

## LOW LOSS LOW-K DIELECTRIC MATERIAL



Eccostock LoK is a low dielectric constant, low loss and low weight thermosetting plastic for RF and microwave insulation. It weighs only about half that of polystyrene and one quarter that of polytetrafluorethylene.

Eccostock LoK has better dimensional stability than other low loss plastics. It will not cold flow, nor will it flow when heat is applied. Soldering iron temperatures will not soften Eccostock LoK, only slightly degrade in the immediate area of contact.

It is completely unicellular and is unaffected by moisture.

## FEATURES AND BENEFITS

- Low dielectric constant
- Lightweight
- Good dimensional stability

## MARKETS

- Commercial Telecom
- Security and Defense

## SPECIFICATIONS

TYPICAL PROPERTIES	ECCOSTOCK LOK
Temperature Range °C (°F)	-70 to 150 (-94 to 302)
Frequency	60 Hz to 10 Ghz
Density g/cc	0.54
Dielectric Constant	1.7
Dielectric Strength, volts/mil (kv/mm)	300 (11.8)
Dissipation Factor	<0.004
Volume Resistivity, ohm-cm	10 <sup>14</sup>
Flexural Strength, kg/cm <sup>2</sup> (psi)	420 (6,000)
Coefficient of Linear Expansion, per°C (°F)	50 x 10 <sup>-6</sup> (28 x 10 <sup>-6</sup> )
Thermal Conductivity W/mK	0.4
Water absorption (%gain in 24h at 25°C)	0.1

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

## APPLICATIONS

- Eccostock LoK is specifically designed for use in coaxial, waveguide and antenna support problems. Due to the low dielectric constant, reflections in transmission lines are minimized.
- RF coils wound on Eccostock LoK exhibit higher Q than when wound on polystyrene or other plastic stock.



## AVAILABILITY

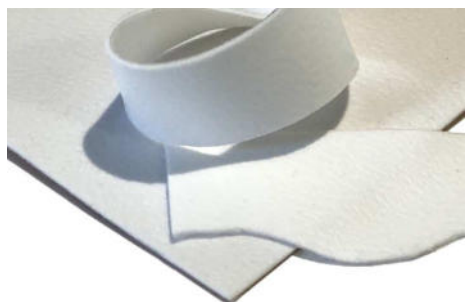
- Eccostock LoK is available in the following standard sizes:
  - Sheets 30.5 x 30.5cm (12" x 12") in thicknesses of 0.32, 0.64, 0.95, 1.27, 1.59, 1.91, 2.54, 3.81, 5.08, 6.35 & 7.62 cm (1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 1.0, 1.5, 2.0, 2.5 & 3.0")
  - Rods 30.5 cm (12") long in diameters of 0.32, 0.64, 0.95,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

## INSTRUCTIONS FOR USE

- Machinability of Eccostock LoK is excellent.
- Gumming does not occur and automatic screw machine operations are possible with it.

# FlexK-LoK Data Sheet

## Low Loss, Low Dielectric Constant Silicone



### LOW LOSS, LOW K DIELECTRIC MATERIAL:

FlexK LoK is a low dielectric constant, low loss and low weight silicone rubber sheet for RF and microwave insulation. It weighs only about half that of polystyrene and one quarter that of polytetrafluoroethylene

FlexK LoK is waterproof and has excellent thermal characteristics, tolerating high and low temperatures. Material does not flake or shed. Complex shape can be die cut or water jet system

### FEATURES AND BENEFITS

- Low dielectric constant
- Light weight and flexible
- Excellent thermal insulation and stability
- It can be used for commercial telecom and defense security

TYPICAL PROPERTIES	DATA
Thickness Range (mm +/- 15%)	0.25 – 1.0
Color	White
Dielectric Constant	1.7 +/- 5%
Dissipation Factor @ 1KHz	0.002
Dielectric Strength	102 V/mil (4 KV/mm)
Density	0.55g/cc
Elongation	10%
Tensile Strength	135 PSI minimum
Deflection	15% @ 100 PSI
Compression Set 23C, 22H / 100C, 70H	10% / 30%
Thermal Conductivity	0.11 W/mK
Temperature Range	-70°C to 177°C
Water Absorption	1.1 (% gain in 24h @ 70°F)
Outgassing ASTM E595-15	0.84% TML, 0.11% CVCM
RoHS / REACH (EU Regulation)	Compliant
Effective Frequency Range	60 Hz to 10 GHz

