

# TLY

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**Dimensionally Stable**  
**Low Loss**  
**Low Moisture Absorption**  
**High Peel Strength**  
**Uniform & Consistent DK**

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## APPLICATIONS

Automotive Radars

Satellite Communications

Cellular Communications

Power Amplifiers

LNBS, LNAs, LNCs

Aerospace:

*Radars*

*Guidance Telemetry*

*High Frequency Communication*

*Military*

Taconic has over 35 years of experience coating fiberglass fabric with PTFE (polytetrafluoroethylene). This enables Taconic to manufacture copper clad PTFE/woven glass laminates with exceptionally well controlled electrical and mechanical properties.

Taconic TLY laminates are manufactured from woven fiberglass fabric coated with PTFE interleaved with thin sheets of pure PTFE. The woven matrix produces a more mechanically stable laminate with a more uniform dielectric constant (DK) than traditional non-woven products. The exceptionally low dissipation factor extends the usefulness of this product to 35 GHz and above.

The dielectric constant range is 2.17 to 2.40. For most thicknesses, the dielectric constant can be specified anywhere within this range with a tolerance of  $\pm 0.02$ . In the low dielectric constant range, the dissipation factor is approximately 0.0009 when measured at 10 GHz.

TLY laminates can be sheared, drilled, milled and plated using the accepted methods for PTFE/woven fiberglass laminates. The laminates are dimensionally stable and are resistant to the solvents and reagents used during fabrication. TLY laminates are being used in composite multi-layer circuitboard applications.

Typical applications for TLY laminates include mobile communications systems, microwave transmission devices, phased array antennas, RF components, and automotive and military radars.

TLY laminates are generally ordered clad on one or both sides with 1/2, 1, and 2 oz. electrodeposited copper. Contact our Customer Service Department for alternate claddings.

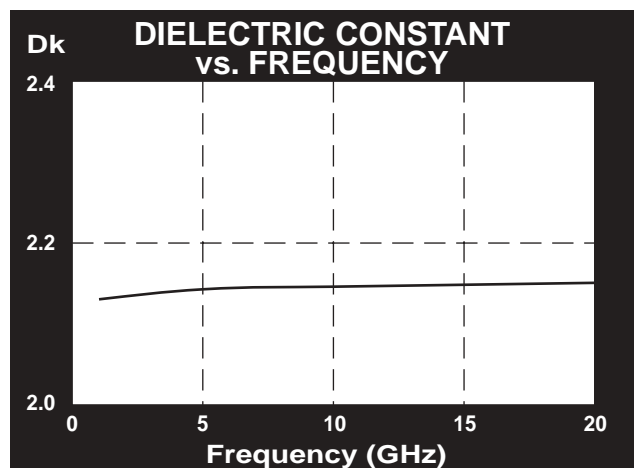
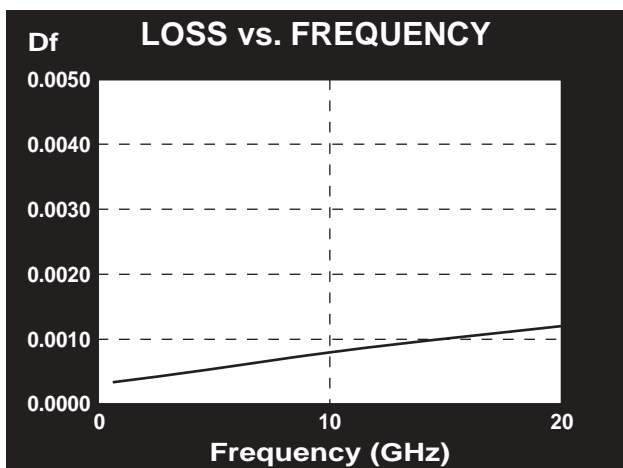
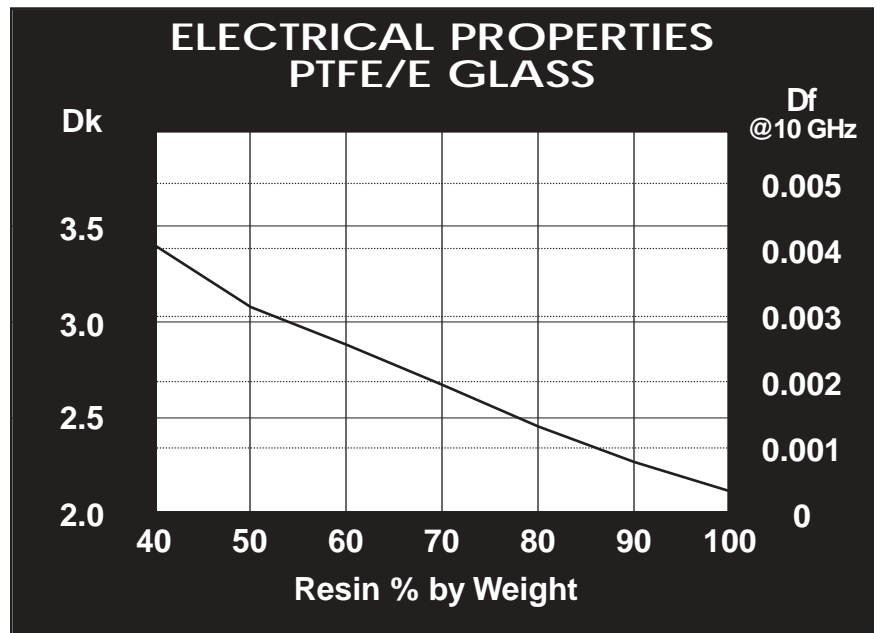
TLY laminates are tested in accordance with IPC-TM 650. A certificate of compliance containing lot-specific test data accompanies each shipment.

