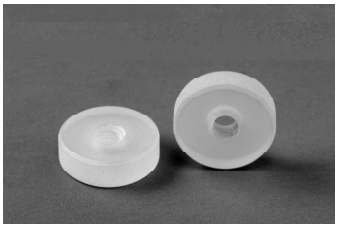
Eccostock®0005

Low Loss, Polystyrene Rod and Sheet Stock



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	$>10^{16}$
Surface Resistivity, ohms/square	$>10^{-14}$
Coefficient of Linear Expansion, °C (°F)	$68x10^{-6}$ ($38x10^{-6}$)
Thermal Conductivity, W/mK	0.146
Rockwell Hardness, M Scale	110-120
Tensile Strength, psi (kg/cm²)	9,000 (633)
Flexural Strength, psi (kg/cm²)	11,500 (809)
Modulus of Elasticity, psi (kg/cm²)	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.

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Eccostock® 0005

- 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.

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