Product Information

TROGAMID® CX7323 NC

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.

Key Features

Industrial Sector
Automotive and Mobility, Aircraft and Aerospace, Industry and Engineering, Optics, Sports and Lifestyle

Processing
Injection molding, Extrusion

Optics
Transparent, High gloss

Resistance to
Heat (thermal stability), Hydrolysis / hot water, UV / light / weathering, Wear / abrasion, Fatigue resistance, Oil / fuels

Electrical
Insulating

Conformity
Food contact, Drinking water contact, Automotive

Additives
Unfilled

LCA-values	dry	Unit	Test Standard
LCA name of certificate	TROGAMID® microcrystalline	-	ISO 14040, 14044

LCA certifier	TÜV Rheinland	-	ISO 14040, 14044
Blue water consumption	**12.4**	kg	ISO 14040, 14044
Global Warming Potential incl. bio. C incl. LUC	**7.8**	kg CO_2 eq./kg	ISO 14040, 14044
Global Warming Potential excl. bio. C incl. LUC	**7.8**	kg CO_2 eq./kg	ISO 14040, 14044
Land use (ReCiPe 2016)	**0**	Annual crop eq. y	ISO 14040, 14044

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, tB	**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 strength, 23°C	**90 / -**	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
Taber Abrasion Resistance, S33, 2x 500g	**< 25 / -**	mg/100 cycles	DIN 53754

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature	**250 / ***	°C	ISO 11357-1/-3
Glass transition temperature, DSC	**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
Density	**1020 / -**	kg/m³	ISO 1183
Water absorption	**3.5 / ***	%	Sim. to ISO 62
Humidity absorption	**1.5 / ***	%	Sim. to ISO 62
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
UL Yellow Card available	yes **/ ***	-	-
Burning behav. at 1.5 mm nom. thickn.	**HB / ***	class	IEC 60695-11-10
Thickness tested	**1.5 / ***	mm	-

Burnin behav. at thickness h	**HB / ***	class	IEC 60695-11-10
Thickness tested	**3.0 / ***	mm	-
Burning behav. at thickness h	**HB / ***	class	IEC 60695-11-10
Thickness tested	**0.8 / ***	mm	-
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**	mm	-
Glow Wire Ignition Temperature (GWIT)	**800**	°C	IEC 60695-2-13
GWIT - thickness tested	**1**	mm	-

Electrical properties	**dry / cond**	**Unit**	**Test Standard**
Volume resistivity, V	**>1E13 / -**	Ohm*m	IEC 62631-3-1
Surface resistivity, E	*** / 1E13**	Ohm	IEC 62631-3-2
Surface resistance, RSA	**1E13 / -**	Ohm	IEC 62631-3-2
Surface resistivity, A	**1E14 / -**	Ohm per square	IEC 62631-3-2
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
Dielectric strength, AC, S20/S20, t. 1 mm	**27 / -**	kV/mm	IEC 60243-1
CTI, test solution A, 50 drops value	**600 / -**	-	IEC 60112
Assessment of the insulation group	**I**	-	DIN EN 60664-1

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	-

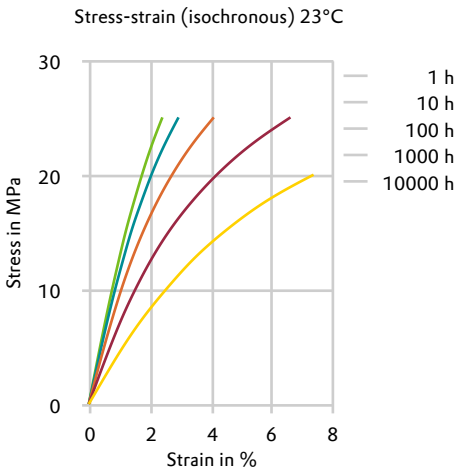
Molding shrinkage, parallel	**0.7 / ***	%	ISO 294-4, 2577
Molding shrinkage, normal	**0.8 / ***	%	ISO 294-4, 2577
Mold temperature	**80 / ***	°C	-
Melt temperature	**280 / ***	°C	-

Polymer analytics	**dry / cond**	**Unit**	**Test Standard**
Viscosity number	**155 / ***	cm^3/g	ISO 307, 1157, 1628

