



## LOW LOSS POLYSTYRENE STOCK

Eccostock 0005 is a translucent, low loss, cross-linked, polystyrene stock. It is a thermosetting plastic that will not flow when subjected to excessive heat. It contains no fungus nutrients. Pieces of Eccostock 0005 can be bonded to itself or other materials.

### FEATURES AND BENEFITS

- Excellent high and low temperature stability
- Excellent machinability
- Good mechanical properties
- Low dielectric loss

### MARKETS

- Commercial Telecom
- Security and Defense

### SPECIFICATIONS

TYPICAL PROPERTIES	ECCOSTOCK 0005
Temperature Range °C (°F)	-60 to 100 (-76 to 212)
Density, g/cc	1.05
Dielectric Strength, volts/mil	500
Dielectric Constant, 1 MHz to 500 GHz	2.53
Homogeneity of Dielectric Constant	±0.02
Isotropy of Dielectric Constant	±0.01
Loss Tangent, 1 MHz to 500 GHz	0.0005
Volume Resistivity, ohm-cm	>10 <sup>16</sup>
Surface Resistivity, ohms/square	>10 <sup>-14</sup>
Coefficient of Linear Expansion, °C (°F)	68x10 <sup>-6</sup> (38x10 <sup>-6</sup> )
Thermal Conductivity, W/mK	0.146
Rockwell Hardness, M Scale	110-120
Tensile Strength, psi (kg/cm <sup>2</sup> )	9,000 (633)
Flexural Strength, psi (kg/cm <sup>2</sup> )	11,500 (809)
Modulus of Elasticity, psi (kg/cm <sup>2</sup> )	239,000 (16,803)
Izod Impact, ft-lb/in (kg-cm/cm) of notch	0.3
Water absorption, % gain in 24 hours at 25°C	<0.08
Outgassing (%TML) (%CVCM)*	0.14-0.16/0.02

*Data for design engineer guidance only. Observed performance varies in application. Engineers are reminded to test the material in application.*

\* Outgassing data per ASTM E595-07; criteria for acceptability is 1.00% TML and 0.10% CVCM.

### APPLICATIONS

- Excellent machinability makes Eccostock 0005 a good choice for custom microwave transmission line components.
- Eccostock 0005 has been used as the spacer in Type N connectors and for other machined parts in coaxial transmission lines.
- Machined parts are also used as waveguide supports, antenna insulators, and as complete microwave lenses.
- Optical clarity and good mechanical properties have recommended this product for purely structural applications.
- Eccostock 0005 is able to withstand high voltages for producing gap switch houses, capacitors and other components.

- High radiation resistance with little change in dielectric loss with exposures up to 1000m rads.
- Other applications include material testing devices, surveillance equipment, radar windows, radomes and missile guidance system housings.

## AVAILABILITY

- Eccostock 0005 is available in the following standard sizes:
- Sheets 30.5cm x 30.5cm (12" x 12") in thicknesses of 0.32, 0.64, 0.95, 1.27, 1.91, 2.54, 3.81, 5.08, 6.35 & 7.62 cm (1/8, 1/4, 3/8, 1/2, 3/4, 1.0, 1.5, 2.0, 2.5 & 3.0")
- Rods 30.5cm long (12") in diameters of 0.32, 0.64, 0.95, 1.27, 1.59, 1.91, 2.54, 3.81, 5.08, 6.35 & 7.62 cm (1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 1.0, 1.5, 2.0, 2.5 & 3.0")
- Other sizes, shapes, thicknesses and configurations are available on special order.

## INSTRUCTIONS FOR USE

- Eccostock 0005 is easy to machine. Tools should be kept very sharp. Feed rate should be initially low and then increased with emulsion type coolants recommended.