

Technical information

## CYROLITE® Protect 2

### antimicrobial medical device applications

CYROLITE® Protect 2 acrylic-based multipolymer compound for antimicrobial medical device applications

**This product is specifically designed for FDA regulated Class I or Class II medical devices covered by 510(k) PMN submission. Call Evonik Cyro for the Device Master File Number.**

CYROLITE® Protect 2 acrylic based multipolymer compound provides antimicrobial capabilities\* against a variety of microorganisms commonly found in healthcare facilities.

#### **Benefits of CYROLITE® Protect 2 compound:**

- Excellent chemical resistance to lipids and alcohol
- excellent bonding and welding capabilities
- excellent bonding to PVC tubing
- excellent ductility
- EtO, gamma and E-beam sterilizable
- resistant to plasticizers found in flexible PVC tubing
- Free of bisphenol A (BPA)

#### **Processing:**

CYROLITE® Protect 2 compound can be processed in injection molding machines and extrusion lines with 3-zone general purpose screws.

#### **Typical Medical Applications:**

Luer connectors, IV Spikes, Needle hubs, Adapters, Fittings, Filter housings, Y-sites, Valve assemblies, Protection caps and covers and Sharp needle dispenser receptacles. This product is not recommended for blood handling devices.

#### **Product Offering:**

**Color:** Blue tint

**Packaging:** Available in 1500 lb. Gaylord boxes; other packaging available on request.

#### **Regulatory and compliance requirements:**

CYROLITE® Protect 2 compound complies with RoHS, does not contain heavy metals nor phthalates nor natural latex nor Conflict Minerals. BPA free details are provided in the special characteristics chart above. This product\* meets the requirements of the United States Pharmacopeia Class VI; and FDA food contact for all use conditions up to and including hot filled or pasteurized above 150 degrees F (e.g. Condition 21 CFR 176.170) for all food types except those containing more than 8% alcohol.

**Antimicrobial Activity – Test Method JIS Z 2801 (Log Rate of >4 means a kill rate of 99.99%)**

Duration	Staphylococcus aureus	Candida albicans ATCC 10231	Klebsiella pneumoniae	Pseudomonas aeruginosa	Staphylococcus epidermidis
24 hours	>4	>4	>4	>4	>4
96 hours	>4	>4	>4	>4	>4

Properties	Parameter	Unit	ASTM-Standard	CYROLITE® Protect 2 F22P
Mechanical Properties				Typical Value
Tensile Strength		psi [MPa]	D 638	5,840 [40.3]
Tensile Modulus		x10 <sup>6</sup> psi [GPa]	D 638	0.26 [1.8]
Tensile Elongation @ Yield		%	D 638	4.0
Tensile Elongation @ Break		%	D 638	17.0
Flexural Strength		psi [MPa]	D 790	8,840 [61]
Flexural Modulus		x10 <sup>6</sup> psi [GPa]	D 790	0.28 [1.9]
Notched Izod	¼" bar @23°C	ft-lb/in [J/m]	D 256	1.7 [91]
Thermal Properties				
Vicat Softening Point		°F [°C]	D 1525	201 [94]
Deflection Temperature, Annealed	1.8MPa, 0.250"	°F [°C]	D 648	149 [65]
Rheological Properties				
Melt Flow Rate	230°C & 5.0 kg	g/10min	D 1238	2.5
Optical Properties	d = 1.5 mm			
Light Transmission		%	D 1003	11
Haze		%	D 1003	32
Recommended processing conditions				
Predrying Temperature		°F [°C]		160 [71]
Predrying Time		hour		3 to 4
Melt Temperature		°F [°C]		460 – 490 [238 – 254]
Mold Temperature		°F [°C]		140 – 170 [60 – 77]

Please follow our recommended drying conditions for CYROLITE® Protect 2 compound prior to injection molding/extrusion due to its sensitivity to moisture. All listed technical data are typical values intended for your guidance. They are given without obligation and do not constitute a materials specification.

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**Evonik Cyro LLC**

299 Jefferson Road,

Parsippany, NJ 07054-0677 USA

Phone: 800-631-5384;

Email: [cyro.polymer@evonik.com](mailto:cyro.polymer@evonik.com)

Website: <http://www.acrylite-polymers.com> <http://www.cyrolite.com>

Technical Support: visit the TechKnowledge Center at [cyro.custhelp.com](http://cyro.custhelp.com)