SciCron Technologies

Product Information

CPVC-350™ - FM 4910 (Bending Grade)

Static Dissipative Plastic

Description

CPVC-350- FM 4910 is a plastic sheet product designed to control static electricity for a wide range of end uses. It is a Factory Mutual 4910* compliant polyvinyl chloride sheet which has been coated with SciCron Technologies proprietary, clear, C-350™ static dissipative coating. This unique coating technology prevents charge generation on the sheet surfaces, thereby controlling particulate attraction and preventing electrostatic discharge (ESD) events. This performance is permanent and totally independent of humidity. **CPVC-350 - FM 4910** exhibits excellent flammability and smoke generation properties, plus superior chemical resistance and bending properties.

**The CPVC substrate used to make this product has been tested according to procedures outlined in the Factory Mutual Clean Room Materials Flammability Test Protocol (Class 4910) and is listed as an approved material in the Factory Mutual Research Approval Guide. It has been formulated to resist fire and to emit low levels of smoke when tested according to this protocol. The substrate coated with SciCron Technologies non-flammable C-350 coating has not been similarly tested.*

Applications

CPVC-350 - FM 4910 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 clean rooms in the semi-conductor, electronic, and micro-manufacturing industries. Applications include: contoured and fabricated items requiring heat bending, such as; covers, shields and doors for equipment, machines and instruments and formed process equipment enclosures.

Fabrication

CPVC-350 - FM 4910 is easily fabricated into flat and bent configurations using the same equipment and fabrication techniques generally employed with unsurfaced CPVC sheet products. *This product is designed to accommodate heat bending, however, care must be taken to avoid applying too much heat to prevent damage to the C-350 surface.* When solvent welding, it is recommended that the C-350 surface be removed to achieve optimum bonds. For more information on fabrication see SciCron Technologies Technical Information Bulletin SP-02.

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.

- *Factory Mutual Class 4910 compliant substrate.*

Substrate meets clean room performance requirements called out in FM 4910 guidelines.

- *Excellent flame spread properties*

Provides additional protection for equipment in a fire.

- *Excellent smoke generation properties*

Improves visibility and reduces area contamination in a fire.

- *Superior fabrication and bending characteristics.*

Provides maximum versatility and workability during part fabrication.

- *Superior chemical resistance*

Reduces risk of solvent or chemical surface damage.

Availability

CPVC-350 - FM 4910 is available in a transparent blue-gray tint.

Standard Dimensions

Thickness: 0.125”, 0.187”, 0.250”, 0.375”, 0.500”, 1.00”

Standard Sheet Size: 48” x 96” nominal (trimmed size - 47” x 97”)

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CPVC-350™ - FM 4910

Typical Physical Properties (Typical but not guaranteed values for 0.25 inch material)

Property	Test Method	Units	CPVC-350 - FM 4910
Physical			
Specific Gravity	ASTM D792	--	1.47
Pencil Hardness	ASTM D3363	Hardness Scale	B
Mechanical			
Tensile Strength			
Ultimate	ASTM D638	psi	9,000
Elongation	ASTM D638	%	45
Tensile Modulus	ASTM D638	psi	480,000
Flexural Strength	ASTM D790	psi	15,000
Flexural Modulus	ASTM D790	psi	450,000
Izod Impact Strength (milled notch)	ASTM D256	ft-lb/inch of notch	0.5
Thermal			
Deflection Temperature (264 psi load)	ASTM D648	°F	177
Vicat Softening Point	ASTM D1525	°F	204
Maximum Continuous Service Temperature	--	°F	160
Coefficient of Thermal Expansion	ASTM D696	in/in/°F	7.0×10^{-5}
Coefficient of Thermal Conductivity	Cenco-Fitch	BTU•in/hr•ft^2•°F	1.1
Flammability			
UL 94 Rating of the Uncoated Substrate	UL 94	UL Classification	V-0
Factory Mutual Test Protocol (Class 4910)	FM 4910	--	Uncoated Substrate Listed as Approved
Optical			
3mm Transparent Clear Transmittance - Total	ASTM D1003	%	60
Haze	ASTM D1003	%	10.0
Electrical			
Surface Resistivity	ASTM D257	ohms/sq	10^6 - 10^8
Surface Resistance	EOS/ESD S11.11	ohms	10^5 - 10^7
Electrostatic Decay	FTS 101C, Method 4046.1*	sec	Less than 0.05

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

Chemical Resistance ASTM D543

Samples immersed in the specified chemicals for 24 hours at room temperature and visually examined.

Chemical	Surface Attack	Visual Evaluation
Deionized Water	None	Clear
30% Sodium Hydroxide	None	Clear
30% Sulfuric Acid	None	Clear
30% Nitric Acid	Slight Pitting	Clear
48% Hydrofluoric Acid	None	Clear
Methanol	Slight Pitting	Clear
Ethanol	None	Clear
Isopropyl Alcohol	None	Clear
Acetone	Sample Dissolved	Sample Dissolved
Methylene Chloride	Sample Dissolved	Sample Dissolved

Precautions:

1. CPVC-350 - FM 4910 is designed to resists ignition, however, CPVC plastic is a combustible thermoplastic which emits toxic and corrosive gases upon combustion. Avoid exposure to flame and excessive heat.
2. For building applications, comply with applicable code regulations.
3. Clean with soap and water. Do not use abrasives. Avoid inappropriate contact with solvents.