*Properties will vary to a degree with the dielectric constant. Typical values for the middle of the dielectric constant range are given above. Data for design engineer guidance only. Observed performance varies in application. Engineers are reminded to test the material in application.*

# FlexK-LoK Data Sheet

## Low Loss, Low Dielectric Constant Silicone

### APPLICATIONS

- Outdoor applications / flexible radome
- Antenna mounting spacer in small electronics
- Electrical separation of components maintaining spacing
- Microwave absorber separation for PCB absorber applications
- Thin dielectric spacer

### AVAILABILITY

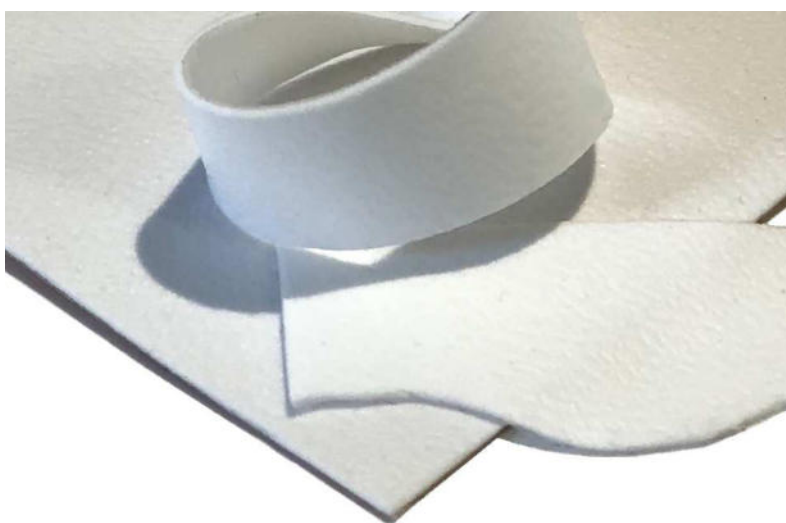
Standard FlexK LoK sheet sizes:

- 28017002 0.010"x12.0"x12.0"
- 28017004 0.020"x12.0"x12.0"
- 28017008 0.030"x12.0"x12.0"
- 28017006 0.040"x12.0"x12.0"

### SAMPLES

Standard FlexK LoK samples:

- 98100601 0.010"x4.0"x4.0"
- 98100602 0.020"x4.0"x4.0"
- 98100603 0.030"x4.0"x4.0"
- 98100604 0.040"x4.0"x4.0"



ABS-DS-FLEXK LOK 042618

## Flexible, Low Loss, Closed Cell Polyethylene Foam

### FLEXIBLE LOW LOSS CLOSED CELL FOAM



Eccostock PP is a closed cell, cross-linked **polyethylene** foam with low loss, low dielectric, and low density. Due to the low dielectric constant, the materials are essentially transparent to electromagnetic energy. Dielectric constant does not change with frequency and change with temperature is negligible. It offers excellent thermal insulation. Eccostock PP is lightweight and will return to its normal thickness after being compressed. It can be heat sealed to form blocks of material or to make contoured pieces that can be draped over complex objects. It is tough and weather resistant.

### FEATURES AND BENEFITS

- Lightweight
- Low loss, low dielectric, low density
- Flexible material

### MARKETS

- Commercial Telecom
- Security and Defense

### SPECIFICATIONS

TYPICAL PROPERTIES	ECCOSTOCK PP	
	Eccostock PP-2	Eccostock PP-4
Temperature Range °C (°F)	-80 to 85 (-112 to 185)	-80 to 85 (-112 to 185)
Dielectric Constant	1.03	1.06
Compression Strength, kPa @25%(@50%)	35 (100)	70 (150)
Compression Set (% of original thickness)	28	16
Hardness, Shore A	7	15
Loss Tangent	0.0001	0.0001
Density, g/cc (lbs/ft³)	0.032 (1.8 - 2.2)	0.064 (3.6 - 4.4)
Tensile Strength, kg/cm²	2.5	5.5
Elongation %	220	290
Thermal Conductivity, W/m-K	0.040	0.042
Water absorption, g/cm²(lb/ft²) of cut surface	0.04	0.04

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

### APPLICATIONS

- Eccostock PP can be used as radomes, blankets, and coverings where radar transparency is desired. It can also be used in a variety of electrical and microwave applications.
- With its low density and being closed cell, it finds uses in ocean buoyancy applications.
- It has been used as a spacer in antenna applications.