See "How to Order" on back page for a complete product listing.

## TLY-5 TYPICAL VALUES

| Property                     | Test Method         | Units           | Value           | Units             | Value           |
|------------------------------|---------------------|-----------------|-----------------|-------------------|-----------------|
| Dielectric Constant @ 10 GHz | IPC-TM 650 2.5.5.5  |                 | 2.20            |                   | 2.20            |
| Dissipation Factor @ 10 GHz  | IPC-TM 650 2.5.5.5  |                 | 0.0009          |                   | 0.0009          |
| Moisture Absorption          | IPC-TM 650 2.6.2.1  | %               | <0.02           | %                 | <0.02           |
| Dielectric Breakdown         | IPC-TM 650 2.5.6    | kV              | >60             | kV                | >60             |
| Volume Resistivity           | IPC-TM 650 2.5.17.1 | Mohm/cm         | 10 <sup>7</sup> | Mohm/cm           | 10 <sup>7</sup> |
| Surface Resistivity          | IPC-TM 650 2.5.17.1 | Mohm            | 10 <sup>7</sup> | Mohm              | 10 <sup>7</sup> |
| Arc Resistance               | IPC-TM 650 2.5.1    | seconds         | >180            | seconds           | >180            |
| Flexural Strength Lengthwise | IPC-TM 650 2.4.4    | lbs./in.        | >12,000         | N/mm <sup>2</sup> | >83             |
| Flexural Strength Crosswise  | IPC-TM 650 2.4.4    | lbs./in.        | >10,000         | N/mm <sup>2</sup> | >69             |
| Peel Strength (1oz copper)   | IPC-TM 650 2.4.8    | lbs./linear in. | 12.0            | N/mm              | 2.1             |
| Thermal Conductivity         | ASTM F 433          | W/m/K           | 0.22            | W/m/K             | 0.22            |
| x-y CTE                      | ASTM D 3386 (TMA)   | ppm/°C          | 20              | ppm/°C            | 20              |
| z CTE                        | ASTM D 3386 (TMA)   | ppm/°C          | 280             | ppm/°C            | 280             |
| UL-94 Flammability Rating    | UL-94               |                 | V-0             |                   | V-0             |

| Type           | Dk   |
|----------------|------|
| TLY-5A         | 2.17 |
| TLY-5          | 2.20 |
| TLY-3          | 2.33 |
| TLT-0   TLX-0  | 2.45 |
| TLT-9   TLX-9  | 2.50 |
| TLT-8   TLX-8  | 2.55 |
| TLT-7   TLX-7  | 2.60 |
| TLT-6   TLX-6  | 2.65 |
| TLE-95         | 2.95 |
| TLC-27         | 2.75 |
| TLC-30         | 3.00 |
| TLC-32         | 3.20 |
| RF-30          | 3.00 |
| RF-35   RF-35P | 3.50 |
| RF-60          | 6.15 |
| CER-10         | 10   |



# How to Order

| Designation | Dielectric Constant | Dielectric Thickness | Dielectric Thickness |
|-------------|---------------------|----------------------|----------------------|
| TLY - 5A    | 2.17 +/- .02        | .0310"               | 0.78mm               |
| TLY - 5     | 2.20 +/- .02        | .0050"               | 0.13mm               |
| TLY - 3     | 2.33 +/- .02        | .0050"               | 0.13mm               |

Standard sheet size is 36" x 48" (914mm x 1220mm). Please contact our Customer Service Department for the availability of other sizes and claddings.

TLY can be ordered with the following electrodeposited copper:

| Designation | Weight          | Copper Thickness | Copper Thickness |
|-------------|-----------------|------------------|------------------|
| CH          | 1/2 oz./sq. ft. | ~ .0007"         | ~18 µm           |
| C1          | 1 oz./sq. ft.   | ~ .0014"         | ~ 35 µm          |
| C2          | 2 oz./sq. ft.   | ~ .0028"         | ~ 70 µm          |

Panels may be ordered cut to size

| Typical Panel Sizes |                |
|---------------------|----------------|
| 12" x 18"           | 304mm x 457mm  |
| 16" x 18"           | 406mm x 457mm  |
| 18" x 24"           | 457mm x 610mm  |
| 16" x 36"           | 406mm x 914mm  |
| 24" x 36"           | 610mm x 914mm  |
| 18" x 48"           | 457mm x 1220mm |

An example of our part number is: TLY-5-0100-CH/CH-18" x 24" (TLY-5-0100-CH/CH-457mm x 610mm)

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