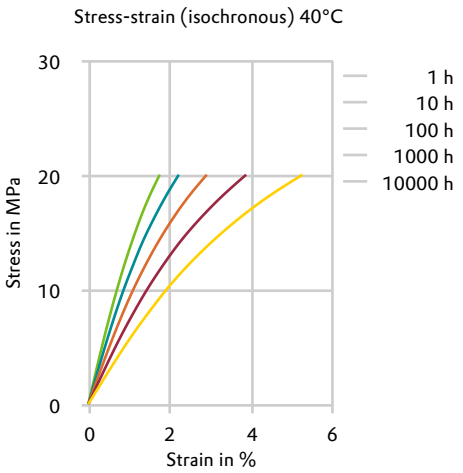
Test specimen production	**dry**	**Unit**	**Test Standard**
Injection Molding, melt temperature	**280**	°C	ISO 294
Injection Molding, mold temperature	**80**	°C	ISO 294
Injection Molding, injection velocity	**200**	mm/s	ISO 294
Injection Molding, pressure at hold	**70**	MPa	ISO 294

Diagrams

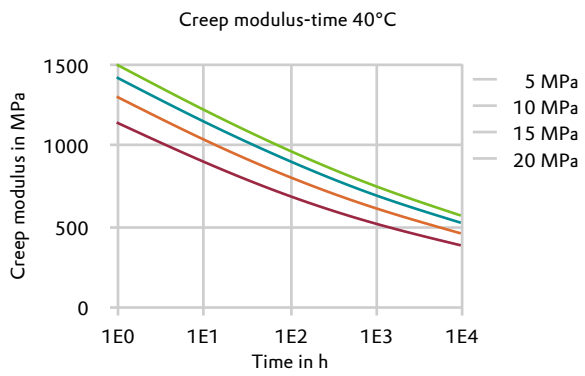
Stress-strain (isochronous) 23°C



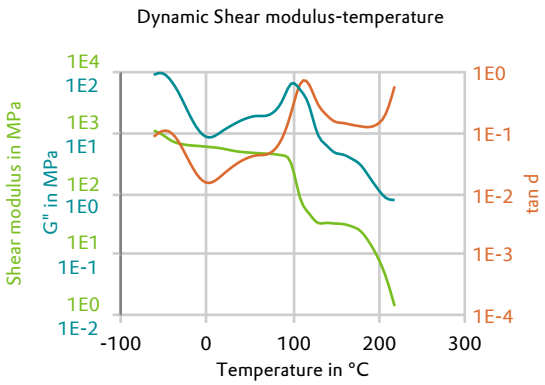
Stress-strain (isochronous) 40°C



Creep modulus-time 40°C

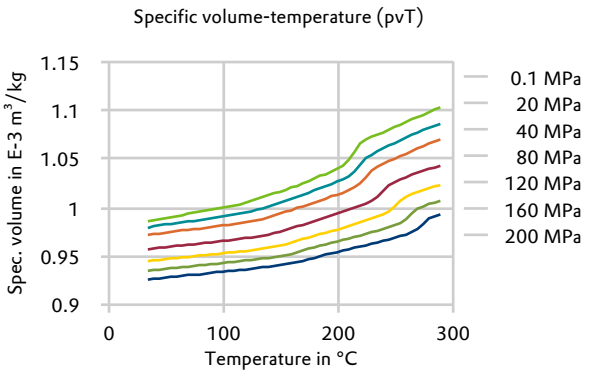


Dynamic Shear modulus-temperature

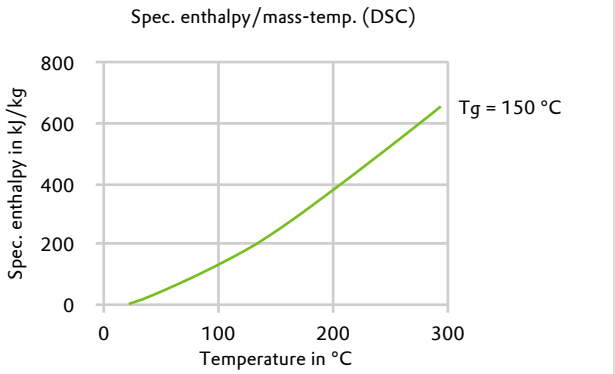


TROGAMID® CX

Specific volume-temperature (pvT)



Spec. enthalpy/mass-temp. (DSC)



Characteristics

Applications
Electrical and Electronical, 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

Regulatory
Water contact KTW-BWGL, Water contact DIN EN 16421, Water contact WRAS, Water contact ACS

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	**0**	m²/s	-
Ejection temperature	**100**	°C	-
Min. mold temperature	**60**	°C	-
Max. mold temperature	**100**	°C	-
Min. melt temperature	**280**	°C	-
Max. melt temperature	**300**	°C	-