TECHNYL® PROTECT
Flame retardants

DOMO
caring is our formula

TECHNICAL DATA SHEET

# TECHNYL PROTECT A 20 V25 BK 25

**(Previously TECHNYL A 20 V25 BLACK 25)**

TECHNYL PROTECT A 20 V25 BK 25 is a Red Phosphorous flame retardant polyamide 66, reinforced with 25% of glass fiber, heat stabilized, for injection moulding. This grade provides robust UL 94 V-0 and a full UL yellow card while offering good mechanical properties. This grade is suitable for moulding insulating parts for electrical devices, and more generally for thin parts under stress.

## General

| | | |
|---|---|---|
| Feature | halogen free flame retardant | |
| Polymer type | PA66 (Polyamide 66) | |
| Processing technology | Injection molding | |
| Certification | RoHS | UL-Yellow Card |
| Applications | Electrical/Electronic Applications | Wire & Cable |
| Colors available | Black | Natural |
| Forms | Pellets | |

## Product identification

| | |
|---|---|
| ISO 1043 abbreviation | PA66-GF25 FR(52) |

## Physical properties

| | Condition | Standard | Unit | Value |
|---|---|---|---|---|
| Density | | ISO 1183 | g/cm³ | 1.38 |
| Water absorption | 24 hr, 23°C | ISO 62 | % | 0.75 |
| Molding shrinkage, parallel | | ISO 294-4, 2577 | % | 0.35 |
| Molding shrinkage, normal | | ISO 294-4, 2577 | % | 1.2 |

**TECHNICAL DATA SHEET** — **TECHNYL PROTECT A 20 V25 BK 25**

| | Condition | Standard | Unit | Value |
|---|---|---|---|---|
| **Mechanical properties** | | | | **dam / cond.*** |
| Tensile modulus | 1 mm/min | ISO 527-1/-2 | MPa | 9400 / 6300 |
| Stress at break | | ISO 527-1/-2 | MPa | 150 / 100 |
| Strain at break | | ISO 527-1/-2 | % | 2.5 / 5.2 |
| Flexural modulus, ISO 178 | 2 mm/min | ISO 178 | MPa | 8500 / 5700 |
| Flexural strength, ISO 178 | 2 mm/min | ISO 178 | MPa | 255 / 170 |
| Charpy impact strength, +23°C | +23°C | ISO 179/1eU | kJ/m² | 55 / 60 |
| Charpy impact strength, -30°C | -30°C | ISO 179/1eU | kJ/m² | 50 / - |
| Charpy notched impact strength, +23°C | +23°C | ISO 179/1eA | kJ/m² | 8 / 9 |
| Charpy notched impact strength, -30°C | -30°C | ISO 179/1eA | kJ/m² | 7 / - |
| Izod notched impact strength, +23°C | +23°C | ISO 180/1A | kJ/m² | 8 / 9 |
| **Thermal properties** | | | | |
| Melting temperature, 10°C/min | | ISO 11357-1 | °C | 263 |
| Temp. of deflection under load, 1.80 MPa | 1.80 MPa | ISO 75 | °C | 244 |
| **Electrical properties** | | | | |
| Volume resistivity | | IEC 62631-3-1 | ohm.m | 1E+013 |
| Surface resistivity | | IEC 62631-3-1 | ohm | 1E+013 |
| Comparative tracking index | Solution A | IEC 60112 | V | 400 |
| CTI performance level category | | Sol A | | PLC 1 |
| Dielectric strength | 1 mm | IEC 60243-1 | kV/mm | 30 |
| **Burning behaviour** | | | | |
| UL Yellow Card availability | Click here to have access to the UL Yellow Card → QMFZ2.E44716 | | | |
| Flammability, 0.75 mm | 0.75 mm | UL 94 | | V0 |
| Flammability, 1.5 mm | 1.5 mm | UL 94 | | V0 |
| Flammability, 3.0 mm | 3.0 mm | UL 94 | | V0 |
| Glow-wire flammability index, GWFI, 0.75 mm | 0.75 mm | IEC 60695-2-12 | °C | 960 |
| Glow-wire flammability index, GWFI, 1.5 mm | 1.5 mm | IEC 60695-2-12 | °C | 960 |
| Glow-wire flammability index, GWFI, 3.0 mm | 3.0 mm | IEC 60695-2-12 | °C | 960 |
| Glow-wire ignition temperature, GWIT, 1.5 mm | 1.5 mm | IEC 60695-2-13 | °C | 725 |
| Oxygen index | | | % | 31 |

| | Condition | Standard | Unit | Value |
|---|---|---|---|---|

**: conditioned according to ISO 1110*

## Processing conditions

| | |
|---|---|
| Drying temperature/time | 80 °C |
| Suggested max moisture | 0.2 % |
| Rear temperature | 265 - 275 °C |
| Middle temperature | 270 - 280 °C |
| Front temperature | 280 - 290 °C |
| Recommended mould temperature | 60 - 90 °C |

## Injection notes

The material is supplied in airtight bags, ready for use. In case that the virgin material has absorbed moisture, it must be dried with a dehumidified air drying equipment, dew point minimum -20°C. Recommended time 2-4h.

## Injection advice

All reinforced, flame retardant compounds generate some level of abrasion/corrosion to the steel processing equipment. These issues may be magnified by using incorrect processing conditions (temperatures, residence time, moisture level ...) during the moulding process. Therefore, Domo recommends you adhere to the processing conditions detailed in this technical data sheet. For equipment that comes into contact with molten flame retardant compounds, Domo advises you to use a steel with high chromium and high carbon content (having a minimum concentration of 16% chromium) to prevent corrosion and abrasion. For the correct reference of steel associated to flame retardant compounds' processing, please refer to your equipment manufacturers. In the case of high requirements on surface quality a mould temperature of up to 120°C can be considered. The processing parameters like processing temperatures are a recommendation and can be adjusted in function of injection machine size, part geometry / design.

## Disclaimer