Product Information

# TROGAMID® CX7323

## MICROCRYSTALLINE, PERMANENTLY TRANSPARENT POLYAMIDE

**TROGAMID® CX7323** is a microcrystalline transparent polyamide for the manufacture of parts according the injection molding procedure.

The crystallites are so small, that they do not scatter visible light, and the material appears transparent to the human eye. The crystalline structure causes the excellent crack resistance for this polymer.

TROGAMID® CX7323 is supplied as spherical pellets in polyethylene packaging.

Deviations of molds or in processing are possible to a certain extent, if they are required by the cavity or the process itself.

Pigmentation may affect values.

| Mechanical properties ISO | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Tensile Modulus | **1400 / -** | MPa | ISO 527 |
| Tensile Strength | **60 / -** | MPa | ISO 527 |
| Yield stress | **60 / -** | MPa | ISO 527 |
| Yield strain | **8 / -** | % | ISO 527 |
| Stress at 50% strain | **40 / -** | MPa | ISO 527 |
| Stress at break | **60 / -** | MPa | ISO 527 |
| Nominal strain at break, εtB | **160 / -** | % | ISO 527 |
| Tensile creep modulus, 0,5% Strain, 1h | *** / 1300** | MPa | ISO 899-1 |
| Tensile creep modulus, 0,5% Strain, 1000h | *** / 700** | MPa | ISO 899-1 |
| Charpy impact strength, +23°C | **N / -** | kJ/m² | ISO 179/1eU |
| Charpy impact strength, 0°C | **N / -** | kJ/m² | ISO 179/1eU |

| | | | |
|---|---|---|---|
| Charpy impact strength, -30°C | **N / -** | kJ/m² | ISO 179/1eU |
| Charpy notched impact strength, +23°C | **11 / -** | kJ/m² | ISO 179/1eA |
| Type of failure | **C / -** | - | - |
| Charpy notched impact strength, 0°C | **12 / -** | kJ/m² | ISO 179/1eA |
| Type of failure | **C / -** | - | - |
| Charpy notched impact strength, -30°C | **11 / -** | kJ/m² | ISO 179/1eA |
| Type of failure | **C / -** | - | - |
| Flexural modulus, 23°C | **1700 / -** | MPa | ISO 178 |
| Flexural stress at conv. deflection, 23°C | **50 / -** | MPa | ISO 178 |
| Flexural strain at flexural strength, 23°C | **9 / -** | % | ISO 178 |
| Flexural strain at break, 23°C | **N / -** | % | ISO 178 |
| Pressure cycle test on hollow part | **200000 / *** | cycles | EN 13443-1 |

| **Thermal properties** | **dry / cond** | **Unit** | **Test Standard** |
|---|---|---|---|
| Melting temperature | **250 / *** | °C | ISO 11357-1/-3 |
| Glass transition temperature | **140 / *** | °C | ISO 11357-1/-2 |
| Temp. of deflection under load A, 1.80 MPa | **108 / *** | °C | ISO 75-1/-2 |
| Temp. of deflection under load B, 0.45 MPa | **122 / *** | °C | ISO 75-1/-2 |
| Vicat softening temperature A, 10 N, 50 K/h | **137 / *** | °C | ISO 306 |
| Vicat softening temperature B, 50 N, 50 K/h | **130 / *** | °C | ISO 306 |
| Coeff. of linear therm. expansion, 23°C to 55 °C, parallel | **90 / *** | E-6/K | ISO 11359-1/-2 |
| Coeff. of linear therm. expansion, 23°C to 55 °C, normal | **90 / *** | E-6/K | ISO 11359-1/-2 |
| Melting Temperature | **250** | °C | ASTM D 3418 |

| **Physical properties** | **dry / cond** | **Unit** | **Test Standard** |
|---|---|---|---|
| Water absorption | **3.5 / *** | % | Sim. to ISO 62 |
| Humidity absorption | **1.5 / *** | % | Sim. to ISO 62 |
| Density | **1020 / -** | kg/m³ | ISO 1183 |

