Omnix® DW-4050

Solvay Specialty Polymers - High Performance Polyamide

Monday, April 8, 2019

General Information

Product Description

Dry

Omnix® DW-4050 is a 50% glass-fiber reinforced high-performance polyamide. It is hot-water moldable and intended for use in components requiring superior mechanical properties even after moisture absorption.

Omnix® DW-4050 is characterized by high stiffness and strength, very good impact properties, good dimensional stability and high flow properties. This material is an economical alternative for food service applications using die-cast alloys.

Omnix® DW-4050 is cleared for use under United States Food and Drug Administration (FDA) Conditions of Use B through H, in contact with all food types except Food Type VI C, Beverages containing more than 8 percent alcohol.

Omnix® DW-4050 is also cleared for food contact use by European Union regulations. For specific clearances, please contact your Solvay representative.

It processes readily using conventional injection molding machines and methods. Water-cooled molds are suitable for use with this grade.

- Black: Omnix® DW-4050 BK 001
- Natural: Omnix® DW-4050 NT 000

General	Dry	Conditioned
Generic Name	• Polyamide, High Performance (HPPA)	• Polyamide, High Performance (HPPA)
Material Status	• Commercial: Active	• Commercial: Active
Availability	• Asia Pacific • Europe • North America	• 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	• Appliances • Food Service Applications	--
Agency Rating	• ACS, Unspecified Rating • DVGW, W270 • EU, Food Contact, Unspecified Rating [1] • FDA, Food Contact, Unspecified Rating [2] • KTW, Guidelines • NSF, STD-51 • WRAS, Unspecified Rating	--
RoHS Compliance	• RoHS Compliant	--

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General	Dry	Conditioned
Appearance	• Black • Natural Color	--
Forms	• Pellets	--
Processing Method	• Injection Molding • Water-Heated Mold Injection Molding	--
Part Marking Code (ISO 11469)	• >(PA+PPA)-GF50<	--

ASTM & ISO Properties [3]

Physical	Dry	Conditioned	Unit	Test Method
Density / Specific Gravity	1.59	--		ASTM D792
Molding Shrinkage [4]				ISO 294-4
Across Flow	0.50	--	%	
Flow	0.10	--	%	
Mechanical	**Dry**	**Conditioned**	**Unit**	**Test Method**
Tensile Modulus (23°C)	17000	17000	MPa	ISO 527-2
Tensile Stress (Yield, 23°C)	245	205	MPa	ISO 527-2
Tensile Strain (Break, 23°C)	2.6	2.6	%	ISO 527-2
Flexural Modulus	15000	--	MPa	ISO 178
Flexural Stress	350	--	MPa	ISO 178
Impact	**Dry**	**Conditioned**	**Unit**	**Test Method**
Charpy Notched Impact Strength				ISO 179
23°C	13	13	kJ/m²	
Charpy Unnotched Impact Strength				ISO 179
23°C	100	95	kJ/m²	
Notched Izod Impact Strength				ISO 180
23°C	15	15	kJ/m²	
Unnotched Izod Impact Strength				ISO 180
23°C	90	85	kJ/m²	
Thermal	**Dry**	**Conditioned**	**Unit**	**Test Method**
Melting Temperature	260	--	°C	ISO 11357-3

Additional Information

Dry	• Typical values shown tested on Dry as Molded samples. • Standard Packaging and Labeling: Omnix® DW-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.

Processing Information

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

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Injection	Dry	Unit
Mold Temperature	80 to 140	°C

Injection Notes

Drying:

- Omnix® DW-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® DW-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 140°C (176° and 284°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

[1] For specific clearances, please contact your Solvay representative.

[2] Omnix® DW-4050 is cleared for use under United States Food and Drug Administration (FDA) Conditions of Use B through H, in contact with all food types except Food Type VI C, Beverages containing more than 8 percent alcohol.

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

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