TOPAS® 5013S-04

Cyclic Olefin Copolymer

Topas Advanced Polymers, Inc.

Message:

Product Description
TOPAS 5013S-04 is a high flow injection molding grade with a 130°C heat distortion temperature. It is a glass-clear amorphous polymer with outstanding moisture barrier, chemical resistance, high purity and a non-reactive surface making it an excellent choice for healthcare and other high-tech products. The 5013 resin series features high flow characteristics for excellent mold detail replication. Lower leachables and extractables of TOPAS COC preserve content stability and quality, and chemical purity. This grade has a high heat distortion temperature to withstand 95°C PCR protocols, and is suitable for gamma or EtO procedures.
Selected Applications
Microfluidics
Microplates and biochips
Labware
Optics
Cuvettes
Electronics
Healthcare and food contact
Leading Attributes
Exceptional mold detail replication; machinable
Heat and chemical resistant, clarity and purity
Temperature resistance, clarity and purity
Clarity, low birefringence, low moisture sensitivity
More UV transparent than most resins (see 8007X10)
Low dielectric constant, thermoplastic
Broad regulatory compliance
Related Grades for Injection Molding, Healthcare, Optics and Diagnostics
TOPAS 5013L-10 - lubricated version for greater processing versatility
TOPAS 6013S-04 - general purpose version with standard flow
TOPAS 6013M-07 - broader processing version especially suited for IBM/ISBM
TOPAS 6015S-04 - higher heat distortion temperature (150°C) for 134°C protocols
TOPAS IT X1 - impact grade for applications requiring extra toughness

General Information	
Features	High purity
	Low extract
	Moisture proof
	Radiation disinfection
	Copolymer
	Ethylene oxide disinfection
	Machinable
	High liquidity
	Good chemical resistance
	Heat resistance, high
	Definition, high
	Compliance of Food Exposure
	amorphous
Uses	Electrical/Electronic Applications

	Non-specific food applications
	Optical applications
	Laboratory apparatus
	Medical/nursing supplies

Agency Ratings	DMF 12132
	FDA FCN 405
	ISO 10993
	USP Class VI
	Europe 10/1/2011 12:00:00 AM

Appearance	Clear/transparent
Forms	Particle
Processing Method	Injection molding

Physical	Nominal Value	Unit	Test Method
Density	1.02	g/cm³	ISO 1183
Melt Mass-Flow Rate (MFR) (260°C/2.16 kg)	44	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (260°C/2.16 kg)	48.0	cm³/10min	ISO 1133
Molding Shrinkage [1]	0.10 - 0.50	%	Internal method
Water Absorption (Saturation, 23°C)	0.010	%	ISO 62

Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus	3200	MPa	ISO 527-2/1A/1
Tensile Stress (Yield)	46.0	MPa	ISO 527-2/1A/50
Tensile Strain (Yield)	1.7	%	ISO 527-2/1A/50

Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength (23°C)	1.6	kJ/m²	ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)	13	kJ/m²	ISO 179/1eU

Thermal	Nominal Value	Unit	Test Method
Heat Deflection Temperature (0.45 MPa, Unannealed)	127	°C	ISO 75-2/B
Glass Transition Temperature	134	°C	ISO 11357-2
Vicat Softening Temperature	135	°C	ISO 306/B50

Electrical	Nominal Value	Unit	Test Method
Volume Resistivity	> 1.0E+16	ohms·cm	IEC 60093
Relative Permittivity			IEC 60250
1 kHz	2.35		IEC 60250
10 kHz	2.35		IEC 60250
Comparative Tracking Index	> 600	V	IEC 60112

Flammability	Nominal Value	Unit	Test Method
Flame Rating (1.60 mm)	HB		UL 94

Optical	Nominal Value	Unit	Test Method

Refractive Index	1.530		ISO 489
Transmittance	91.0	%	ISO 13468-2
Injection	Nominal Value	Unit	
Drying Temperature	100	°C	
Drying Time	4.0 - 6.0	hr	
Rear Temperature	230 - 260	°C	
Middle Temperature	240 - 280	°C	
Front Temperature	260 - 290	°C	
Nozzle Temperature	240 - 300	°C	
Processing (Melt) Temp	240 - 300	°C	
Mold Temperature	95.0 - 125	°C	
Injection Pressure	50.0 - 110	MPa	
Injection Rate	Moderate-Fast		
Holding Pressure	30.0 - 60.0	MPa	
Back Pressure	< 15.2	MPa	
Screw Speed	50 - 200	rpm	

Injection instructions
Feed Temperature: <100°C (<212°F)Max. residence time: 10 minutes, reduce Tx = 170°C (338°F)Injection speed: 50 - 150 mm/sec (2.0 - 6.0 in/sec)Nozzle type: Free Flow

NOTE	
1.	Dependent on processing conditions and part design.

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