| | | | |
|---|---|---|---|
| Shore D hardness | **81[b] / -** | - | ISO 7619-1 |
| Ball indentation hardness | **110 / -** | MPa | ISO 2039-1 |
| Density | **1020** | kg/m³ | ASTM D 792 |

b: 3 seconds

| **Burning Behav.** | **dry / cond** | **Unit** | **Test Standard** |
|---|---|---|---|
| Burnin behav. at thickness h | **HB / *** | class | IEC 60695-11-10 |
| Thickness tested | **3.0 / *** | mm | - |
| YellowCard available | yes **/ *** | - | - |
| Burning behav. at thickness h | **HB / *** | class | IEC 60695-11-10 |
| Thickness tested | **0.8 / *** | mm | - |
| Yellow Card available | yes **/ *** | - | - |
| Burning behav. at 1.5 mm nom. thickn. | **HB / *** | class | IEC 60695-11-10 |
| Thickness tested | **1.5 / *** | mm | - |
| Yellow Card available | yes **/ *** | - | - |
| Burnin behav. at thickness h | **HB / *** | class | IEC 60695-11-10 |
| Thickness tested | **0.4 / *** | mm | - |
| Glow Wire Flammability Index (GWFI) | **960** | °C | IEC 60695-2-12 |
| GWFI - thickness tested (1) | **1** | mm | - |
| Glow Wire Ignition Temperature (GWIT) | **800** | °C | IEC 60695-2-13 |
| GWIT - thickness tested (1) | **1** | mm | - |

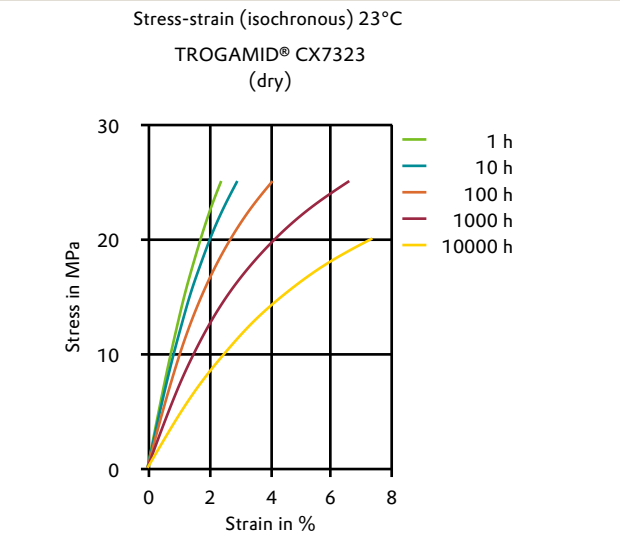
| **Electrical properties** | **dry / cond** | **Unit** | **Test Standard** |
|---|---|---|---|
| Relative permittivity, 100Hz | **3.6 / -** | - | IEC 62631-2-1 |
| Relative permittivity, 1MHz | **3.2 / -** | - | IEC 62631-2-1 |
| Dissipation factor, 100Hz | **115 / -** | E-4 | IEC 62631-2-1 |
| Dissipation factor, 1MHz | **325 / -** | E-4 | IEC 62631-2-1 |
| Volume resistivity, ρV | **>1E13 / -** | Ohm*m | IEC 62631-3-1 |

| | | | |
|---|---|---|---|
| Surface resistivity, σE | *** / 1E13** | Ohm | IEC 62631-3-2 |
| Surface resistance , RSA | **1E13 / -** | Ohm | IEC 62631-3-2 |
| Surface resistivity, σA | **1E14 / -** | Ohm per square | IEC 62631-3-2 |
| Electric strength, AC, S20/S20 | **27 / -** | kV/mm | IEC 60243-1 |
| CTI, test solution A, 50 drops value | **600 / -** | - | IEC 60112 |

