Technical Data

Trizod™ OP-ESD

Static-dissipative Optical Grade Clear Polycarbonate Plate

Product Description

Trizod™ OP is an Optically Clear Polished, ultraviolet-stabilized polycarbonate sheet specially engineered for superior optical performance. It also offers improved flammability performance over General Purpose PC. Its UL94 flammabaility rating is V2 at a thickness of 1.5 mm (0.059") and 3.0 mm (0.118") and V0 at a thickness of 6.0 mm (0.236"). Trizod™ OP-ESD is designed for applications requiring high optics, excellent impact strength, outstanding clarity, and UV resistance. Trident's proprietary annealing process improves characteristics such as strength, chemical resistance, and increases dimensional stability over a wide temperature range which allows extensive machining to ensure tight tolerances.

Trizod™OP ESD Polycarbonate resists tribocharging under all circumstances and cannot generate a charge when properly grounded. This makes it ideal for use in manufacturing and assembly operations for charge sensitive electronic components where it can help prevent both immediate and latent ESD caused defects. Since it resists charge build-up it does not attract contaminants, so it can also help prevent contamination-related rejects in ultra-clean manufacturing operations. Consequently, it is suitable for use in the semi-conductor, electronic, and micro-manufacturing industries. Typical applications include; guards, covers, windows, doors, and access panels for electronic equipment, assembly machines and instruments; conveyor line covers; transparent room partitions; process equipment enclosures; and mini-environment glazing panels. The product also has many general industrial uses, including protection for static charge sensitive manufacturing devices and control of spark discharge in explosive environments.

Features and Benefits

- Cannot be tribocharged when properly grounded prevents build-up of static charge and accumulation of harmful contamination.
- Electrostatic decay in less than 0.05 second per Federal Test Standard 101C Method 4046.1 Results in rapid static dissipation without arcing.
- Surface resistivity of 10^6 - 10^8 ohms per square Provides for ESD control without the need for ionization.
- Permanence in static dissipation performance Avoids cost of application of temporary topical anti-stats.
- Humidity independent static charge control Avoids inconvenience of maintaining high levels of humidity and damage caused by such humidity.
- Advanced technology, uniform surface treatment Avoids conductive discontinuities (charged “hot spots”) often found with non uniform temporary topical anti-stats.
- Superior impact resistance. Provides exceptional shatter resistance for safety.
- Superior flame spread properties. Provides additional protection for equipment in a fire.
- Hard, mar resistant, durable surface C-300™ surface, harder than the base plastic reduces risk of damage to the sheet surfaces.
- Superior chemical resistance. Reduces risk of solvent or chemical surface damage.
- Excellent clarity. Premium optical quality polycarbonate with clear C-300 surface minimizes visible distortion.

General

Annealed Plate: .250 through 2.00" thick

Optically Clear Polished Finish • Paper Masked

Agency ratings: ASTM D3935 PC0136 • UL94 V0

Standard color: Transparent Clear (Blue tint)

Plate sizes: 23x47 • 46x94 • 48x96

Trizod™ OP-ESD

Static-dissipative Optical Grade Clear Polycarbonate

Physical	Nominal Value	Unit	Nominal Value	Unit	Test Method
Density / Specific Gravity	0.043	lb/in^3	1.200	g/cm^3	ASTM D1505
Water Absorption, Immersion at 73°F (23°C):					ASTM D570
24 Hours	0.12	%	0.12	%	
Equilibrium	0.30	%	0.30	%	
Optical	**Nominal Value**	**Unit**	**Nominal Value**	**Unit**	**Test Method**
Transmittance at 0.125-in (3.2-mm) Thickness	87	%	87	%	ASTM D1003
Haze at 0.125-in (3.2-mm) Thickness	<0.8	%	<0.8	%	ASTM D1003
Refractive Index	1.587		1.587		ASTM D542
Mechanical	**Nominal Value**	**Unit**	**Nominal Value**	**Unit**	**Test Method**
Tensile Strength (Yield)	9400	psi	65	Mpa	ASTM D638
Tensile Strength (Break)	10200	psi	70	Mpa	ASTM D638
Tensile Elongation (Yield)	6.50	%	6.50	%	ASTM D638
Tensile Elongation (Break)	115	%	115	%	ASTM D638
Tensile Modulus	350000	psi	2415	Mpa	ASTM D638
Flexural Stress at 5% strain	12500	psi	86	Mpa	ASTM D790
Flexural Modulus	340000	psi	2346	Mpa	ASTM D790

Impact	Nominal Value	Unit	Nominal Value	Unit	Test Method
Notched Izod Impact at .125"	18	ft-lb/inch	961	J/m	ASTM D256
Hardness	**Nominal Value**	**Unit**	**Nominal Value**	**Unit**	**Test Method**
Rockwell Hardness	112	R scale	112	R scale	ASTM D785
	70	M scale	70	M scale	ASTM D785
Thermal	**Nominal Value**	**Unit**	**Nominal Value**	**Unit**	**Test Method**
Deflection Temperature 66 psi	288	ºF	142	ºC	ASTM D648
Deflection Temperature 264 psi	270	ºF	132	ºC	ASTM D648
Coefficient of Linear Thermal Expansion	3.34 E-05	in/in/°F	6.0 E-05	mm/mm/°C	ASTM D696
Thermal Conductivity	1.39	Btu•in/(h•ft2•°F)	0.20	W/(m•K)	ASTM C177
Relative Temperature Index: 0.059-in (1.5-mm) Thickness					(UL746B)
Mechanical without Impact	257	ºF	125	ºC	
Electrical	239	ºF	115	ºC	
Mechanical with Impact	257	ºF	125	ºC	
Specific Heat	0.28	Btu/lb•°F	1,172	J/(kg•K)	ASTM D2766
Vicat Softening Temperature	295	ºF	146.23	ºC	ASTM D1525

Electrical	Nominal Value	Unit	Nominal Value	Unit	Test Method
Surface Resistivity	10^6 - 10^8	ohms·cm	10^6 - 10^8	ohms·cm	ASTM D257
Surface Resistance	10^5 - 10^7	ohms·cm	10^5 - 10^7	ohms·cm	EOS/ESD S11.11
Electrostatic Decay	Less than 0.05		Less than 0.05		FTS 101C, Method 4046.1*

* Federal Test Standard 101C, Method 4046.1 as described in EIA-541, Appendix F, Measurement of Electrostatic Decay Properties of Dissipative Planar Materials

Flammability	Nominal Value	Unit	Nominal Value	Unit	Test Method
Flammability Rating	V0 @ .236		V0 @ .236		UL94
Flash Ignition Temperature	896	ºF	480.38	ºC	ASTM D1929