



DEXFLEX® 1000

DESCRIPTION:

DEXFLEX® 1000 is an engineered thermoplastic polyolefin (TPO) designed for automotive air bag covers. This material has been designed for low temperature air bag deployment with a balance of stiffness and ductility. The material is typically black for painted or non-visible applications. The product is also available in natural, or color matched to automotive OEM interior colors with UV stabilization for mold-in-color applications.

APPLICATIONS:

DEXFLEX® 1000 engineered thermoplastic polyolefin is intended for use in automotive airbag door applications, either in driver, passenger, or side airbag modules. The typical service temperature range is from -40°C to 100°C. For mold-in-color applications, low gloss appearance can be achieved with most interior grain patterns.

NOMINAL PROPERTIES:

PROPERTY	TYPICAL VALUE	UNITS	TEST METHODS
PHYSICAL			
Specific Gravity	0.89	—	ISO 1183
Filler Content	< 2	wt %	ISO 3451 /ASTM D5630
RHEOLOGICAL			
Melt Flow Rate, 230°C / 2.16 kg	4.5	dg/min	ISO 1133
MECHANICAL			
Tensile Stress at Yield	12	MPa	ISO 527-1, 50 mm/min
Tensile Elongation at Yield	25	%	ISO 527-1, 50 mm/min
Tensile Elongation at Break	>500	%	ISO 527-1, 50 mm/min
Tensile Modulus	500	MPa	ISO 527-1, 1 mm/min
Flexural Modulus, +23°C (4mm thickness)	440	MPa	ISO 178, 2 mm/min
Flexural Strength, +23°C (4mm thickness)	15	MPa	ISO 178, 2 mm/min
Hardness, 15 sec dwell	43	Shore D	ISO 868
THERMAL			
Heat Distortion Temperature			
0.45 MPa applied stress, un-annealed	55	°C	ISO 75-2
1.8 MPa applied stress, un-annealed	40	°C	ISO 75-2
CLTE, -30°C to +80°C, parallel	5.2×10^{-5}	mm/mm/°C	ASTM D 696
CLTE, -30°C to +80°C, transverse	4.6×10^{-5}	mm/mm/°C	ASTM D 696
Flammability (FMVSS 302)	< 100	mm/min	ISO 3795
DSC Melting Peak (10°C/min)	162	°C	ASTM D 3417 / 3418
VISUAL			
Five-finger Scratch Resistance			GMN3943, FLTM BN 108-13 DCX LP-463DD-18-1
Minimum Load for No Whitening	~3-7	N	

Tests are made in accordance with the current issue of the ISO, ASTM, or other cited test methods. Test data reported here are nominal values measured on injection molded plaques and test bars.

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DEXFLEX[®] 1000

IMPACT PROPERTIES:

PROPERTY	TYPICAL VALUE	UNITS	TEST METHODS
IMPACT			
Multi-Axial Instrumented Impact			
at +23°C, 6.7 m/s (15 mph)	18 Ductile	J at max load	ASTM D 3763
at 0°C, 6.7 m/s (15 mph)	25 Ductile	J at max load	ASTM D 3763
at -40°C, 6.7 m/s (15 mph)	25 Ductile	J at max load	ASTM D 3763
Notched Izod Impact, at +23°C	NB	kJ/m ²	ISO 180/1eA
Notched Izod Impact, at -40°C	NB	kJ/m ²	ISO 180/1eA

PROCESSING CONDITIONS

PROPERTY	TYPICAL VALUE		UNITS	TEST METHODS
INJECTION MOLDING SHRINKAGE	Average	Range		
Mold Shrinkage, as molded	0.6	0.4 – 0.8	%	ISO 294-4 / ASTM D955
Mold Shrinkage, after bake, 48hrs/80°C	0.85	0.7 – 1.0	%	ISO 294-4 / ASTM D955

Mold shrinkage is measured on laboratory injection molded flat plaque, 150 x 100 x 3.2 mm, and is not necessarily representative of actual field data. The part wall thickness, gate type and location, flow length and paint oven temperature affect final part dimensions. Please contact your Solvay Engineered Polymers representative before any tools are cut.

MOLDING PARAMETERS

Barrel Temperature	
Nozzle	215°C / 420°F
Front	215°C / 420°F
Center	210°C / 410°F
Rear	205°C / 400°F
Hot Runner, Manifold & Tips	215°C / 420°F
Melt Temperature	190 – 240°C 380 – 460°F
Mold Temperatures	
Cavity	30°C / 85°F
Core	24°C / 75°F

MOLDING PARAMETERS

Injection Pressure	
High	35 – 105 bar
(first stage)	500 – 1500 psi
Low	25 – 70 bar
(second stage)	350 – 1000 psi
Back Pressure	3.5 – 20 bar 50 – 300 psi
Cushion	6 – 13 mm ¼ to ½ inch
Injection Velocity	10 – 80 mm/sec 0.4 – 3.2 in/sec
Screw Speed	50 – 100 rpm

Drying:

Pellet drying is generally unnecessary for DEXFLEX engineered polyolefin materials. However, drying may help to improve the aesthetic appearance of DEXFLEX engineered polyolefins. Drying with dehumidified air (-20°C dew point or lower) at 50-80°C for 2 to 6 hours is generally sufficient to remove any residual moisture to below 0.05 wt%.

For further information, please contact Solvay Engineered Polymers.

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