WÜRTH ELEKTRONIK MORE THAN YOU EXPECT

## Thermoplastic Polyurethan (TPU)

| **Properties of TPU** | | Tickness 0.10 mm Typical Values | Unit Metric | Test method |
|---|---|---|---|---|
| Adhesive strength TPU/ CU | Copper thickness 18 µm Copper Foil: IPC-4562/3 (HTE | 0.96 | N/mm | IPC-TM-650 2.4.9* |
| Adhesive strength TPU/ FR4 | FR4 TG150 | 1.59 | | |
| Moisture absorption | 37 °C / 80% r.h. | 1,23 | % | Empirically |
| Density | | 1.15 | g/cm³ | Empirically |
| Thermal conductivity | | 0.17 | W/mK | Empirically |
| Dielectric strength | Dry | 91.2 | kV/mm | DIN EN 60243-1/2 |
| | 72 h in a drying cabinet 85 % r.h. | | | |
| | 72 h in a humidity chamber | 78.9 | | |
| Dielectric constant $e_r$ | @ 1 MHZ | 4.69 | | IEC60250 |
| | @ 100 MHZ | 4,23 | | |
| | @ 1 GHZ | 3.31 | | |
| Dielectric dissipation factor tan α | @ 1 MHZ | 0.086 | | IEC60250 |
| | @ 100 MHZ | 0,094 | | |
| | @ 1 GHZ | 0.084 | | |
| Thermal decomposition | | > 250 | °C | Empirically |
| Continuous operating temperature | | -20 bis +80 | °C | Empirically |
| Softening area | | 155 - 185 | °C | Empirically |
| CTE x-y range | Heating rate 3 °C/min | 201.8 | ppm/K | TMA |
| Glass transition temperature | Heating rate 3 °C/min | -20 | °C | TMA |
| Hydrolysis resistance | | ✓ | | Empirically |
| Microbe resistance | | ✓ | | Empirically |
| Weldability | | ✓ | | Empirically |
| Thermoforming | | ✓ | | Empirically |

| **Reliability Tests STRETCH.flex** | | Typical Values | Unit Metric | Test method |
|---|---|---|---|---|
| Washability | 25x washing cycles | ✓ | - | DIN EN ISO 6330 Method 5A |
| Biocompatible base material | | ✓ | - | ISO 10993-part 5 |
| Resistance in solderability (Reflow)** | | ✓ | - | Empirically |

*Based on IPC

** Solder paste: Fa. Indium Indalloy 282

Low temperature solder paste (Sn/Bi)

Drying: 4 hours at 80 °C.

STRETCH.flex Technology is a technology based on stretchable printed circuit boards utilizing tracks made of copper. The common standards (Perfag, IPC) are not applicable here. All qualification tests are only based on those standards. The suitability for the planned application must be checked by the user before use. The base material, thermoplastic polyurethane, is ROHS listed.