

Omnix[®]



SOLVAY

asking more from chemistry[®]

Omnix[®] HPPA
High-Performance Polyamides

**SPECIALTY
POLYMERS**

Omnix® HPPA is a family of high-performance polyamides (HPPA) that bridge the cost-performance gap between lower performing, aliphatic polyamides (PA) and higher performing, aromatic polyphthalamides (PPA). Thanks to low moisture absorption, these materials retain their mechanical properties and offer low warpage and dimensional stability, making them particularly suited to replace metal in structural applications.

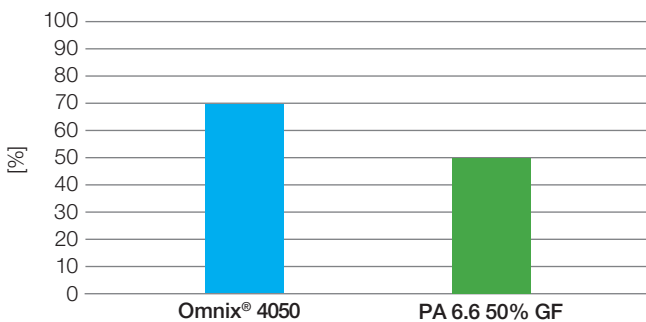
Omnix® HPPA can be injection molded using PA 6.6 tooling without any modifications or special mold heating equipment. There are only minor variations in the dimensions of molded parts part as the material's shrinkage and flow properties are similar to PA 6.6.

Omnix® HPPA vs. PA 6.6

- Lower moisture absorption
- Higher strength and stiffness
- Better dimensional stability
- Lower warpage
- More aesthetic surface appearance

Surface appearance

Gloss 60°, ASTM D2457



Omnix® HPPA Portfolio

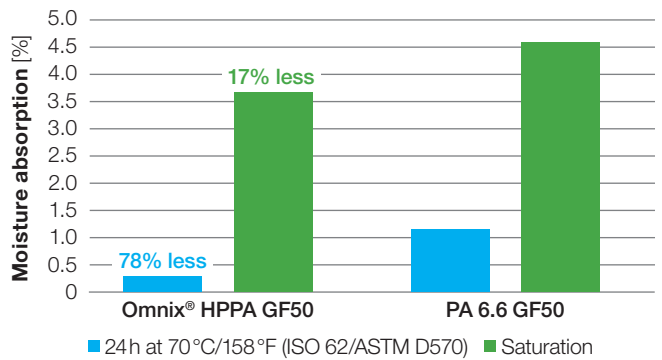
The Omnix® HPPA product line is built on two base resins, each offering distinct product and processing features. Products are available in a variety of glass-filled, food contact and potable water grades.

Omnix® HPPA resins are available in black and natural grades. The off-white color of the natural resin provides excellent colorability.

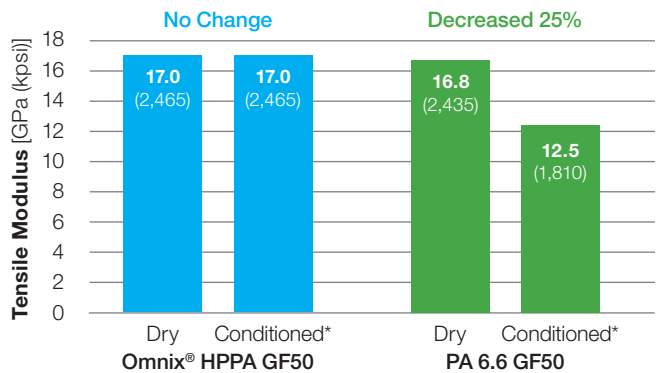
Omnix® HPPA base resins

| Base Resin | Formulation | Description |
|-------------|--|---|
| 4000 series | Hot water moldable, based on Amodel® PPA | 20%, 25% HFFR, 30% and 50% glass fiber, good impact strength, good surface finish |
| 9000 series | Hot water moldable, based on Ixef® PARA | 50% glass fiber, better fluidity |

Moisture absorption

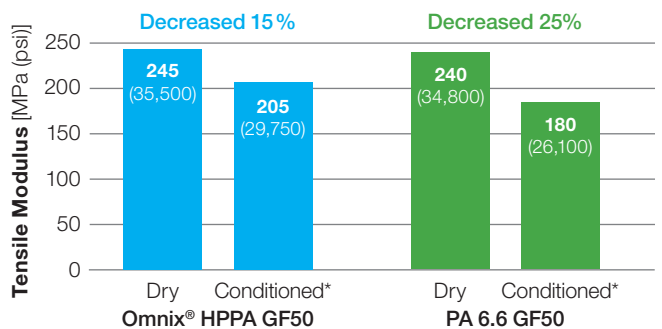


Effect of moisture absorption on tensile modulus



* ISO 1110 (70°C/158°F, 62% RH)