### AVAILABILITY

- Eccostock PP is available in two densities: 2 lb/ft³(32 kg/m³) and 4 lb/ft³ (64 kg/m³). It is designated as Eccostock PP-2 and Eccostock PP-4.
- Standard sheets are available in 61 x 61 cm (24"x24") and 122 x 152 cm (48" x 60") sheets with thickness of 0.32 cm and 0.64 cm (1/8" and 1/4"). Eccostock PP-4 also with thickness of 0.16 cm (1/16").
- Other sheet sizes are available on special order.

Americas: +1.866.928.8181  
Europe: +49.(0)8031.2460.0  
Asia: +86.755.2714.1166

[www.lairdtech.com](http://www.lairdtech.com)

RFP-DS-PP 112515

Any information furnished by Laird Technologies, Inc. and its agents is believed to be accurate and reliable. All specifications are subject to change without notice. Responsibility for the use and application of Laird Technologies materials rests with the end user. Laird Technologies makes no warranties as to the fitness, merchantability, suitability or non-infringement of any Laird Technologies materials or products for any specific or general uses. Laird Technologies shall not be liable for incidental or consequential damages of any kind. All Laird Technologies products are sold pursuant to the Laird Technologies' Terms and Conditions of sale in effect from time to time, a copy of which will be furnished upon request. © Copyright 2015 Laird Technologies, Inc. All Rights Reserved. Laird Technologies, the Laird Technologies Logo, and other marks are trademarks or registered trademarks of Laird Technologies, Inc. or an affiliate company thereof. Other product or service names may be the property of third parties. Nothing herein provides a license under any Laird Technologies or any third party intellectual property rights.

## Rigid High Temperature Plastic Foam Sheet Stock

### RIGID PLASTIC FOAM SHEET STOCK



Eccostock SH is a rigid polyurethane foam, which remains rigid and withstands high temperatures, for a short time even up to 163°C (325°F). Unlike most polyurethanes, Eccostock SH has an extremely low dissipation factor and low dielectric constant. It is a closed cell foam, pink in color.

### FEATURES AND BENEFITS

- Rigid
- High Temperature Resistance

### MARKETS

- Commercial Telecom
- Security and Defense

### SPECIFICATIONS

TYPICAL PROPERTIES	ECCOSTOCK SH		
Bulk Density, lbs/ft <sup>3</sup> (g/cc)	<b>2 (0.03)</b>	<b>8 (0.13)</b>	<b>14 (0.22)</b>
Temperature Range °C (°F)	-70 to 135 (-94 to 275)	-70 to 135 (-94 to 275)	-70 to 135 (-94 to 275)
Dielectric Constant (1 MHz)	1.04	1.12	1.25
Dielectric Strength, volts/mil	40	40	40
Dissipation Factor (1 MHz)	0.001	0.002	0.005
Compressive Strength, psi (kg/cm <sup>2</sup> )	30 (2.1)	250 (17.6)	600 (42.3)
Flexural Strength at 5% strain, psi (kg/cm <sup>2</sup> )	25 (1.8)	225 (15.8)	800 (56.0)
Flexural Modulus, psi (kg/cm <sup>2</sup> )	500 (35.2)	7,000 (493)	20,000 (1408)
Tensile Strength, psi (kg/cm <sup>2</sup> )	40 (2.8)	200 (14.1)	450 (31.7)
Shear Strength, psi (kg/cm <sup>2</sup> )	35 (2.5)	140 (9.9)	300 (21.1)
Coefficient of Thermal Expansion per °C	25 x 10 <sup>-6</sup>	40 x 10 <sup>-6</sup>	50 x 10 <sup>-6</sup>
Water absorption, % gain in 24 hours	3	1.5	1

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

### APPLICATIONS

- Eccostock SH is primarily used as a high-temperature structural member or thermal barrier in electrical/electronic applications.

