

ECCOSTOCK® 0005

Low Loss, Polystyrene Rod and Sheet Stock

Material Characteristics

- Translucent, low loss, cross-linked, polystyrene stock
- It is a thermosetting plastic that will not flow when subjected to excessive heat
- Excellent high and low temperature stability
- Contains no fungus nutrients
- Pieces of ECCOSTOCK® 0005 can be bonded to itself or other materials

Applications

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

Machining

- ECCOSTOCK® 0005 is easily machined. Tools should be kept very sharp. Feed rate should be initially low and then increased with emulsion type coolants recommended

Typical Properties

Temperature Range, °F (°C)	-94 to 257 (-70 to 125)
Short Term Service Temperature, °F (°C)	<392 (200)
Specific Gravity	1.06
Dielectric Strength, volts/mil (kv/m)	500 (20)
Dielectric Constant, 60 Hz to 12 GHz	2.53 +/- .03
Homogeneity of Dielectric Constant	± 0.02
Isotropy of Dielectric Constant	± 0.01
Loss Tangent, 60 Hz to 12 GHz	0.0005
Volume Resistivity, ohm-cm	>10 ¹⁶
Surface Resistivity, ohms/square	10 ¹⁴
Coefficient of Linear Expansion, °F (°C)	35 x 10 ⁻⁶ (63 x 10 ⁻⁶)
Thermal Conductivity, (cal)(cm)/(sec)(cm ²)(°C) (BTU)(in)/(hr)(ft ²)(°F)	0.0003 0.87
Rockwell Hardness, M Scale	105
Tensile Strength, psi (kg/cm ²)	11,000 (770)
Flexural Strength, psi (kg/cm ²)	17,000 (1,190)
Modulus of Elasticity, psi (kg/cm ²)	300,000 (21,000)
Izod Impact, ft-lb/in (kg-cm/cm) of notch	0.4 (2.2)
Water absorption, % gain in 24 hours at 25°C	0.003
%TML	0.29
%CVCM	0.011