

Product Information

TROGAMID® CX9704 NC

TRANSPARENT, AMORPHOUS POLYAMIDE FOR INJECTION MOLDING



TROGAMID® CX9704 is an amorphous and transparent polyamide for the manufacture of parts in the optical industry, like lenses according the injection molding procedure.

TROGAMID® CX9704 is supplied as spherical pellets in moisture-proof packaging.

Pigmentation may affect values.

Key Features

Industrial Sector

Automotive and Mobility, Aircraft and Aerospace, Industry and Engineering, Medical Devices, Optics, Sports and Lifestyle

Resistance to

Heat (thermal stability), Hydrolysis / hot water, UV / light / weathering

Processing

Injection molding, Extrusion

Additives

Unfilled

Optics

Transparent, High gloss

LCA-values

LCA name of certificate

dry

Unit

Test Standard

[TROGAMID® CX9704 -
- Shanghai](#)

ISO 14040, 14044

LCA certifier

[TÜV Rheinland](#)

-

ISO 14040, 14044

Blue water consumption

9.2

kg

ISO 14040, 14044

Global Warming Potential incl. bio. C incl. LUC

6.4

kg CO₂ eq./kg

ISO 14040, 14044

Global Warming Potential excl. bio. C incl. LUC

6.4

kg CO₂ 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	1500 / -	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	50 / -	MPa	ISO 527
Nominal strain at break, tB	>50 / -	%	ISO 527
Charpy impact strength, +23°C	N / -	kJ/m ²	ISO 179/1eU
Charpy impact strength, 0°C	N / -	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	N / -	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, +23°C	10 / 7.8	kJ/m ²	ISO 179/1eA
Type of failure	C / C	-	-
Charpy notched impact strength, 0°C	11 / -	kJ/m ²	ISO 179/1eA
Type of failure	C / -	-	-
Charpy notched impact strength, -30°C	10 / -	kJ/m ²	ISO 179/1eA
Type of failure	C / -	-	-
Flexural modulus, 23°C	1460 / -	MPa	ISO 178
Flexural stress at conv. deflection, 23°C	53 / -	MPa	ISO 178
Flexural strength, 23°C	82 / -	MPa	ISO 178
Flexural strain at flexural strength, 23°C	8 / -	%	ISO 178
Flexural stress at break, 23°C	N / -	MPa	ISO 178
Flexural strain at break, 23°C	N / -	%	ISO 178
Flexural modulus, var. temp.	1500 / -	MPa	ISO 178
Flexural stress at conv. deflection, var. temp.	50 / *	MPa	ISO 178
Flexural strength, var. temp.	90 / *	MPa	ISO 178

Flexural strain at flexural strength, var. temp.	10 / *	%	ISO 178
Flexural strain at break, var. temp.	N / *	%	ISO 178

Thermal properties	dry / cond	Unit	Test Standard
Glass transition temperature, DSC	132 / *	°C	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	102 / *	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	120 / *	°C	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	132 / *	°C	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	125 / *	°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

Physical properties	dry / cond	Unit	Test Standard
Density	1020 / -	kg/m ³	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/m ³	ASTM D 792

b: 3 seconds

Burning Behav.	dry / cond	Unit	Test Standard
Burning behav. at 1.5 mm nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	1.6 / *	mm	-
Burning behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.8 / *	mm	-
Glow Wire Flammability Index (GWFI)	960	°C	IEC 60695-2-12
GWFI - thickness tested	1	mm	-
Glow Wire Ignition Temperature (GWIT)	825	°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 resistance, RSD	1E14 / -	Ohm	IEC 62631-3-2
Surface resistance, RSA	1E14 / -	Ohm	IEC 62631-3-2
Surface resistivity, A	1E15 / -	Ohm per square	IEC 62631-3-2
Relative permittivity, 100Hz	3.4 / -	-	IEC 62631-2-1
Relative permittivity, 1MHz	3.3 / -	-	IEC 62631-2-1
Dissipation factor, 100Hz	130 / -	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	215 / -	E-4	IEC 62631-2-1
CTI, test solution A, 50 drops value	600 / -	-	IEC 60112
Assessment of the insulation group	I	-	DIN EN 60664-1

Optical properties	dry	Unit	Test Standard
Haze	2	%	ASTM D 1003
Haze Thickness tested	2	mm	-
Light Transmittance	92	%	ASTM D 1003
Light Transmittance Thickness tested	2	mm	ASTM D 1003

Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	30 / *	cm ³ /10min	ISO 1133
Temperature	275 / *	°C	-
Load	5 / *	kg	-
Molding shrinkage, parallel	0.5 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	0.6 / *	%	ISO 294-4, 2577
Mold temperature	80 / *	°C	-
Melt temperature	280 / *	°C	-
Flow length, flow spiral	315	mm	Evonik standard

TROGAMID® CX

Flow cross section	6 x 2	mm ²	Evonik standard
Mold temperature, flow spiral	80	°C	Evonik standard
Melt temperature, flow spiral	280	°C	Evonik standard
Injection pressure, flow spiral	1000	bar	Evonik standard

Polymer analytics	dry / cond	Unit	Test Standard
Viscosity number	130 / *	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

Characteristics

Applications

Electrical and Electronical, (Sun-) glasses, Hygiene and cosmetics

Processing

Film extrusion, Profile extrusion

Special Characteristics

Halogen-free, Phosphorus-free, PTFE-free, Amorphous, Low viscosity

Features

Non-corrosive

Color

Natural color

Delivery form

Spherical pellets

Chemical Media Resistance

Alcohols

- ✘ Isopropyl alcohol (23°C)
- ✘ Methanol (23°C)
- ✘ Ethanol (23°C)

Ketones

- ✘ Acetone (23°C)

Salt solutions

- ✓ Sodium Chloride solution (10% by mass) (23°C)
- ✓ Sodium Carbonate solution (20% by mass) (23°C)
- ✓ Sodium Carbonate solution (2% by mass) (23°C)

Other

- ✓ Water (23°C)

Rheological calculation properties	dry	Unit	Test Standard
Density of melt	900	kg/m ³	-
Thermal conductivity of melt	0.25	W/(m K)	-
Min. mold temperature	60	°C	-
Max. mold temperature	100	°C	-
Min. melt temperature	260	°C	-
Max. melt temperature	300	°C	-