

Ultramid® A3WGM53 BK20560

Polyamide 66

Ultramid A3WGM53 BK20560 is a 40% glass/mineral reinforced, pigmented black, injection molding grade for high stiffness parts with good dimensional stability and surface finish.

Applications

Typical applications include automotive cylinder-head cover.

| PHYSICAL | ISO Test Method | Property Value | |
|-------------------------------------------|-----------------|----------------|-------------|
| Density, g/cm ³ | 1183 | 1.48 | |
| Moisture, % | 62 | | |
| (50% RH) | | 1.4 | |
| (Saturation) | | 5.1 | |
| RHEOLOGICAL | ISO Test Method | Dry | Conditioned |
| Melt Volume Rate (275 °C/5 Kg), cc/10min. | 1133 | 30 | - |
| MECHANICAL | ISO Test Method | Dry | Conditioned |
| Tensile Modulus, MPa | 527 | | |
| 23 °C | | 12,100 | 6,100 |
| Tensile stress at break, MPa | 527 | | |
| 23 °C | | 160 | 80 |
| Tensile strain at break, % | 527 | | |
| 23 °C | | 2.3 | 6.0 |
| Flexural Strength, MPa | 178 | | |
| 23 °C | | 225 | 125 |
| Flexural Modulus, MPa | 178 | | |
| 23 °C | | 10,100 | 5,500 |

| | | | |
|----------------------------------------------------------|------------------------|------------------------|--------------------|
| Ball Indentation, MPa | 2039-1 | 230 | 90 |
| IMPACT | ISO Test Method | Dry | Conditioned |
| Izod Notched Impact, kJ/m² | 180 | | |
| -30°C | | 7.5 | - |
| 23°C | | 9.5 | 16 |
| Charpy Notched, kJ/m² | 179 | | |
| -30°C | | 6.7 | - |
| 23°C | | 8 | 16 |
| Charpy Unnotched, kJ/m² | 179 | | |
| -30°C | | 50 | - |
| 23°C | | 55 | 62 |
| THERMAL | ISO Test Method | Dry | Conditioned |
| Melting Point, °C | 3146 | 260 | - |
| HDT A, °C | 75 | 225 | - |
| HDT B, °C | 75 | 250 | - |
| Coef. of Linear Thermal Expansion, Parallel, mm/mm °C | | 0.15 X10 ⁻⁴ | - |
| ELECTRICAL | ISO Test Method | Dry | Conditioned |
| Volume Resistivity (Ohm-m) | IEC 60093 | 1E13 | 1E10 |
| Dielectric Constant (1 MHz) | IEC 60250 | 4 | - |

Processing Guidelines

Material Handling

Max. Water content: 0.15%

Material is supplied in sealed containers and drying prior to molding in a dehumidifying or desiccant dryer is recommended.

Drying parameters are dependent upon the actual percentage of moisture in the pellets and typical pre-drying conditions are 2-4 hours at 180F (83C). Further information concerning safe handling procedures can be obtained from the Safety Data Sheet (MSDS), or by contacting your BASF representative.

Typical Profile

Melt Temperature 280-305°C (536-581°F)

Mold Temperature 80-90°C (176-194°F)

Injection and Packing Pressure 35-125 bar (500-1500 psi)

Mold Temperatures

A mold temperature of 80-90°C (176-194°F) is recommended, however temperatures of as low as 45°C (113°F) and as high as 105°C (221°F) can be used where applicable.

Pressures

Injection pressure controls the filling of the part and should be applied for 90% of ram travel. Packing pressure affects the final part and can be used effectively in controlling sink marks and shrinkage. It should be applied and maintained until the gate area is completely frozen off.

Back pressure can be utilized to provide uniform melt consistency and reduce trapped air and gas. Minimal back pressure should be utilized to prevent glass breakage.

Fill Rate

Fast fill rates are recommended to ensure uniform melt delivery to the cavity and prevent premature freezing. Surface appearance is directly affected by injection rate.

Note

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