### AVAILABILITY

- Standard sheets are 30.5 x 61 cm (12" x 24") in thicknesses of 2.5 cm, 5 cm, 7.6 cm, 10 cm & 15 cm (1", 2", 3", 4" & 6").
- It is available in bulk densities of 2, 4, 6, 8, 10, 12, & 14 lbs/ft<sup>3</sup> (0.03, 0.06, 0.10, 0.13, 0.16, 0.19 & 0.22 g/cc).
- Eccostock SH is available in other thicknesses, sizes, and customer specified shapes upon request.



## INSTRUCTIONS FOR USE

- Eccostock SH at densities less than 3 lbs/ft<sup>3</sup> (0.05 g/cc) may warp at temperatures above 93°C (200°F).
- Unicellularity: Not interconnected above 6 lbs/ft<sup>3</sup> (0.10 g/cc). However, below this density there is a significant percentage of cells connected.
- Eccostock SH is easy to machine.

## RELATED PRODUCTS

- Eccostock® FPH: High temperature foam-in-place casting resin with available bulk density depending on catalyst and mold design. When cured, it has identical properties to Eccostock SH of the same bulk density. (Eccostock SH is produced from Eccostock® FPH under precisely controlled laboratory conditions.)

RFP-DS-SH 112515

Any information furnished by Laird Technologies, Inc. and its agents is believed to be accurate and reliable. All specifications are subject to change without notice. Responsibility for the use and application of Laird Technologies materials rests with the end user. Laird Technologies makes no warranties as to the fitness, merchantability, suitability or non-infringement of any Laird Technologies materials or products for any specific or general uses. Laird Technologies shall not be liable for incidental or consequential damages of any kind. All Laird Technologies products are sold pursuant to the Laird Technologies' Terms and Conditions of sale in effect from time to time, a copy of which will be furnished upon request. © Copyright 2015 Laird Technologies, Inc. All Rights Reserved. Laird, Laird Technologies, the Laird Technologies Logo, and other marks are trademarks or registered trademarks of Laird Technologies, Inc. or an affiliate company thereof. Other product or service names may be the property of third parties. Nothing herein provides a license under any Laird Technologies or any third party intellectual property rights.

## 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 <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) (%CVM)*	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% CVM.

### 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.





# 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.

RFP-DS-0005 112515

Any information furnished by Laird Technologies, Inc. and its agents is believed to be accurate and reliable. All specifications are subject to change without notice. Responsibility for the use and application of Laird Technologies materials rests with the end user. Laird Technologies makes no warranties as to the fitness, merchantability, suitability or non-infringement of any Laird Technologies materials or products for any specific or general uses. Laird Technologies shall not be liable for incidental or consequential damages of any kind. All Laird Technologies products are sold pursuant to the Laird Technologies' Terms and Conditions of sale in effect from time to time, a copy of which will be furnished upon request. © Copyright 2015 Laird Technologies, Inc. All Rights Reserved. Laird, Laird Technologies, the Laird Technologies Logo, and other marks are trademarks or registered trademarks of Laird Technologies, Inc. or an affiliate company thereof. Other product or service names may be the property of third parties. Nothing herein provides a license under any Laird Technologies or any third party intellectual property rights.

## Low Loss, Adjusted Dielectric Constant Stock



### LOW LOSS ADJUSTED DIELECTRIC CONSTANT STOCK

Eccostock HiK is a series of low loss plastic stock with adjusted dielectric constants up to 15. Low outgassing properties make them suitable for space applications.