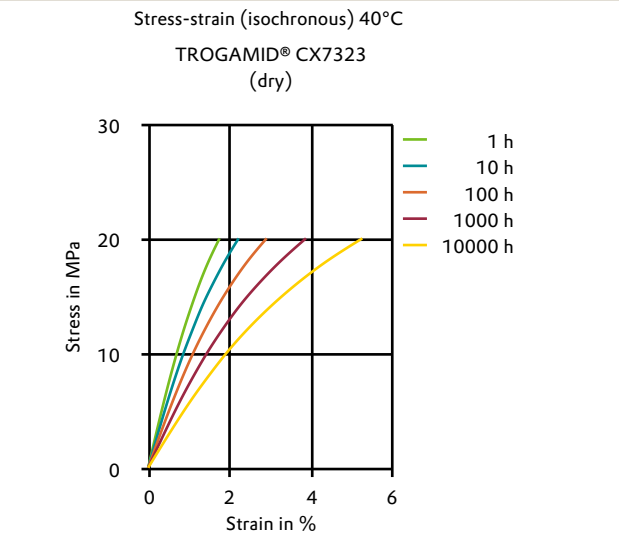
| **Rheological properties** | **dry / cond** | **Unit** | **Test Standard** |
|---|---|---|---|
| Melt volume-flow rate, MVR | **8.2 / *** | $cm^3$/10min | ISO 1133 |
| Temperature | **280 / *** | °C | - |
| Load | **2.16 / *** | kg | - |
| Molding shrinkage, parallel | **0.7 / *** | % | ISO 294-4, 2577 |
| Molding shrinkage, normal | **0.8 / *** | % | ISO 294-4, 2577 |
| Mold temperature | **80 / *** | °C | - |
| Melt temperature | **280 / *** | °C | - |

