

TECHNICAL DATA SHEET

Document number: TTDS 122
Issue: 1

Date: July 2005

SMS-TMS Heat Shrink Tubing

- MATERIAL DESCRIPTION:** Flame retarded, radiation cross-linked 3:1 shrink ratio polyolefin heat-shrinkable tubing.
- USE:** The tubing meets the performance requirements of MIL-DTL-23053/5 classes 1. The identification marks are permanent immediately after printing and remain legible even when exposed to solvents, fuels and oils. The printed tubing meets the mark permanence requirements of MIL-M81531 and MIL-STD-202 both before and after shrinking.
The sleeves are low profile and lightweight. They may be used to provide strain relief and insulation in addition to identification. They are available in 4 widths (6, 9, 12 and 19 mm)..
- PRINT METHOD:** Thermal transfer: Tyco T107M-SMS-PRINTER,
- SERVICE TEMPERATURE:** -55°C to +135°C
- COLORS:** White or Yellow.

| Property | Value | Test Method |
|------------------------------------|----------------------------------|-------------------------------|
| 1. General | | |
| - Total thickness | Maximum 0.5 mm | Micrometer |
| - Shrink ratio | 3:1 | |
| 2. Physical properties | | |
| - Tensile strength | 10.3 MPa (1500 psi) minimum | MIL-DTL-23053, section 4.6.13 |
| - Ultimate elongation | 200 % minimum | MIL-DTL-23053, section 4.6.13 |
| - Heat aging 168 hours at 175°C | minimum 100% ultimate elongation | MIL-DTL-23053, section 4.6.9 |
| - Heat shock 4 hours at 250°C | no cracking, dripping or flowing | MIL-DTL-23053, section 4.6.8 |

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|---|---|---|
| 3. Electrical properties - Dielectric strength | 19.7 kV/mm (500V/mil) minimum | ASTM D 2671 |
| 4. Chemical properties - Flammability - Corrosive effect 16 hours at 175°C | No flaming or glowing after 1 minute Non-corrosive (copper contact) No pitting or blackening (copper mirror) | ASTM D 2671, procedure B MIL-DTL-23053, section 4.6.10.1 MIL-DTL-23053, section 4.6.10.2 |
| 5. Chemical resistance of text printed in T107M - Mil-Std-202F Method 215J 3 cycles of 3 minutes immersion in specified fluids, followed by 10 rubs with a toothbrush after each immersion Skydrol* Isopropylalcohol Diesel | Flat samples Little smearing but print easily legible. No smearing. Print easily legible. Little smearing but print easily legible. | Shrunk samples Smearing but print easily legible. No smearing. Print easily legible. No smearing. Print easily legible. |

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| | | |
|---|---|---|
| Water | No smearing. Print easily legible | Little smearing but print easily legible. |
| Eurosuper | Smearing but print easily legible | Little smearing but print easily legible. |
| Ethanol | Little smearing but print easily legible. | Little smearing but print easily legible. |
| Ethylacetate | Smearing but print easily legible | Little smearing but print easily legible |
| Sabesto oil** | Smearing but print easily legible | Little smearing but print easily legible |
| - Mil-M81531 24 hours immersion in specific fluids, followed by 20 rubs with a pencil erasure | Flat samples | Shrunk samples |
| Skydrol* | Little smearing but print easily legible | Severe smearing but print legible |
| Isopropylalcohol | No smearing. Print easily legible | Little smearing but print easily legible. |
| Diesel | Little smearing but print easily legible | Severe smearing but print legible. |
| Water | No smearing. Print easily legible | Little smearing but print easily legible. |
| Eurosuper | Severe smearing but print legible | Little smearing but print easily legible. |
| Ethanol | No smearing. Print easily legible. | No smearing. Print easily legible. |
| Ethylacetate | Smearing but print legible | No smearing. Print still legible. |
| Sabesto oil** | Severe smearing but print legible | Little smearing but print easily legible. |

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| <p>6. UV light stability - UV filter</p> <p>30 days in Suntester (simulates 1 year outdoor exposure)</p> | <p>Flat samples</p> <p><u>White</u> Moderate discoloration of the tube (yellowing). No visible effect on text.</p> <p><u>Yellow</u> Severe discoloration of the tube (yellow color disappears). No visible effect on text.</p> | <p>Shrunk samples</p> <p><u>White</u> Moderate discoloration of the tube (yellowing). No visible effect on text.</p> <p><u>Yellow</u> Severe discoloration of the tube (yellow color disappears). No visible effect on text.</p> |
| <p>7. UV light stability - glass filter</p> <p>30 days in Suntester (simulates 1 year exposure behind window glass)</p> | <p>Flat samples</p> <p><u>White</u> Moderate discoloration of the tube (yellowing). No visible effect on text.</p> <p><u>Yellow</u> Severe discoloration of the tube (yellow color disappears). No visible effect on text.</p> | <p>Shrunk samples</p> <p><u>White</u> Moderate discoloration of the tube (yellowing). No visible effect on text.</p> <p><u>Yellow</u> Severe discoloration of the tube (yellow color disappears). No visible effect on text.</p> |
| <p>8. Temperature stability</p> <p>- Minimum recovery temperature</p> <p>- Maximum storage temperature</p> | <p>85°C</p> <p>40°C</p> | |
| <p>9. Humidity resistance</p> <p>- 30 days at 45°C, 85 % R.H</p> | <p>Flat samples</p> <p>No visible effect</p> | <p>Shrunk samples</p> <p>No visible effect</p> |

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|-----------------------------------|---|--|
| 10. Shelf life of cassette | 1 year when stored below 25°C in its original packaging | |
|-----------------------------------|---|--|

- * Skydrol is a registered trademark from Solutia
- ** Sabesto is a registered trademark from Würth

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