# TRF

# -41, -43

Low – loss ceramic-filled PTFE

High thermal conductivity

Stable DK over temperature

Stable DK over frequency

Very los Z-axis CTE

TACONIC

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# TRF -41 -43

## *Applications*

**Satellite radio**

**RFID**

The TRF range of laminated materials represent a new generation of low-loss, thermally-stable laminated material from Taconic Advanced Dielectric Division.

TRF is woven-glass reinforced for enhanced dimensional-stability and coupled with Taconic's expertise in ceramic technology, TRF exhibits low and consistent Z-axis expansion across a wide range of temperature including and up to soldering conditions.

The range of dielectric-constant may allow designers to make a seamless switch from FR4 in applications where a lower-loss material may be required.

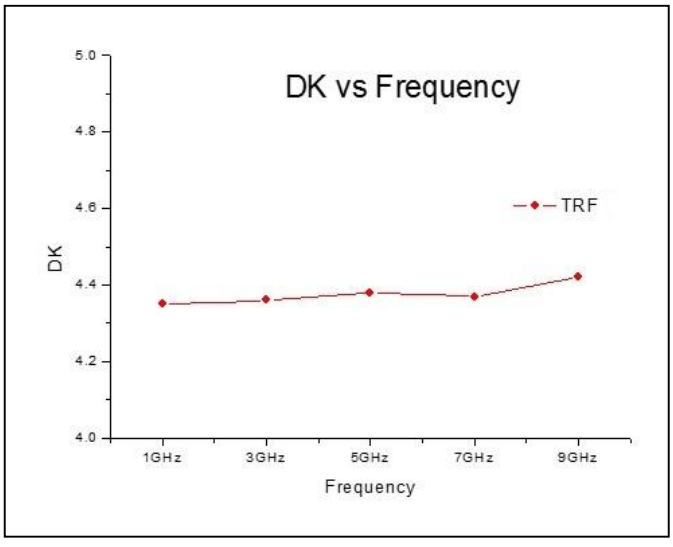
TRF can be sheared, drilled, milled and plated using standard methods for PTFE woven fibre-glass materials.

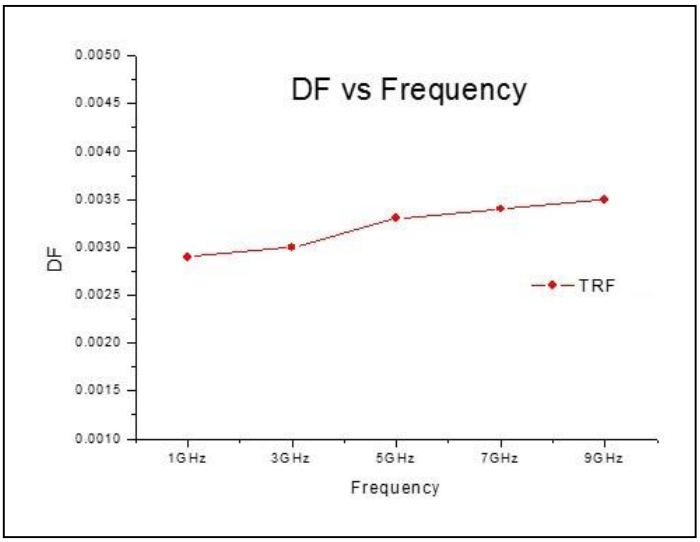
TRF is generally copper-clad with ½ , 1 or 2oz electrodeposited Copper foil and a wide range of panel sizes are available.

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

# TRF-41 & -43 TYPICAL VALUES

| Property | Test Method | Unit | Value | |
|---|---|---|---|---|
| | | | TRF-41 | TRF-43 |
| Dielectric Constant | IPC-TM-650 2.5.5.5.1(m) | 10GHz | 4.1±0.15 | 4.3±0.15 |
| Dissipation Factor | IPC-TM-650 2.5.5.5.1(m) | 10GHz | 0.0035 | 0.0035 |
| Moisture Absorption | IPC-TM-650 2.6.2.1 | % | 0.06 | 0.06 |
| Surface Resistivity | IPC-TM-650 2.5.17.1 | Mohm | $3.0\times10^7$ | $3.0\times10^7$ |
| Volume Resistivity | IPC-TM-650 2.5.17.1 | Mohm·cm | $8.0\times10^7$ | $8.0\times10^7$ |
| Flexural Strength (Lengthwise) | IPC-TM-650 2.4.4 | lbs / in<br>$N/mm^2$ | 17,000<br>177 | 17,000<br>177 |
| Flexural Strength (Crosswise) | IPC-TM-650 2.4.4 | lbs / in<br>$N/mm^2$ | 15,000<br>103 | 15,000<br>103 |
| Peel Strength | IPC-TM-650 2.4.8 | lbs / in<br>N/mm | >8<br>> 1.4 | >8<br>> 1.4 |
| Thermal Conductivity | IPC-TM-650 2.4.50 | W/m-k | 0.43 | 0.43 |
| C.T.E (X axis) | ASTM D 3386 (TMA) | ppm/℃<br>(50~150℃) | 9 | 9 |
| C.T.E (Y axis) | ASTM D 3386 (TMA) | ppm/℃<br>(50~150℃) | 9 | 9 |
| C.T.E (Z axis) | ASTM D 3386 (TMA) | ppm/℃<br>(50~150℃) | 40 | 40 |
| Flammability | | UL-94 | | V-0 |




*All reported values are typical and should not be used for specification purposes. In all instances, the user shall determine suitability In any given application.*

# How to order

| Designation | Dielectric Constant |
|---|---|
| TRF - 41 | 4.10 ± 0.15 |
| TRF - 43 | 4.30 ± 0.15 |

| Typical Thickness | |
|---|---|
| 0.0080” | 0.20mm |
| 0.0160” | 0.41mm |
| 0.0240” | 0.61mm |
| 0.0320” | 0.81mm |
| 0.0400” | 1.02mm |
| 0.0640” | 1.63mm [1] |
| 0.1200” | 3.05mm [1] |

[1]Parts of thickness specification not less than 64mil products would be IPC-4103/class B.

| Available Copper Cladding | | | | | | |
|---|---|---|---|---|---|---|
| Designation | Weight | Copper Thickness | | $R_{ms}$ Treated Side | | Description |
| CLH | 1/2 oz./sq. ft. | ~ .0007” | ~ 18㎛ | 13µin | 0.3㎛ | Reverse treated / Electrodeposited |
| CL1 | 1 oz./sq. ft. | ~ .0014” | ~ 35㎛ | 13µin | 0.3㎛ | Reverse treated / Electrodeposited |
| CH | 1/2 oz./sq. ft. | ~ .0007” | ~ 18㎛ | 25µin | 0.6㎛ | Very Low Profile / Electrodeposited |
| C1 | 1 oz./sq. ft. | ~ .0014” | ~ 35㎛ | 27µin | 0.7㎛ | Very Low Profile / Electrodeposited |
| C2 | 2 oz./sq. ft. | ~ .0028” | ~ 70㎛ | 77µin | 2.0㎛ | Standard Profile / Electrodeposited |

* Other copper claddings can be made available on request. Please call for information

* Our standard sheet size is 36” x 48” (914mm x 1220mm). Please contact our Customer Service Department for availability of other sizes.

**An example of our part number is: TRF-43-0640-CL1/CL1-18” x 24” (457mm x 610mm)**

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