### FEATURES AND BENEFITS

- Low loss
- Adjusted dielectric constant

### MARKETS

- Commercial Telecom
- Security and Defense

### SPECIFICATIONS

TYPICAL PROPERTIES	ECCOSTOCK HiK
Temperature Range °C (°F)	-65 to 110 (-85 to 230)
Density, g/cc	2.2
Dielectric Strength, volts/mil	>200
Dielectric Constant Accuracy	±3%
Dissipation Factor, 1 to 10 GHz	<0.002
Volume Resistivity, ohm-cm	>10 <sup>12</sup>
Flexural Strength, psi (kg/cm <sup>2</sup> )	6500 (457)
Coefficient of Linear Expansion, °C	36 x 10 <sup>-6</sup>
Izod Impact, kg-cm/cm (ft-lb/in of notch)	1.36 (0.25)
Water absorption, %	<0.1
Outgassing (%TML) (%CVCN)*	0.38/0.001

*Properties will vary to a degree with the dielectric constant. Typical values for the middle of the dielectric constant range are given above. 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% CVCN.

### APPLICATIONS

- Since water absorption is low, Eccostock HiK can be used in outdoor applications.
- Eccostock HiK is primarily used for reducing the overall size of a waveguide by increasing the dielectric constant.
- It is also used in cavity tuning probes, patch antennas, and dielectric support pieces.

## AVAILABILITY

- Eccostock HiK is available in the following dielectric constants: 3, 3.5, 3.8, 4, 4.5, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 & 15
- Sheets: 30.5cm x 30.5cm (12" x 12") in thicknesses of 0.64, 0.95, 1.27, 1.59, 1.91, 2.54, 3.81, 5.08, 6.35 & 7.62 cm (1/4, 3/8, 1/2, 5/8, 3/4, 1.0, 1.5, 2.0, 2.5 & 3.0")
- Rods: 30.5 cm (12") long 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")
- Bars: 30.5cm (12") long in squares of 0.64, 0.95, 1.27, 1.59, 1.91, 2.54, 3.81 & 5.08 cm (1/4, 3/8, 1/2, 5/8, 3/4, 1.0, 1.5 & 2.0")
- Other sizes, shapes, thicknesses, dielectrics and configurations are available on special order.

## INSTRUCTIONS FOR USE

- Eccostock HiK can be readily machined using carbide tools or by grinding. Diamond blades are not recommended due to gumming of the tools. Water solution cooling agents are also recommended.

## RELATED PRODUCTS

- Eccostock® HiK 500F - A similar material, but with higher dielectric constants up to 30 and an increased service temperature capability.
- Eccostock® HiK can be bonded to itself using Eccostock® HiK Cement with its corresponding dielectric constant.

## High Temperature, Low Loss, Adjusted Dielectric Constant Stock



### HIGH TEMPERATURE ADJUSTED DIELECTRIC CONSTANT STOCK

Eccostock HiK500F is a series of low loss plastic material with adjusted dielectric constants up to 30. When subjected to high temperatures, the surface will darken. This however has no adverse effect. Eccostock HiK500F offers low moisture absorption and low outgassing properties for space applications.

### FEATURES AND BENEFITS

- Low loss
- Adjusted dielectric constant
- High temperature resistance

### MARKETS

- Commercial Telecom
- Security and Defense

### SPECIFICATIONS

TYPICAL PROPERTIES	ECCOSTOCK HIK500F
Temperature Range °C (°F)	-56 to 204 (-69 to 400)
Density g/cc	2.2
Dielectric Strength, volts/mil	>300
Dielectric Constant Accuracy K<16 (K>16)	±3% (±10%)
Dissipation Factor, 1 to 10 GHz	<0.002
Volume Resistivity, ohm-cm	>10 <sup>14</sup>
Flexural Strength, psi (kg/cm <sup>2</sup> )	10,000 (703)
Coefficient of Linear Expansion, °C	36 x 10 <sup>-6</sup>
Izod Impact, kg-cm/cm(ft-lb/in of notch)	1.65 (0.3)
Outgassing (%TML) (%CVM)*	0.47/0.041

*Properties will vary to a degree with the dielectric constant. Typical values for the middle of the dielectric constant range are given above. 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% CVM.

### APPLICATIONS

- Eccostock HiK500F is primarily used for reducing the overall size of a waveguide by increasing the dielectric constant.
- It can also be used in cavity tuning probes, patch antennas, dielectric lens antennas and dielectric support pieces.
- Since water absorption is low, Eccostock HiK500F can be used in outdoor applications.



