

ECCOSTOCK® HiK Powder

Free Flowing Dielectric Powders

Material Characteristics

- ECCOSTOCK® HiK Powder is a series of granular, free flowing powders of adjusted dielectric properties
- Though these standard powders are extremely low loss, materials of moderate and high loss can be supplied on special order
- ECCOSTOCK® HiK Powder is distinguished by having an extremely stable bulk density. When poured into a cavity, there is little striation physically or in dielectric properties; the material is extremely stable from point to point
- Most of the powders are usable to temperatures in excess of 500 °F (260 °C)
- ECCOSTOCK® HiK Powder maintains consistent electrical characteristics with respect to frequency in the microwave range. These powders have also been treated to be relatively unaffected by changes in temperature and humidity
- ECCOSTOCK® HiK Powder is of course reusable!

Applications

- ECCOSTOCK® HiK Powders are used to fill complex shapes and cavities for microwave experiments. Devices can be immersed in the dielectric powders to test the effect of special dielectric mediums. For example, an antenna can be immerse in ECCOSTOCK® HiK Powder (K=10) and operated to simulate a re-entry plasma
- Waveguides and cavities can be filled to test the effect of dielectric loading

Availability

- ECCOSTOCK® HiK Powder is available in the following dielectric constants: 2.50, 2.75, 3.00, 3.50, 4.00, 5.00, 6.00, 9.00 & 12.00
- Intermediate dielectric constants and Pack-in-Place materials (texture of damp sand) with dielectric constants between 12 and 17 with dissipation factors below 0.001 are available on special order

Instructions for Use

- Tumble the material in its shipping container to insure homogeneity
- Pour the material into the cavity, preferably all at one time
- Jog the powder to a maximum density with high amplitude low frequency motion. For small to medium size fills, an amplitude of 1/4" at a frequency of one cycle per second is adequate. Two minutes per inch of cavity height is generally sufficient time to stabilize the density

Typical Properties

Dielectric Constant	Dissipation Factor	Approximate Bulk Density, g/cc
2.50	0.0004	1.64
2.75	0.0004	1.77
3.00	0.0004	1.84
3.50	0.0004	1.97
4.00	0.0004	2.12
5.00	0.0007	2.21
6.00	0.0007	2.34
9.00	0.0007	2.55
12.00	0.0007	2.70

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