

## PRODUCT DATA SHEET

### DESCRIPTION

Toray TCF4045 is a low dielectric, low density epoxy syntactic film. The material displays both good mechanical and dielectric properties. TCF4045's base resin chemistry features low moisture absorption with good high temperature properties.

### FEATURES

- ▶ Good high temperature properties
- ▶ Lightweight core fill
- ▶ Good dielectric properties

### PRODUCT TYPE

177°C (350°F) Cure, Low Dielectric Epoxy Syntactic Film

### TYPICAL APPLICATIONS

- ▶ Radomes and antennae core fill
- ▶ Low observables
- ▶ Radar transparent structures

### SHELF LIFE

<b>Out Life:</b>	Up to 14 days at ambient
<b>Frozen Storage Life:</b>	6 months at -18°C (< 0°F)

Out life is the maximum time allowed at ambient temperature before cure.\* Ambient is 18–22°C (65–72°F)

*\* Out life tested by handling and cure evaluation. Users may need to separately evaluate out life limits on thicker, more complex parts.*

### TYPICAL NEAT RESIN PROPERTIES

Density	0.61 g/cc (38 pcf nominal)
Dry T <sub>g</sub>	180°C (356°F)
Wet T <sub>g</sub>	166°C (331°F)
Dielectric Constant Per ASTM D 2520	1.57 at 10 Ghz (x-band)
Loss Tangent Per ASTM D 2520	0.0078 at 10 Ghz (x-band)

### PRODUCT FORM

Product Configuration	Film Thickness ~ 1.91 mm (75 mils) (Other thicknesses may be available upon request)
Sheet Size	30.5 cm x 61 cm (12" x 24")



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### MECHANICAL PROPERTIES

Property	Condition	Method	Results	
Compressive Strength	RTD	ASTM D 6641	50.3 MPa	7.3 ksi
Tensile Strength (Dogbone)	RTD	ASTM D 3039	20.7 MPa	3.0 ksi
Flexural Strength	RTD	ASTM D 790	26.9 MPa	3.9 ksi

Average ply thickness 1.47 mm (0.058")

### TYPICAL CURE PARAMETERS

- ▶ Apply full vacuum > 25 inHg, reduce vacuum to 9 inHg
- ▶ Add autoclave pressure to 25–50 psi
- ▶ Heat 1°C/min (2°F/min) to 127°C (260°F), hold for 3 hours
- ▶ Then heat to 179°C (355°F) for 3 hours, cool 3°C/min (5°F/min) to 66°C (150°F) then release vacuum and pressure

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