



## Thorndike Corporation

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## TCK AND TCK-500 Series

### Bulletin: 112 – TCK and TCK -500: K =3 -30 Series

#### Material Characteristics

- Thorndike TCK and TCK-500 series of low loss plastic stock with adjustable dielectric constants up to 30.
- Low out gassing properties for space applications
- Low water absorption
- Does not facilitate fungal growth per MIL-STD-810E
- TCK-500 is a similar product, having essentially the same electrical and mechanical properties as TCK, except that is made from a high temperature plastic which allows continuous use at 200°C (390°F), and short term exposure to 260°C (500°F)

#### Applications

- Since water absorption is low, Thorndike TCK and TCK-500 series can be used in outdoor applications
- Thorndike TCK and TCK-500 series material 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.

#### Machining Recommendations

- Thorndike TCK and TCK-500 series materials 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.

#### Typical Properties

- Color: White
- Loss Tangent: <0.002
- Dielectric Strength, kV/mm: >8 (>200 V/mil)
- Volume Resistivity, ohm-cm: >10<sup>12</sup>
- Specific Gravity: 2.2 – 2.5 depending on grade
- Thermal Expansion per °C: 36 x 10<sup>-6</sup>
- Thermal Conductivity: .001 cal-cm/sec-cm<sup>2</sup>-°C  
3.0 BTU-1in/hr-ft<sup>2</sup>-°F
- Service Temperature (TCK): -55 to +110°C  
(-65 to +230 °F)  
short term exposure to 180°C  
(TCK-500): -55 to +200°C  
(-65 to +390°F)  
short term exposure to 260°C.

#### Availability

- Thorndike TCK & TCK-500 Series materials are available in the following dielectric constants: 3 through 30
- Sheet, Bar and Rod stock.
- Other sizes, shapes, thicknesses, dielectrics, and configurations are available upon request

**CALL THORNDIKE CORPORATION FOR ALL YOUR LOW AND HIGH POWER ABSORBER REQUIREMENTS!!!**

