



Sheldahl T1777

Low-Flow Flame Retardant Adhesive on Polyimide Film

Description

T1777 tapes join Sheldahl's low flow self-extinguishing adhesive with polyimide film and are designed for dielectric applications such as flexible ribbon cables, coverlays, and buss-bars. The material's superior dimensional stability, chemical resistance, dynamic flexibility, and high temperature tolerance provide end-users with solutions that are unattainable with other products.

- Unique low flow adhesive makes T1777 ideal for uses in connector technologies where adhesive "squeeze-out" is a problem.
- High bond strength provides superior adhesion to copper, tin, and standard FFC/FPC materials
- Low variation in adhesive thickness ($\pm .1$ mil) simplifies production
- Elimination of post bake shortens production time, cuts costs, prevents copper oxidation, and eliminates a major cause of dimensional change
- Finished products have a UL minimum continuous use temperature rating of 125°C
- Cables made with T1777 withstand >1000 hours of hydrolysis testing
- T1777 is registered UL 94 VTM-0 (E39696)

Processing Recommendations

Roll-to-Roll Laminating

| | SAE | Metric |
|----------------------|--------------------------------|----------------------------|
| Hot Roll Temperature | 330 - 390°F | 160 - 195°C |
| Pressure (minimum) | 200 PSI | 14 bar |
| Line Speed | 12-20 FPM | 2-8 M/min. |
| Exit Temperature | 295°F (2.5 in. from nip point) | 145°C (6cm from nip point) |
| Pre-Bake | 250°F for 1 hour | 120°C for 1 hour |

Platen Press

| | | |
|----------------------------|------------------|------------------|
| Platen Temperature | 275-300°F | 135-160°C |
| Pressure | 100-200 PSI | 7-14 bar |
| Time (cool under pressure) | 10 min to 120°F | 10 min to 50°C |
| Pre-Bake | 250°F for 1 hour | 120°C for 1 hour |

**Please note, actual values will depend on many factors including but not limited to: number of rollers, number of heated rollers, copper thickness and cable pitch, wrap angle of tape on heated rollers prior to lamination, run speed, etc. Sheldahl suggests use of standard industry tests to confirm encapsulation and adhesion quality. Post curing of finished cables is not needed to achieve temperature resistance. Contact Sheldahl for assistance enhancing product performance.*

| PROPERTY | Test Method | TYPICAL DATA ^A |
|---|------------------------------|---------------------------------------|
| Dimensional Stability, (maximum, %) | IPC-TM-650, Method 2.2.4 | 0 ± .10 |
| Peel Strength, minimum, (lb./in. – width) | IPC-TM-650, Method 2.4.9 | 10.0 |
| Flow, maximum, (mils) | IPC-TM-650, Method 2.3.17.1 | 1.5 ^(B) |
| Volatile Content (maximum %) | IPC-TM-650, Method 2.3.37 | 1.5 |
| Chemical Resistance | IPC-TM-650, Method 2.3.2 | 90% ^(D) |
| Dielectric Constant, maximum (at 1MHz) | IPC-TM-650, Method 2.5.5.3 | 3.4 ^(E) |
| Dissipation Factor, maximum (at 1 GHz) | IPC-TM-650, Method 2.5.5.3 | 0.011 ^(E) |
| Volume Resistivity, (minimum ohm-cm) | IPC-TM-650, Method 2.5.17 | 1.5 x 10 ¹⁷ ^(E) |
| Surface Resistance, (minimum, ohms/sq.) | IPC-TM-650, Method 2.5.17 | 1.5 x 10 ¹⁷ ^(E) |
| Dielectric Strength, (minimum volts/mil) | ASTM-D-149 | 7700 ^(E) |
| Fungus Resistance | IPC-TM-660, Method 2.6.1 | Non-Nutrient |
| Moisture Absorption, (maximum %) | IPC-TM-650, Method 2.6.2 | 2.8 |
| Flammability 94 UL VTM-0 | UL Test Method 94 VTM-0 | Pass ^(C) |
| Specific Gravity | | 1.68 |
| Glass Transition Temperature | | 20°C |
| Adhesive Tack Temperature | Clarkston Bar | 190 - 200°F |
| Tensile Strength, (minimum lb./in. ²) | ASTM-D-882 | 32,000 |
| Tensile Modulus, (psi) | ASTM-D-882 | 370,000 |
| Elongation, (minimum %) | ASTM-D-882 | 72 |
| Initiation Tear Strength, (gms/mil) | IPC-TM-650, 2.4.16, Method A | 600 ^(E) |
| (A) Sheldahl does not guarantee, nor will it accept obligation or liability based on the use of this data. Data subject to change without notice. | | |
| (B) Based on 1.5 mil adhesive. | | |
| (C) Based on standard constructions using flame retardant adhesives, consult factory for data on specific constructions. | | |
| (D) Except chlorinated solvents and ketones. | | |
| (E) Based on Film alone at 1 mil thickness. | | |

Storage and Shelf Life

Guaranteed shelf life is six months from date of shipment when stored at ≤20°C and ≤50% RH.