



# TECHNICAL DATA SHEET

Document number: TTDS-108

Issue: 5

Date: May 2012

## HX-SCE Heat shrinkable sleeves

**MATERIAL DESCRIPTION:**

Thin wall, zero-halogen, low smoke, low toxicity, radiation cross-linked, UV stabilised polyolefin heat-shrinkable tubing, assembled as cut sleeves organized in a ladder format.

**USE:**

Identification of wires and cables by computer-based printing onto sleeves. Ideal for applications where LFH characteristics are critical. The self extinguishing properties with low smoke and low toxic fume emissions make this product ideal for use in enclosed spaces such as mass transit, marine and industrial installations. This product is not recommended where strain relief properties are required.

**PRINT METHOD/RIBBON:**

Refer to TE Identification TT Printer Product Ribbon Matrix Document 411-121005

**CONTINOUS OPERATING TEMPERATURE:**

-55°C to +105°C (-40°F to +221°F).

**MINIMUM RECOVERY TEMPERATURE:**

120°C (248°F).

**COLOURS:**

White or Yellow. Other colors available on request.

**FLAMMABILITY:**

Self-extinguishing (ASTM D2671 Procedure B)  
Maximum flame spread index,  $Is \leq 35$  (ASTM E 162)

**OXYGEN INDEX:**

34% minimum (BS EN ISO 4589-2 [1996]).

**SMOKE EMISSION ( $A_o$ )**

0.017 maximum (BS 6853 [1999] Annex D.8.3).

**SMOKE DENSITY**

ASTM E 662 Maximum  $D_s$  (1.5)  $\leq 100$ ,  $D_s(4) \leq 200$   
(Flaming and non flaming modes)

**TOXIC FUME (R)**

< 1 (BS 6853 [1999] Annex B – Mass based test method - NF X 70-100)

**LUL TOXIC FUME (ELEMENTAL ANALYSIS):**

No Halogens, P, S, or N sources above trace level  
(1-085 A3 Fire Safety Performance of Materials).

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<b>DIELECTRIC STRENGTH:</b>	15kV/mm minimum.
<b>WATER ABSORPTION:</b>	1% maximum after 24 hours at 23°C (73°F).
<b>COPPER MIRROR CORROSION:</b>	8% maximum after 16 hours at 150°C (302°F).
<b>LONGITUDINAL CHANGE:</b>	+5% to -10%.
<b>TENSILE STRENGTH:</b>	7MPa minimum.
<b>ULTIMATE ELONGATION:</b>	80% minimum.
<b>SECANT MODULUS:</b>	200MPa maximum at 2% elongation.
<b>UV RESISTANCE:</b>	Tensile Strength > 90% & Ultimate Elongation > 40% of original value after 1000 hours (ASTM G53: UVA [100% dry cycle]; UVB [8 hours dry/4 hours wet cycle]).
<b>PRINT PERMANENCE:</b>	
- ADHERENCE	SAE AS5942 <sup>1</sup> : 1Kg load 50 rubs: Legible.
- FLUID RESISTANCE	MIL-STD-202 Method 215: 3 cycles, 30 brush strokes: Legible.  BS EN 50343: 2003: Appendix H: Legible.  London Underground specific test fluids to CC3349: Legible.

<sup>1</sup> SAE AS81531 cancelled Oct 2011, superseded by SAE AS5942.

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### FLUID RESISTANCE, DETAIL:

THREAT	TEST	EFFECT
Xylene / butylacetate / cyclohexanone mix (Paint stripper)	10 Cycles, Crockmeter	Print legible
Diesel	10 Cycles, Crockmeter	Print legible
Tunnel dust/white spirit	LUL C3349 (72hours, 20 strokes dry tissue)	Print legible
Water	LUL C3349 (72hours, 20 strokes dry tissue)	Print legible
Tunnel Dust and Oil (50%/50%)	LUL C3349 (72hours, 20 strokes dry tissue)	Print legible
Tunnel Dust and Water (50%/50%)	LUL C3349 (72hours, 20 strokes dry tissue)	Print legible
White Spirits	LUL C3349 (72hours, 20 strokes dry tissue)	Print legible
Diesel	LUL C3349 (72hours, 20 strokes dry tissue)	Print legible
Grease	LUL C3349 (72hours, 20 strokes dry tissue)	Print legible
Wash cycle test	25 cycles at 75°C (167°F), 25 wipes	Print legible

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### FLUID RESISTANCE, DETAIL:

(Continued)

THREAT	TEST	EFFECT
Glycol rail de-icer (50% glycol/50% water)	LUL C3349 (72hours, 20 strokes dry tissue)	Print legible
Cleaning solvent	LUL C3349 (72hours, 20 strokes dry tissue)	Print legible
Surface Cleaner (PGP500)	LUL C3349 (72hours, 20 strokes dry tissue)	Print legible
Multi-Purpose Graffiti remover gel	LUL C3349 (72hours, 20 strokes dry tissue)	Print legible
CGR gel (Chewing gum remover)	LUL C3349 (72hours, 20 strokes dry tissue)	Print legible
IRM 902 oil	BS EN 50343 (24 hours at 50°C (122°F) 10 cycles with Crockmeter)	Print legible
Hydrochloric acid 5% solution	BS EN 50343 (1 minute at 23°C (73°F) 10 cycles with Crockmeter)	Print legible
Sodium Hydroxide 5% solution	BS EN 50343 (1 minute at 23°C (73°F) 10 cycles with Crockmeter)	Print legible
Heat Aging	BS EN 50343 (240hrs 120°C (248°F), 10 cycles with Crockmeter)	Print legible
Wash cycle test	25 cycles at 75°C (167°F), 25 wipes with cloth	Print legible

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### FLUID RESISTANCE, DETAIL:

*(Continued)*

THREAT	TEST	EFFECT
Aircraft fuel (ISO 1817 Liquid B)	24 hours at 40°C (104°F) then 25 strokes dry tissue; IEC 60684-2 – Tensile Strength and Ultimate Elongation	Print legible; 4MPa TS & 90% UE retained
Silicone fluid (S1714)	24 hours at 50°C (122°F) then 25 strokes dry tissue; IEC 60684-2 – Tensile Strength and Ultimate Elongation	Print legible; 4MPa TS & 90% UE retained
Propan-2-ol	24 hours at 23°C (73°F) then 25 strokes dry tissue; IEC 60684-2 – Tensile Strength and Ultimate Elongation	Print legible; 4MPa TS & 90% UE retained
De-icing fluid (50% ethylene glycol in water)	24 hours at 23°C (73°F) then 25 strokes dry tissue; IEC 60684-2 – Tensile Strength and Ultimate Elongation	Print legible; 4MPa TS & 90% UE retained
Sullage fluid (formaldehyde/cresol)	24 hours at 23°C (73°F) then 25 strokes dry tissue; IEC 60684-2 – Tensile Strength and Ultimate Elongation	Print legible; 4MPa TS & 90% UE retained

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