

# Omnix® 4020

## high performance polyamide

Omnix® 4020 is a 20% glass-fiber reinforced, heat-stabilized, 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® 4020 display

exceptional mechanical properties and excellent surface appearance even after moisture adsorption.

- Black: Omnix® 4020 BK 000
- Natural: Omnix® 4020 NT 000

### General

|                               |                                                                                                                          |                                                                               |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Material Status               | • Commercial: Active                                                                                                     |                                                                               |
| Availability                  | • Asia Pacific<br>• Europe                                                                                               | • North America                                                               |
| Filler / Reinforcement        | • Glass Fiber, 20% Filler by Weight                                                                                      |                                                                               |
| Features                      | • Fast Molding Cycle<br>• Good Dimensional Stability<br>• Good Impact Resistance<br>• Good Surface Finish<br>• High Flow | • High Stiffness<br>• High Strength<br>• Hot Water Moldability<br>• Paintable |
| Uses                          | • Automotive Electronics<br>• 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)-GF20<                                                                                                        |                                                                               |

| Physical                   | Typical Value | Unit | Test method |
|----------------------------|---------------|------|-------------|
| Density / Specific Gravity | 1.32          |      | ASTM D792   |

| Mechanical             | Typical Value | Unit | Test method |
|------------------------|---------------|------|-------------|
| Tensile Modulus        | 7600          | MPa  | ISO 527-2   |
| Tensile Stress (Yield) | 140           | MPa  | ISO 527-2   |
| Tensile Strain (Break) | 2.6           | %    | ISO 527-2   |
| Flexural Modulus       | 6700          | MPa  | ISO 178     |
| Flexural Stress        | 200           | MPa  | ISO 178     |

| Impact                           | Typical Value | Unit  | Test method |
|----------------------------------|---------------|-------|-------------|
| Charpy Notched Impact Strength   | 5.0           | kJ/m² | ISO 179     |
| Charpy Unnotched Impact Strength | 30            | kJ/m² | ISO 179     |

| Thermal             | Typical Value | Unit | Test method |
|---------------------|---------------|------|-------------|
| Melting Temperature | 260           | °C   | ISO 11357-3 |

# Omnix® 4020

## high performance polyamide

### Additional Information

- Typical values shown tested on Dry as Molded samples.
- Standard Packaging and Labeling: Omnix® 4020 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.

| Injection              | Typical Value | 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® 4020 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® 4020 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.