## Diagrams

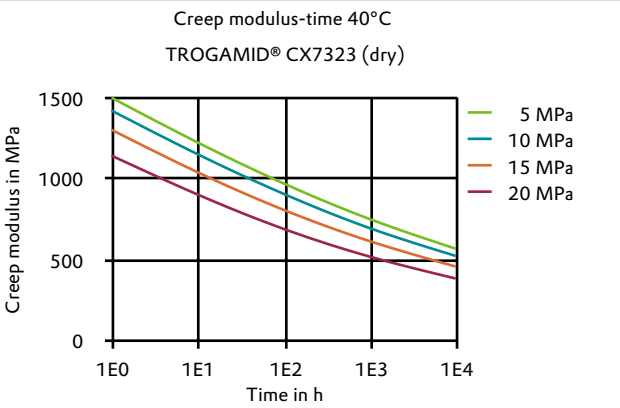
### Stress-strain (isochronous) 23°C



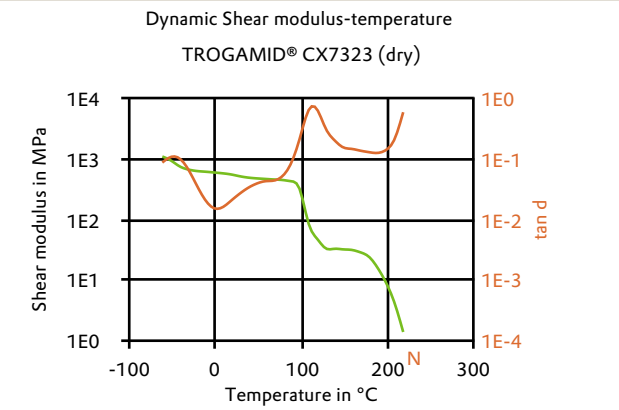

### Stress-strain (isochronous) 40°C




### Creep modulus-time 40°C

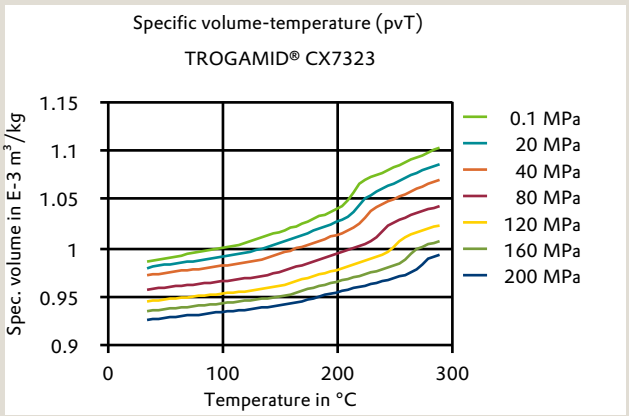



### Dynamic Shear modulus-temperature

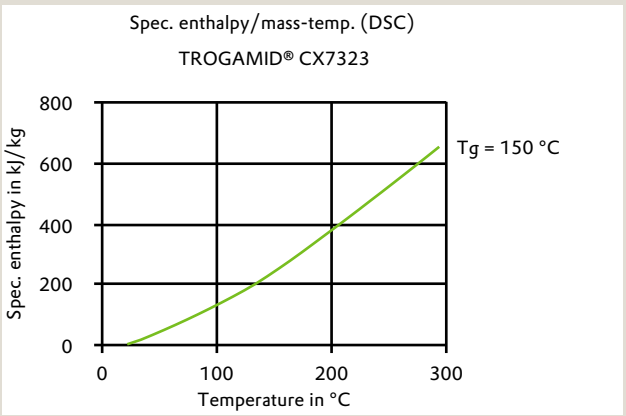


# TROGAMID® CX

## Specific volume-temperature (pvT)




## Spec. enthalpy/mass-temp. (DSC)




## Characteristics

**Key Feature, Industrial Sector**
Automotive, Aircraft and Aerospace, Electrical and Electronical, Instustry and Building Construction, Optics, Sports and Lifestyle

**Key Feature, Processing**
Injection Molding, Extrusion

**Key Feature, Optics**
Transparent, High Gloss

**Key Feature, Resistance to**
Heat (Thermal Stability), Hydrolysis / Hot water, U.V. / Light / Weathering, Wear / Abrasion, Fatigue Resistance, Oil / Fuels

**Key Feature, Electrical**
Isolating

**Key Feature, Certificate / Licence**
Food contact, Drinking water contact, Automotive

**Key Feature, Additives**
Unfilled

**Applications**
Encapsulation, General Purpose, (Sun-) glasses, Hygiene and cosmetics

**Processing**
Film Extrusion, Profile Extrusion, Sheet Extrusion

**Special Characteristics**
Environmental Stress Crack Resistance, Light-stabilized, U.V. stabilized, Medium viscosity

**Ecological valuation**
Water contact KTW, Water contact DVGW W270, US Pharmacopeia Class VI Biocompatibility

**Delivery form**
Spherical Pellets

## Chemical Media Resistance

### Acids

✖ Sulfuric Acid (38% by mass) (23°C)

### Alcohols

✔ Isopropyl alcohol (23°C)

✔ Methanol (23°C)

✔ Ethanol (23°C)

**Hydrocarbons**

✔ Toluene (23°C)

**Ketones**

✔ Acetone (23°C)

**Mineral oils**

✔ SAE 10W40 multigrade motor oil (23°C)

**Standard Fuels**

✔ Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23°C)
✔ Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23°C)
✔ Diesel fuel (pref. ISO 1817 Liquid F) (23°C)

**Other**

✔ Ethyl Acetate (23°C)

| Rheological calculation properties | dry | Unit | Test Standard |
|---|---|---|---|
| Density of melt | **900** | kg/m³ | - |
| Thermal conductivity of melt | **0.25** | W/(m K) | - |
| Spec. heat capacity of melt | **2490** | J/(kg K) | - |
| Eff. thermal diffusivity | **1.12E-7** | m²/s | - |
| Ejection temperature | **100** | °C | - |