

TROGAMID® CX CX7323

Polyamide
Evonik Industries AG

Message:

By selecting specific monomers, one can achieve a crystallizable and permanently transparent polyamide: TROGAMID® CX. The crystallites are so small that they do not scatter visible light, and the material appears transparent to the human eye—a property known as microcrystallinity. Because of its crystallinity, the microcrystalline structure retains important properties such as stress cracking resistance — without clouding. The degree of crystallinity is so negligible, however, that it has no adverse effect on the shrinkage behavior of molded parts. TROGAMID® CX undergoes a similar isotropic shrinkage like amorphous materials.

The combination of good UV resistance, high mechanical strength, permanent transparency, high transmission and superior chemical resistance opens a wide range of applications for TROGAMID® CX. Typical areas of application are in the automotive industry, machinery and engineering, medical technology, the sports and recreation industry, the glasses production, the cosmetics industry and in water treatment and filter technology.

TROGAMID® CX7323:

Medium-viscous, permanently transparent polyamide for injection molding and extrusion

General Information	
UL YellowCard	E47637-237710
Features	Good Abrasion Resistance
	Good Chemical Resistance
	Good Dimensional Stability
	Good Processability
	Good UV Resistance
	High ESCR (Stress Crack Resist.)
	High Impact Resistance
	Low Shrinkage
	Low Temperature Impact Resistance
	Low to No Water Absorption
	Medium Viscosity
	Scratch Resistant
Uses	Automotive Applications
	Cosmetics
	Engineered Applications
	Filters
	Optical Applications
	Sporting Goods
Appearance	Clear/Transparent
	Colors Available
	Natural Color
Forms	Granules
Processing Method	Extrusion

Injection Molding

Physical	Nominal Value	Unit	Test Method
Density (23°C)	1.02	g/cm ³	ISO 1183
Viscosity Number	150 to 170	cm ³ /g	ISO 307
Hardness	Nominal Value	Unit	Test Method
Shore Hardness (Shore D)	81		ISO 868
Ball Indentation Hardness	110	MPa	ISO 2039-1
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			ISO 527-2
23°C	1400	MPa	
80°C	1270	MPa	
Tensile Stress			ISO 527-2/50
Yield, 23°C	60.0	MPa	
Yield, 80°C	48.0	MPa	
Tensile Strain			ISO 527-2/50
Yield, 23°C	8.0	%	
Yield, 80°C	5.5	%	
Nominal Tensile Strain at Break			ISO 527-2/50
23°C	> 50	%	
80°C	> 50	%	
Tensile Creep Modulus			ISO 899-1
1 hr	1300	MPa	
1000 hr	700	MPa	
Flexural Modulus	1700	MPa	ISO 178
Flexural Stress ¹			ISO 178
3.5% Strain	50.0	MPa	
--	90.0	MPa	
Abrasion Resistance	18.0	mg/100 cycles	DIN 53754
Outer Fiber Strain - at maximum stress ²	9.0	%	ISO 178
Scratch Resistance - % turbidity increase	32.0		DIN 52347
Permeation			
Carbon Dioxide : 20°C, 50.0 µm	1.42E-8	cm ³ ·cm/cm ² /sec/bar	
Nitrogen : 20°C, 50.0 µm	5.00E-10	cm ³ ·cm/cm ² /sec/bar	
Oxygen : 20°C, 50.0 µm	4.30E-9	cm ³ ·cm/cm ² /sec/bar	
Temperature Index ³	100	°C	IEC 216
Dynamic Properties - Under load ⁴	> 2.0E+5	Cycles	DIN EN 13443-1
Films	Nominal Value	Unit	Test Method
Carbon Dioxide Transmission Rate (20°C, 50 µm)	2540	cm ³ /m ² /24 hr	
Nitrogen Transmission Rate (20°C, 50 µm)	85.0	cm ³ /m ² /24 hr	
Oxygen Transmission Rate (20°C, 50 µm)	740	cm ³ /m ² /24 hr	

Water Vapor Transmission Rate (23°C, 85% RH, 110 µm)	8.3	g/m ² /24 hr	
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength			ISO 179/1eA
-30°C, Complete Break	11	kJ/m ²	
0°C, Complete Break	12	kJ/m ²	
23°C, Complete Break	14	kJ/m ²	
Charpy Unnotched Impact Strength			ISO 179/1eU
-30°C	No Break		
0°C	No Break		
23°C	No Break		
Thermal	Nominal Value	Unit	Test Method
Heat Deflection Temperature			
0.45 MPa, Unannealed	122	°C	ISO 75-2/B
1.8 MPa, Unannealed	108	°C	ISO 75-2/A
Glass Transition Temperature ⁵	140	°C	ISO 11357-2
Vicat Softening Temperature			
--	137	°C	ISO 306/A
--	130	°C	ISO 306/B
Melting Temperature (DSC) ⁶	250	°C	DSC
CLTE			ISO 11359-2
Flow : 23 to 55°C	9.0E-5	cm/cm/°C	
Transverse : 23 to 55°C	9.0E-5	cm/cm/°C	
Electrical	Nominal Value	Unit	Test Method
Surface Resistivity	1.0E+13	ohms	IEC 60093
Volume Resistivity	1.0E+16	ohms · cm	IEC 60093
Electric Strength	27	kV/mm	IEC 60243-1
Relative Permittivity			IEC 60250
23°C, 100 Hz	3.60		
23°C, 1 MHz	3.20		
Dissipation Factor			IEC 60250
23°C, 100 Hz	0.012		
23°C, 1 MHz	0.033		
Comparative Tracking Index			IEC 60112
-- ⁷	575	V	
Solution A	600	V	
Flammability	Nominal Value	Unit	Test Method
Flame Rating			UL 94
0.800 mm	HB		
1.60 mm	HB		
Glow Wire Flammability Index (1.00 mm)	960	°C	IEC 60695-2-12
Glow Wire Ignition Temperature (1.00 mm)	800	°C	IEC 60695-2-13

NOTE	
1.	5.0 mm/min
2.	5.0 mm/min
3.	Criterion: stress at yield
4.	Filter Cup
5.	10 K/min
6.	2nd Heating
7.	100 drops value

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