</u>	Production Material:	<u>PK60NY</u>
Supplier/Factory:	<u></u>	Customer:	<u></u>
Supplier'/Country:	<u></u>	Sales Factory:	<u></u>
Description:	<u>Injection molded EVA</u>	MQF. NO.:	<u></u>
Color(S):	<u>NY</u>	Produce Date:	<u>2009.08.21</u>
Model No./Style:	<u>Injection</u>	Tested Date:	<u>2009.08.27</u>
P.O./Lot No.:	<u></u>	Finished Date:	<u></u>
Locale Temp(°C)	<u>23°C</u>	Relative Humidity	<u></u>

TEST ITEM	METHOD	UNIT	TEST RESULT	Medium	Test Standard
Hardness	ASTM D-2240	ASKER C	60 60.2 60.3 60 61.8	60.2	
Specific Gravity	ASTM D-3574	g/cm ³	0.1688	0.1688	
Tensile Strength	ASTM D-412	kg/cm ²	20.4 24.1 22.8	22.8	
Elongation	ASTM D-412	%	148 132 120	132	
Tear Strength	ASTM D-624	Kg/cm	8.5 7.9 7.7	7.9	
Split Tear	ASTM D-3574	Kg/cm	1.7 1.7 1.7	1.7	
Compression Set	ASTM D-395	%			
DIN Abrasion	SATRA TM174	mm ³			
Resilience	ASTM D2632-0	%	39 39 39	39	
Shrinkage	70°C/40mins	%	1.2 1.1	1.2	

Lab test report of the material used for producing the all range of E.V.A. Bumpers

The Ethylene-vinyl acetate polymer, is a closed cell material that combines with success the elevated level of characteristics of the poliuretans of high quality.

- Resistance to the degradation
- Resistance to the atmospheric agents
- Resistance to the UVA
- Good stability to present oils and solvents in the water's port
- Elevated elasticity
- Elevated resistance to the usury, to the laceration and the compression

Our EVA Bumper ref. B.60 has reached and excellently passed the test of compression resistance of 4000 kg / 39,22 KNW without present any type of yielding

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Ivan Lazzari
General manager

(document of n° 08 pages)



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