



BASF Polyurethanes GmbH Global Business Management Cellasto®

Material Specification:
Cellasto® MHSP

1 Scope

This specification describes an elastomeric microcellular polyurethane for use as shock absorber and/ or strut damper bumpers, suspension insulators and spring assists.

2 Requirements

2.1 Basic

5 test blocks are required for complete testing.

2.2 Validity

The properties of the test blocks must be evaluated based on at least 3 individual measurements. The required numerical values apply to each individual measurement. If any one requirement is not met, at least 3 additional specimen must be measured. If these results confirm to the requirements, the specimen is considered to have passed.

2.3 Conditioning

Prior to testing, the prepared specimens must be conditioned for at least 16 h and shall be tested under standard conditions, 23 ± 2 °C and 50 ± 5 % relative humidity.

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3 Material

3.1 Microcellular Polyurethane

The product of a reaction between naphthylene-1,5-diisocyanate and ester-based polyol, includes protection against hydrolysis.

3.2 Appearance

Uniform cell structure, i.e. free of voids and larger blisters.

4 Test block Properties

According to Table 1.

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Table 1: Test Block Properties

	Material Property	Test Method	Unit	Specification									
1.	Density	DIN EN ISO 845 ASTM D 3574-A ISO 1855	kg/m ³	270 ± 25	300 ± 25	350 ± 25	400 ± 25	450 ± 25	500 ± 25	550 ± 25	600 ± 25	650 ± 25	
2.	Tensile Strength	DIN EN ISO 1798 ASTM D 3574-E ISO 1798	N/mm ²	≥ 2,0	≥ 2,3	≥ 2,5	≥ 3,3	≥ 3,8	≥ 4,5	≥ 5,3	≥ 5,8	≥ 6,1	
3.	Elongation at Break	DIN EN ISO 1798 ASTM D3574-E ISO 1798	%	≥ 300	≥ 300	≥ 330	≥ 330	≥ 400	≥ 400	≥ 400	≥ 400	≥ 400	
4.	Tear Resistance	DIN ISO 34-1 Bb ASTM D624 C ISO 34-4 Bb	kN/m	≥ 6,0	≥ 6,5	≥ 8,0	≥ 11,5	≥ 12,0	≥ 16,0	≥ 18,0	≥ 19,0	≥ 19,0	
5.1.	Compression Set (40x40x30 mm) 50 % Compression 22h / 70°C	DIN EN ISO 1856 A ASTM D3574 D ISO 1856 A	%	≤ 6,0	≤ 7,0	≤ 7,0	≤ 8,0	≤ 8,0	≤ 8,0	≤ 8,0	≤ 8,0	≤ 8,0	
5.2.	Compression Set (40x40x30 mm) 40 % Compression 22h / 80°C / 2h/23°C	Based on: DIN EN ISO 1856 ASTM D3574 D ISO 1856	%	≤ 20,0	≤ 22,0	≤ 22,0	≤ 22,0	≤ 22,0	≤ 25,0	≤ 28,0	≤ 28,0	≤ 28,0	

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Table 1: Test Block Properties

	Material Property	Test Method	Unit	Specification
1.	Density	DIN EN ISO 845 ASTM D 3574-A ISO 1855	kg/m ³	270 - 650
6.1.	Liquid storage (water) Change Tensile strength; 7 d / 70 °C	DIN 53428-F ASTM D471 ISO 1817	%	≤ 10
6.2.	Liquid storage (water) Change Elongation at Break; 7 d / 70 °C	DIN 53428-F ASTM D471 ISO 1817	%	≤ 10
7.1.	Heat aging Change Tensile strength; 70 h / 100 °C	DIN EN ISO 2440 ASTM D573 ISO 2440	%	≤ 10
7.2.	Heat aging Change Elongation at Break; 70 h / 100 °C	DIN EN ISO 2440 ASTM D573 ISO 2440	%	≤ 10
8.1.	Liquid storage (Oil IRM901) Change Tensile strength; 70 h / 100 °C	DIN 53428-F ASTM D471 ISO 1817	%	≤ 10
8.2.	Liquid storage (Oil IRM901) Change Elongation at Break; 70 h / 100 °C	DIN 53428-F ASTM D471 ISO 1817	%	≤ 10
9.1.	Liquid storage (Oil IRM903) Change Tensile strength; 70 h / 100 °C	DIN 53428-F ASTM D471 ISO 1817	%	≤ 10
9.2.	Liquid storage (Oil IRM903) Change Elongation at Break; 70 h / 100 °C	DIN 53428-F ASTM D471 ISO 1817	%	≤ 10

5 Notes on Testing

5.1 Density

The density of the finished part is determined acc. to DIN EN ISO 845.

5.2 Tensile Strength and Elongation at Break

Tensile strength and elongation at break are determined acc. to DIN EN ISO 1798.

5.3 Tear resistance

Tear resistance is determined acc. to DIN ISO 34, B (b).

5.4 Compression Set

Compression set based on DIN EN ISO 1856.

5.5 Compression Set

Compression set based on DIN EN ISO 1856.

The test is performed at constant deformation.

Specimens are taken from test block with a height of 30 mm. They are compressed by 40% and placed in a mechanical circulation oven for 22h at 80°C.

After removing the test device from the oven, it is cooled to room temperature over 2 hours in the compressed state, after that the samples are removed. 10 min \pm 30 s after removing, the height of the specimens are measured with an accuracy of 0.1 mm.

5.5.1 Test Equipment

Thickness gage acc. to DIN EN ISO 1923 - 0.1 mm.

Test Device acc. to DIN EN ISO 1856.

Oven acc. to DIN 50011-11 with mechanical circulation.

5.6 Liquid Storage / Water Storage

Conditions for liquid storage based on DIN 53428 F: 70h at 70°C in water.

5.7 Heat Aging

Conditions for heat aging based on DIN EN ISO 2440: 70h at 100°C.

5.8 Oil Aging

Conditions for oil aging based on DIN 53428 F: 70h at 100°C in IRM 901.

5.9 Oil Aging

Conditions for oil aging based on DIN 53428 F: 70h at 100°C in IRM 903.