



TECHNICAL DATA SHEET

TMS-90-SCE

Document number: TTDS-212
Issue: 1
Date: December 2011

HEAT SHRINK MARKER SLEEVE

| | |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Material Description: | General purpose flame retarded, radiation cross-linked, modified polyolefin heat-shrinkable marker sleeve. Assembled as organized cut sleeves in a "ladder" configuration. 3:1 and 2:1 shrink ratio products available. |
| Use: | Identification of wires and cables by computer-based printing onto sleeves. Sleeves can also provide terminal insulation, strain relief and mechanical protection. Suitable for a wide variety of applications, including aerospace, military and rail applications. |
| Print Method/Ribbon: | See document 411-121005 – "Customer printer ribbon matrix", for current recommended printer / ribbon systems. Sleeves may also be laser marked using the LMS 9000 ¹ ¹ Contact a TE Sales Engineer for further details |
| Service Temperature: | -55°C to +135°C (-67°F to +275°F). |
| Maximum Storage Temperature: | 40°C (104°F). |
| Minimum Recovery Temperature: | 120°C (248°F) |
| Colors: | White and Yellow. |
| Shelf Life | Storage life (pre-installation) shall be in compliance with AMS SAE 23053/5. 5 years when stored between 18°C to 35°C (64°F to 95°F). |
| Specifications / Approvals: | UL recognised standard 224 (File E35586). CSA certified (File LR31929). AMS SAE 23053/5 Class 1 NFF 00608 Cat A SAE AS 5942 Mark Adherence MIL 202F Method 215 Resistance to Solvents |

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Page: 1 of 3

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PERFORMANCE:

Physical Properties

| | |
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| Tensile Strength: | 10.3MPa minimum (SAE-AMS-DTL-23053/5). |
| Ultimate Elongation: | 200% minimum (SAE-AMS-DTL-23053/5). |
| 2% Secant Modulus: | 172.4MPa maximum (SAE-AMS-DTL-23053/5). |
| Longitudinal Change: | ±5% (SAE-AMS-DTL-23053/5). |

Thermal Properties

| | |
|-------------------------------------|------------------------------------------------------------------------------------|
| Heat Ageing: | 100% UE retained and print legible after 336 hours at 175°C (347°F). |
| Heat Shock: | No cracking, dripping or flowing and print legible after 4 hours at 250°C (482°F). |
| Low Temperature Flexibility: | No cracking after 4 hours at -55°C (-67°F), followed by mandrel bend. |

Other Properties

| | |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resistance To Fungus: | ISO EN 846 Method B: 56 days exposure. No change in mechanical and electrical properties. Print legible. |
| Flammability: | UL224 (C22.2 No. 198.1-99) Flame Test – All Tubing FED STAN 228 method 5221 ASTM D876 Burn time 30 seconds maximum. No flag burn; no burning of cotton or dripping. |
| Water Absorption: | 0.5% maximum (ASTM D570), 24hours at 23°C. |
| Dielectric Strength: | 19.7MV/m minimum (ASTM D2671). |

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Page: 2 of 3

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FLUID RESISTANCE:

Sleeve properties after 24 hour immersion at 23°C. Samples tested 30 minutes after removal from the fluid in accordance with SAE AMS 23053/5, Class 1.
 Printed samples rubbed with eraser in accordance with SAE AS 81531.

| THREAT | TEST | TYPICAL RESULT | LEGIBILITY |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------|------------|
| Hydraulic Fluid (MIL PRF 5606) | Tensile Strength (MPa) | 11 | Pass |
| | Dielectric Strength (kV/mm) | 63 | |
| Military Jet Fuel JP-8 (MIL-DTL-83133) | Tensile Strength (MPa) | 11 | Pass |
| | Dielectric Strength (kV/mm) | 67 | |
| Rocket Propellant JP-10 (MIL-P-87107) | Tensile Strength (MPa) | 10 | Pass |
| | Dielectric Strength (kV/mm) | 40 | |
| Synthetic Lubricating Oil, Turbo prop and turbo jet aircraft gas turbines (MIL PRF 7808) | Tensile Strength (MPa) | 14 | Pass |
| | Dielectric Strength (kV/mm) | 53 | |
| Synthetic Lubricating Oil, Civil and military aircraft gas turbines (MIL PRF 23699) | Tensile Strength (MPa) | 15 | Pass |
| | Dielectric Strength (kV/mm) | 56 | |
| 5 % NaCl (A-A-694) | Tensile Strength (MPa) | 16 | Pass |
| | Dielectric Strength (kV/mm) | 60 | |
| De-icing Fluid (SAE AS 8243) | Tensile Strength (MPa) | 15 | Pass |
| | Dielectric Strength (kV/mm) | 52 | |
| Synthetic Hydraulic Fluid Military aircraft, Fire Resistant, Hydrocarbon Base, Aircraft (MIL-PRF-83282) | Tensile Strength (MPa) | 15 | Pass |
| | Dielectric Strength (kV/mm) | 53 | |

For full product performance details see TE Connectivity specification RW-2530

Some types of neoprene insulation used in jackets contain additives that can migrate to the surface and discolor the polyolefin TMS-90-SCE sleeves. Any discoloration is dependent on the composition of the neoprene, combined with application conditions. Users should independently evaluate the suitability of TMS-90-SCE sleeves for applications involving neoprene-jacketed cables.

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 Page: 3 of 3

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