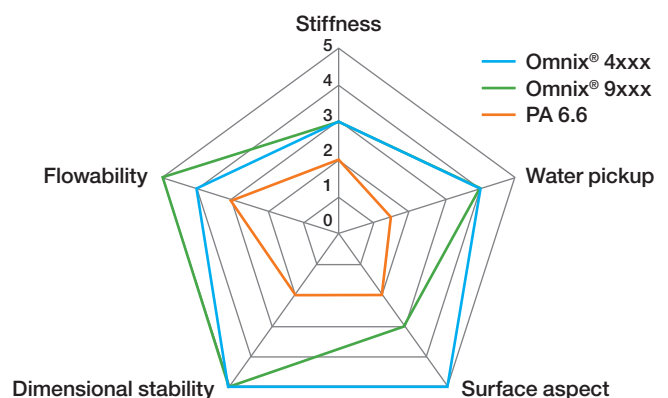
Effect of moisture absorption on tensile strength



* ISO 1110 (70°C/158°F, 62% RH)

Processing

For standard grades of Omnix® HPPA, melt temperatures range from 285 to 305°C (545 to 580°F), and mold temperatures range from 80°C (175°F). There are only minor variations in part dimensions as the material's shrinkage and flow properties are similar to that of PA 6.6.



Typical properties of Omnix® HPPA

| | Dry/ Conditioned | Unit | FC-4020 20% GF | FC-4030 30% GF | 4050 DW-4050 FC-4050 50% GF | 6025 HFFR 25% GF | 9050 FC-9050 50% GF | Test Method |
|-----------------------------------|---------------------|---|-------------------|-------------------|--------------------------------------|------------------------|---------------------------|---------------|
| Physical | | | | | | | | |
| Density | Dry | g/cm ³ | 1.32 | 1.41 | 1.59 | – | 1.60 | ASTM D792 |
| Molding shrinkage | | | | | | | | |
| Across flow | Dry | % | – | – | 0.30 | – | 0.50 | Solvay Method |
| Flow | Dry | % | – | – | 0.10 | – | 0.20 | Solvay Method |
| Moisture absorption | | | | | | | | |
| 23 °C/24 h | | % | – | – | 0.24 | – | 0.27 | ISO 62 |
| Saturation | | % | | | 3.80 | – | 3.80 | Solvay Method |
| Mechanical | | | | | | | | |
| Tensile modulus | Dry | MPa (ksi) | 7,600 (1,100) | 10,000 (1,450) | 17,000 (2,470) | 10,000 (1,450) | 17,000 (2,470) | ISO 527-4 |
| | Conditioned | MPa (ksi) | – – | – – | 17,000 (2,470) | – – | – – | ISO 1110 |
| Tensile stress at break | Dry | MPa (psi) | 140 (20,300) | 170 (24,700) | 245 (35,500) | 135 (19,600) | 235 (34,100) | ISO 527-4 |
| | Conditioned | MPa (psi) | – – | – – | 205 (29,700) | – – | – – | ISO 1110 |
| Tensile strain at break | Dry | % | 2.7 | 2.5 | 2.6 | 2.8 | 2.1 | ISO 527-4 |
| | Conditioned | % | – | – | 2.7 | – | – | ISO 1110 |
| Flexural modulus | Dry | MPa (ksi) | 6,700 (970) | 9,000 (1,300) | 15,000 (2,180) | 9,200 (13,300) | 15,000 (2,180) | ISO 179 |
| Flexural stress | Dry | MPa (psi) | 200 (29,000) | 260 (37,700) | 350 (50,800) | 200 (29,000) | 340 (49,300) | ISO 179 |
| Impact | | | | | | | | |
| Charpy impact strength, notched | Dry | kJ/m ² (ft-lb/in ²) | 5 (2.4) | 7 (3.3) | 13 (6.2) | – – | 13 (6.2) | ISO 179 |
| | Conditioned | kJ/m ² (ft-lb/in ²) | – – | – – | 13 (6.2) | – – | – – | ISO 1110 |
| Charpy impact strength, unnotched | Dry | kJ/m ² (ft-lb/in ²) | 30 (14) | 47 (22) | 100 (48) | – – | 75 (36) | ISO 179 |
| | Conditioned | kJ/m ² (ft-lb/in ²) | – – | – – | 95 (45) | – – | – – | ISO 1110 |
| Thermal | | | | | | | | |
| Melting temperature | Dry | °C (°F) | 262 (504) | 262 (504) | 260 (504) | 260 (500) | 260 (500) | ISO 11357-3 |
| Flammability | | | | | | | | |
| Flame rating (0.8 mm) Dry | | | HB | HB | HB | V-0 | HB | UL 94 |

FC: Food Contact approved DW: Potable Water approved GF: Glass Fiber





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