TECHNICAL DATA SHEET

TMS-90-SCE

HEAT SHRINK MARKER SLEEVE

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

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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PERFORMANCE:

Physical Properties

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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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.