

## TECHNICAL DATA SHEET

# TECHNYL STAR S 60X1 V30 BK 15N



TECHNYL STAR S 60X1 V30 BK 15N is a grade based on a non-halogenated flame retardant system and on a patented high flow polyamide 6 resin (TechnylStar), reinforced of 30% of glass fiber, heat stabilized, for injection moulding. This grade is Heat stabilized and provides optimized injection moulding performance.

## General

|                       |                                                                                                  |                                                         |
|-----------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Polymer type          | PA6                                                                                              |                                                         |
| Certifications        | RoHS<br>EC 1907/2006 (REACH)<br>NSF/ANSI Standard 61                                             | UL listed product<br>EN 45545                           |
| Feature               | halogen and red phosphorus free<br>flame retardant<br>excellent surface finish<br>very high flow | corrosion resistant<br>low temperature impact resistant |
| Applications          | connectors                                                                                       | electrical/electronic applications                      |
| Colors available      | black<br>grey                                                                                    | natural                                                 |
| Forms                 | pellets                                                                                          |                                                         |
| Processing technology | injection moulding                                                                               |                                                         |

## Product identification

|                       |                          |
|-----------------------|--------------------------|
| ISO 1043 abbreviation | PA6-GF30 FR(40)          |
| ISO 16396 designation | PA6,GF30FR(40),M,S14-110 |

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

## Physical properties

|                              |             |                 |                   |             |
|------------------------------|-------------|-----------------|-------------------|-------------|
| Density                      |             | ISO 1183        | g/cm <sup>3</sup> | 1.42        |
| Water absorption             | 24 hr, 23°C | ISO 62          | %                 | 0.85 - 0.95 |
| Water absorption, saturation |             |                 | %                 | 4.2         |
| Molding shrinkage, parallel  |             | ISO 294-4, 2577 | %                 | 0.15 - 0.2  |
| Molding shrinkage, normal    |             | ISO 294-4, 2577 | %                 | 0.85 - 0.9  |

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|---------------------------------------|-----------|--------------|-------|---------------------|
| <b>Mechanical properties</b>          |           |              |       | <b>dam / cond.*</b> |
| Tensile modulus                       | 1 mm/min  | ISO 527-1/-2 | MPa   | 10600 / 7000        |
| Stress at break                       |           | ISO 527-1/-2 | MPa   | 150 / 90            |
| Strain at break                       |           | ISO 527-1/-2 | %     | 2.5 / 4.5           |
| Flexural modulus, ISO 178             | 2 mm/min  | ISO 178      | MPa   | 9100 / 5900         |
| Flexural strength, ISO 178            | 2 mm/min  | ISO 178      | MPa   | 230 / 150           |
| Charpy impact strength, +23°C         | +23°C     | ISO 179/1eU  | kJ/m² | 60 / 65             |
| Charpy impact strength, -30°C         | -30°C     | ISO 179/1eU  | kJ/m² | 45 / -              |
| Charpy notched impact strength, +23°C | +23°C     | ISO 179/1eA  | kJ/m² | 9 / 12              |
| Charpy notched impact strength, -30°C | -30°C     | ISO 179/1eA  | kJ/m² | 8.5 / -             |
| Izod impact strength, +23°C           | +23°C     | ISO 180/1U   | kJ/m² | 50 / 55             |
| Izod notched impact strength, +23°C   | +23°C     | ISO 180/1A   | kJ/m² | 9 / 11              |

\*: **conditioned according to ISO 1110**

|                                          | Condition | Standard    | Unit | Value |
|------------------------------------------|-----------|-------------|------|-------|
| <b>Thermal properties</b>                |           |             |      |       |
| Melting temperature, 10°C/min            |           | ISO 11357-1 | °C   | 222   |
| Temp. of deflection under load, 1.80 MPa | 1.80 MPa  | ISO 75      | °C   | 205   |

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|-----------|----------|------|-------|
|-----------|----------|------|-------|

**Burning behaviour**

|                                               |                                                                                                                 |                |    |        |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------|----|--------|
| UL Yellow Card availability 1                 | <b><u><a href="#">Click here to have access to the UL Yellow Card availability 1 -&gt; QMFZ2.E44716</a></u></b> |                |    |        |
| Flammability, 0.75 mm                         | 0.75 mm                                                                                                         | UL 94          |    | V0     |
| Flammability, 1.5 mm                          | 1.5 mm                                                                                                          | UL 94          |    | V0,5VA |
| Flammability, 3.0 mm                          | 3.0 mm                                                                                                          | UL 94          |    | V0,5VA |
| 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    |                                                                                                                 |                | °C | 960    |
| Glow-wire ignition temperature, GWIT, 0.75 mm | 0.75 mm                                                                                                         | IEC 60695-2-13 | °C | 775    |
| Glow-wire ignition temperature, GWIT, 1.5 mm  | 1.5 mm                                                                                                          | IEC 60695-2-13 | °C | 800    |
| Glow-wire ignition temperature, GWIT, 3.0 mm  | 3.0 mm                                                                                                          | IEC 60695-2-13 | °C | 825    |
| Oxygen index                                  |                                                                                                                 |                | %  | 35.0   |

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

**Electrical properties**

|                                |            |               |       |        |
|--------------------------------|------------|---------------|-------|--------|
| Volume resistivity             |            | IEC 62631-3-1 | ohm.m | 1.0E13 |
| Surface resistivity            |            | IEC 62631-3-1 | ohm   | 6.0E14 |
| Comparative tracking index     | Solution A | IEC 60112     | V     | 600.0  |
| CTI performance level category |            | Sol A         |       | PLC 0  |
| Dielectric strength            | 1 mm       | IEC 60243-1   | kV/mm | 25.0   |

**Processing conditions**

|                         |              |
|-------------------------|--------------|
| Drying temperature/time | 80 °C        |
| Suggested max moisture  | 0.1 %        |
| Rear temperature        | 230 - 245 °C |

**Processing conditions**

|                               |              |
|-------------------------------|--------------|
| Middle temperature            | 235 - 255 °C |
| Front temperature             | 240 - 260 °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.