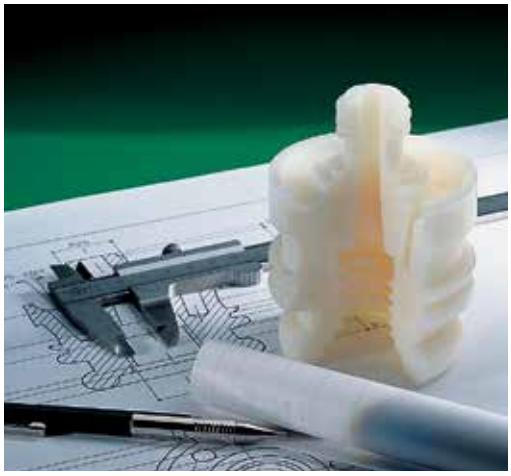
# POLYESTER - SUSTADUR® PET



SUSTADUR® Polyethylene Terephthalate (PET) has high mechanical strength, good resistance to creep, excellent dimensional stability and excellent sliding properties. SUSTADUR® (PET) has superior wear resistance compared to acetal and is ideal for close tolerance parts. Its low moisture absorption enables mechanical and electrical properties to remain virtually unaffected by moisture making this material ideally suited as a bronze bush replacement. SUSTADUR® PET can be machined to precise detail on standard metal working equipment.

## PROPERTIES:

- Improved tensile strength.
- Good for both wet and dry environments.
- High strength and rigidity - ideal for close tolerance parts.
- Excellent stain resistance.
- Good wear resistance and excellent dimensional stability.
- Better resistance to acids than nylon or acetal.
- Better operating temperature.
- Reduced notched impact resistance.
- SUSTADUR® is FDA approved.

## TEMPERATURE RANGE:

| | SUSTADUR® |
|---|---|
| Max service temperature for short periods | 180 °C |
| Max service temperature continuously | 115 °C |
| Min service temperature | -20 °C |

## APPLICATIONS:

For high-grade and high-strength technical parts in many industrial sectors like e.g. mechanical engineering, electronic industry, ship building industry, materials handling industry, food processing industry etc. General mechanical and plant engineering: e.g. gears, levers, handles, control discs, cams, bearings, sliding elements, bearings, door furniture, hinges, food industry. NOTE: Although it absorbs very little moisture SUSTADUR® does suffer from hydrolysis and should not be used in aqueous applications at temperatures above 70° C or steam environments.

## DELIVERY PROGRAMME

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| SUSTADUR® PET (POLYESTER) | | | |
|---|---|---|---|
| **PROPERTIES** | **TEST METHOD** | **UNIT OF MEASURE** | **SUSTADUR VIRGIN** |
| **GENERAL** | | | |
| DENISTY | DIN EN ISO 1183-1 | g/cm³ | 1,38 |
| WATER ABSORPTION | DIN EN ISO 62 | % | 0,25 |
| FLAMABILITY 3mm | UL 94 | 3mm | HB |
| FLAMABILITY 6mm | UL 94 | 6mm | HB |
| **MECHANICAL** | | | |
| TENSILE STRENGTH | DIN EN ISO 527 | MPA | 85 |
| ELONGATION AT BREAK | DIN EN ISO 527 | % | 15 |
| E MODULUS | DIN EN ISO 527 | MPA | 3 000 |
| NOTCHED IMPACT STRENGTH | DIN EN ISO 179 | kJ/m² | 2,00 |
| BALL INDENTATION HARDNESS | DIN EN ISO 2039-1 | MPA | 170 |
| SHORE HARDNESS | DIN EN ISO 868 | SCALE D | 84 |
| **THERMAL** | | | |
| MELTING TEMPERATURE | ISO 11357-3 | °C | 255 |
| THERMAL CONDUCTIVITY | DIN 52612-2 | W/(m.K) | 0,28 |
| SPECIFIC THERMAL CAPACITY | DIN 52612 | kJ/(kg.K) | 1,1 |
| COEFFICIENT OF LINEAR THERMAL EXPANSION | DIN 53752 | $10^{-6}$ K-1 | 60 |
| LONG TERM SERVICE TEMPERATURE | GUIDELINE ONLY | °C | - 20 TO 115 |
| SHORT TERM SERVICE TEMPERATURE | GUIDELINE ONLY | °C | 180 |
| HEAT DEFLECTION TEMPERATURE | DIN EN ISO 75.VERF.A | °C | 80 |
| **ELECTRICAL** | | | |
| DIELECTRIC CONSTANT | IEC 60250 | N/A | 3,4 |
| DIELECTRIC DISSIPATION FACTOR | IEC 60250 | N/A | 0,001 |
| SPECIFIC VOLUME RESISTIVITY | IEC 60093 | Ω.cm | 10^18 |
| SURFACE RESISTIVITY | IEC 60093 | Ω | 10^16 |
| DIELECTRIC STRENGTH | IEC 60243 | kV/mm | 20 |

**When machining thermoplastic stock shapes, remember…**

- Thermal expansion is up to 10 times greater with plastics than metals.
- Plastics lose heat more slowly than metals, so avoid localized overheating.
- Softening (and melting) temperatures of plastics are much lower than metals and plastics are much more elastic than metals.

**Getting started**

- Positive tool geometries with ground peripheries are recommended.
- HSS/Tip tooling with polished top surfaces is suggested for optimum tool life and surface finish.
- Use adequate chip clearance to prevent clogging.
- Adequately support the material to restrict deflection away from the cutting tool.

**Coolants**

Coolants are generally not required for most machining operations, but are strongly suggested during drilling operations, especially with notch sensitive materials such as Nylon, PET-P, PAI, PBI and glass or carbon reinforced products.

In addition to minimizing localized part heat-up, coolants prolong tool life. For optimum surface finishes and close tolerances, nonaromatic, water soluble coolants are suggested. General purpose petroleum based cutting fluids, although suitable for many metals and plastics, may contribute to stress cracking of amorphous plastics such as Polycarbonate.

Because of these differences, you may wish to experiment with fixtures, tool materials, angles, speeds and feed rates to obtain optimum results.

**GENERAL NOTE:**

The data shown fall within the normal parameters of product properties. They should only be used as a guide to initial material selection for the relevant application and for material specification limits. Further technical information is available for specific application requirements. When no value is listed, insufficient details were available to present a usable value.