Omnix® 4050
high performance polyamide

Omnix® 4050 is a 50% glass-fiber reinforced, high-performance polyamide (HPPA). It is particularly suited for replacing die-cast metal in a variety of mechanical applications and components used in automotive, consumer goods, E/E, and construction. Components injection molded from Omnix® 4050 display exceptional mechanical properties and excellent surface appearance even after moisture adsorption.

- Black: Omnix® 4050 BK 000
- Natural: Omnix® 4050 NT 000

General		
Material Status	• Commercial: Active	
Availability	• Asia Pacific • Europe	• North America
Features	• Fast Molding Cycle • Good Dimensional Stability • Good Impact Resistance • Good Surface Finish • High Flow	• High Stiffness • High Strength • Hot Water Moldability • Paintable
Uses	• Automotive Electronics • Electrical/Electronic Applications	• Machinery Maintenance/Repair
RoHS Compliance	• RoHS Compliant	
Appearance	• Black	• Natural Color
Forms	• Pellets	
Processing Method	• Injection Molding	• Water-Heated Mold Injection Molding
Part Marking Code (ISO 11469)	• >(PA+PPA)-GF50<	

Physical	Dry	Conditioned	Unit	Test method
Density / Specific Gravity	1.59	--		ASTM D792
Molding Shrinkage [1]				ISO 294-4
Across Flow	0.50	--	%	
Flow	0.10	--	%	
Water Absorption				
24 hr, 23°C	0.24	0.24	%	ISO 62
Saturation, 23°C [2]	3.8	3.8	%	
Equilibrium, 23°C, 50% RH [2]	1.3	1.3	%	

Mechanical	Dry	Conditioned	Unit	Test method
Tensile Modulus	17000	17000	MPa	ISO 527-1
Tensile Stress (Yield)	245	205	MPa	ISO 527-2
Tensile Strain (Break)	2.6	2.7	%	ISO 527-2
Flexural Modulus	16300	--	MPa	ISO 178
Flexural Stress	360	--	MPa	ISO 178

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Impact	Dry	Conditioned	Unit	Test method
Charpy Notched Impact Strength	13	13	kJ/m²	ISO 179
Charpy Unnotched Impact Strength	100	95	kJ/m²	ISO 179

Thermal	Dry	Conditioned	Unit	Test method
Melting Temperature	260	--	°C	ISO 11357-3

Electrical	Dry	Conditioned	Unit	Test method
Comparative Tracking Index	--	600	V	IEC 60112
Dielectric Strength	30.6	--	kV/mm	ASTM D149

Flammability	Dry	Conditioned	Unit	Test method
Flame Rating (0.8 mm)	HB	--		UL 94

Additional Information

Dry	• Typical values shown tested on Dry as Molded samples. • Standard Packaging and Labeling: Omnix® 4050 resin is packaged in foil lined, multiwall paper bags containing 25 kg (55 pounds) of material. Individual packages will be plainly marked with the product number, the color, the lot number, and the net weight.
Conditioned	• Conditioned data generated according to test method ISO 1110.

Injection	Dry	Unit
Drying Temperature	80	°C
Drying Time	4.0 to 12	hr
Rear Temperature	250	°C
Front Temperature	285	°C
Processing (Melt) Temp	275 to 290	°C
Mold Temperature	80 to 120	°C

Injection Notes

Drying:

- Omnix® 4050 resin is shipped in moisture-resistant packages at moisture levels according to specifications. Sealed, undamaged bags should be preferably stored in a dry room at a maximum temperature of 50°C (122°F) and should be protected from possible damage. If only a portion of a package is used, the remaining material should be transferred into a sealable container. It is recommended that Omnix® resins be dried prior to molding following the recommendations found in this datasheet and/or in the Omnix® processing guide. It should be dried before molding because excessive moisture content will result in reduced mechanical properties and processing issues, such as excessive nozzle drooling, foaming and splay visible on the molded parts.
- Recommended drying conditions are as follows:
  - Type of drier: Desiccant
  - Temperature: 80°C (175°F)
  - Time: 4-12 hours
  - Dew point: -30°C (-22°F) or lower
  - Polyamides oxidize in the presence of oxygen at high temperatures. Therefore drying temperatures above 80°C should be avoided, particularly for light colors or color-controlled parts.

Injection Molding:

- Omnix® 4050 resin can be readily injection molded in most screw injection molding machines. A general purpose screw is recommended, with minimum back pressure. The melt temperature should be between 275°C and 290°C (527°F and 554°F). Generally this can be achieved with barrel temperatures from 250°C (482°F) in the rear zone gradually increasing to 285°C (545°F) in the front zone. Mold temperature should be between 80° and 120°C (176° and 248°F).
- Set injection pressure to give rapid injection. Adjust holding pressure to one-half injection pressure. Set hold time to maximize part weight. Transfer from injection to hold pressure at the screw position just before the part is completely filled.

Storage:

- Omnix® compounds are shipped in moisture-resistant packages at moisture levels according to specifications. Sealed, undamaged bags should be preferably stored in a dry room at a maximum temperature of 50°C (122°F) and should be protected from possible damage. If only a portion of a package is used, the remaining material should be transferred into a sealable container. It is recommended that Omnix® resins be dried prior to molding following the recommendations found in this datasheet and/or in the Omnix® processing guide.

Notes

Typical properties: these are not to be construed as specifications.

[1] Solvay Test Method. Shrink rates can vary with part design and processing conditions. Please consult a Solvay Technical Representative for more information.

[2] Solvay method

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