

ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

**REFLECTIVE SLEEVING, WOVEN POLYESTER,
ALUMINUM FOIL LAMINATED WITH ADHESIVE**

WSS-M99G173-A

1. SCOPE

This standard defines the material requirements for a polyester substrate with a polymeric adhesive laminating the substrate to an exterior aluminum foil. The polyester substrate is a combination of polyester monofilament and polyester multifilament. The final product can be either a sleeve version; or a flat tape with a hook and loop closure and a foil overlap to enclose the hook and loop closure.

2. APPLICATION

This specification was released originally for material used to provide thermal protection for engine wires used in high temperature applications.

3. REQUIREMENTS

Material specification requirements are to be used for initial qualification of materials.

3.1 QUALITY SYSTEM REQUIREMENTS

Material suppliers and part producers must conform to the Company's Quality System Requirements.

3.2 INFRARED SPECTROPHOTOMETRY AND/OR THERMAL ANALYSIS

IR spectra and thermograms established for initial approval shall constitute the reference standard and shall be kept on file at the designated material laboratory. All samples shall produce IR spectra and thermograms that correspond to the reference standard when tested under the same conditions.

3.3 CONDITIONING AND TEST CONDITIONS

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Date	Action	Revisions
2015 12 15	Editorial	Para 3.5 corrected ASTM To D903 G. Kowalski, NA
2000 09 26	Revised	Updated A. Cockman
1997 05 02	Activated	D. W. Whyte

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3.4 POLYESTER PHYSICAL PROPERTIES

3.4.1	Polyester Monofilament Diameter (ASTM D 204)	0.254 +/- 0.00762 mm
3.4.2	Polyester Multifilament Size, denier	1250
3.4.3	Tensile Strength, min (ASTM D 2256)	
	Polyester Monofilament, N	37.81 +/- 6.67
	Polyester Multifilament, N	33.36 +/- 6.67
3.4.4	Elongation (ASTM D 2256)	
	Polyester Monofilament, %	15 - 30
	Polyester Multifilament, %	22 - 38
3.4.5	Linear Shrinkage (ASTM D 204, after 0.5 h at 175 °C)	
	Polyester Monofilament, %	4.5 +/- 1
	Polyester Multifilament, %	4.5 +/- 1

3.5 PEEL STRENGTH (foil from fabric)
(ASTM D 903, 30 minute immersion at
23 +/- 1 °C)

Samples are cut to 10 inches long. Each sample tested is subjected to one of the following fluids: distilled water, 3 % salt water solution, 10W-40 motor oil or brake fluid. Samples (including the overlap of the wrappable version) must meet at least one of the following requirements:

- Achieve peel strength value of 175.13 N/m, min
- Adhesion to the fabric shall exceed the strength of the aluminum foil substrate.

3.6 LOW TEMPERATURE FLEXIBILITY

No sign of cracking or delamination of the foil laminate after the sleeve is held at - 40 °C for 5 h, and then wrapped around a mandrel which is 2 times the nominal diameter of the sleeve. Sample length for the test is 304.8 mm.