## AVAILABILITY

- Eccostock HiK500F is available in the following dielectric constants: 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 16, 20, 25 and 30
- Sheets: 30.5cm x 30.5cm (12" x 12") in thicknesses of 0.64, 0.95, 1.27, 1.59, 1.91, 2.54, 3.81, 5.08, 6.35 & 7.62 cm (1/4, 3/8, 1/2, 5/8, 3/4, 1.0, 1.5, 2.0, 2.5 & 3.0")
- Rods: 30.5 cm (12") long 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")
- Bars: 30.5cm (12") long in squares of 0.64, 0.95, 1.27, 1.59, 1.91, 2.54, 3.81 & 5.08 cm (1/4, 3/8, 1/2, 5/8, 3/4, 1.0, 1.5 & 2.0")
- Other sizes, shapes, thicknesses, dielectrics and configurations are available on special order.

## INSTRUCTIONS FOR USE

- Eccostock HiK500F must be machined using diamond blades. Carbide tools are not recommended and may break due to the hardness of the material. Water solution cooling agents are also highly recommended.

## RELATED PRODUCTS

- Eccostock HiK500F can be bonded to itself using Eccostock® HiK Cement with its corresponding dielectric constant.

## One Part Free Flowing Syntactic Foam Powder

### FREE FLOWING SYNTACTIC FOAM POWDER



Eccostock FFP is a one-part, epoxy-based, free-flowing powder. It cures at elevated temperatures to a rigid, non-burning syntactic foam. It is extremely light weight and provides physical support as well as thermal insulation without increasing the weight or dielectric constant. Eccostock FFP exhibits minimum shrinkage during cure, exerting minimum stress on delicate components. Cured material can be easily removed with tools enabling access to repair or replace components. Since cured Eccostock FFP is porous, application of an epoxy coating will reduce moisture absorption.

### FEATURES AND BENEFITS

- Low cost
- Low shrinkage during cure
- No mixing required and easy to use as it is a one part curing system

### MARKETS

- Commercial Telecom
- Security and Defense

### SPECIFICATIONS

TYPICAL PROPERTIES	ECCOSTOCK FFP
Temperature Range °C (°F)	-65 to 175 (-85 to 347)
Density, g/cc	0.24
Compression Strength kPa (psi)	1000 (150)
Dielectric Constant @ 8.6 GHz	1.25
Loss Tangent @ 8.6 GHz	0.005
Dielectric Strength, volts/mil	64
Thermal Conductivity W/mK	0.051
Volume Resistivity, ohm-cm	$3.49 \times 10^{11}$

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

### APPLICATIONS

- Eccostock FFP is designed to infiltrate densely populated electronic packages, readily filling available volumes around components. It been used to stabilize crystal oscillators as well as other delicate components that need to be held in place or thermally protected.
- Eccostock FFP has also found its way into machinery operating in high vibration environments to keep electrical components from shaking apart.
- Low shrinkage during cure makes
- Eccostock FFP excellent for encapsulation applications.

### AVAILABILITY

- Eccostock FFP is readily available in pints, quarts, gallons, and 5 gallon containers. Pint and quart containers are also available in squeeze bottles for ease of application.

## INSTRUCTIONS FOR USE

- Refer to the MSDS for full safety information before opening the container. Measures should be taken to avoid any contact with the skin and eyes, and a dust mask or respirator should be used to avoid inhaling the product.
- Mix the Eccostock FFP in the shipping container by lightly tumbling or shaking before use, as some components may separate during shipping and storage.
- In a well ventilated area, carefully pour the Eccostock FFP from a small paper cup or dispense from a squeeze bottle into the device being filled.
- Light to moderate vibration is recommended to maximize packing of the material.
- Eccostock FFP bonds well to itself and most other substrates. Mold release wax is recommended in applications where removal from a mold is necessary.
- Shelf life is 6 months if stored in a cool dry place out of direct sunlight at 21 °C (70 °F).
- Elevated temperature curing is required. Select one of the following recommended curing times and temperatures:

### Cure Times and Temperatures

24 hours at 100°C (212°F)

4 hours at 120°C (248°F)

2 hours at 150°C (302°F)