

## CPVC-300™ - FM 4910 Static Dissipative Plastic

### Description

**CPVC-300- 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-300™ 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-300 - FM 4910** exhibits excellent flammability and smoke generation properties, plus superior chemical resistance, surface hardness, and mar resistance.

*\*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-300 coating has not been similarly tested.*

### Applications

**CPVC-300 - 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: perimeter windows, partitions, laminar flow air containment screens, mini-environment glazing panels, and pass-thru modules; enclosures, covers, and doors for equipment, machines and instruments; and fabricated desiccator cabinets and boxes.

### Fabrication

**CPVC-300 - FM 4910** is easily fabricated into flat surface configurations using the same equipment and fabrication techniques generally employed with unsurfaced CPVC sheet products. It should not be used for heat formed bent configurations since the hard C-300 surface is not designed for heat bending. When solvent welding, it is necessary to remove the C-300 surface mechanically to achieve a good

bond. For more information on fabrication refer to SciCron Technologies Technical Information Bulletin No. SP-01.

### 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.
- *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.

### Availability

**CPVC-300 - 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")

The information and statements contained herein are believed to be accurate, however, users should perform their own testing and verification to determine the durability, applicability and suitability of the products for their own purposes. NOTHING CONTAINED HEREIN SHALL BE CONSTRUED AS A REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, or as permission, inducement, or recommendation to practice any patented invention without license. IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXCLUDED. While SciCron Technologies' surface is more mar resistant than the original substrate, the term "Permanent" or "Permanence" is not intended as a guarantee of durability in any particular application. It is used to distinguish SciCron Technologies' surface from topical anti-stats which must be reapplied on a regular basis.

# CPVC-300™ - FM 4910

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

Property	Test Method	Units	CPVC-300 - FM 4910
<b>Physical</b>			
Specific Gravity	ASTM D792	--	1.47
Pencil Hardness	ASTM D3363	Hardness Scale	F
<b>Mechanical</b>			
Tensile Strength Ultimate	ASTM D638	psi	9,000
Elongation	ASTM D638	%	3.76
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
<b>Thermal</b>			
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	$7.0 \times 10^{-5}$
Coefficient of Thermal Conductivity	Cenco-Fitch	BTU•in/hr•ft <sup>2</sup> •°F	1.1
<b>Flammability</b>			
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
<b>Optical</b>			
3mm Transparent Clear Transmittance - Total	ASTM D1003	%	60
Haze	ASTM D1003	%	10.0
<b>Electrical</b>			
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-300 - FM 4910 is designed to resist 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.