

1. Scope

Detail specifications for braided EMI shields incorporating silver plated, Class I, ARACON® fiber. Braided EMI shields per this specification are intended for high reliability applications.

2. Specifications

2.1 Construction

Braided EMI shields shall be 100% ARACON® fiber. The number of carriers and ends shall be as specified in Table II.

2.2 Materials

Silver over copper plated DuPont™ Kevlar® brand aramid fiber.

2.3 Mechanical Properties

- a) Nominal size and weight shall be as specified in Table II.
- b) Suitable wire bundle range shall be as specified by Table II.
- c) Braided EMI shields shall be designed for an optical coverage of 90% minimum.
- d) Braided EMI shields shall withstand 50,000 flexures of ±90° around a mandrel no greater than 10 times the nominal braid diameter with minimal performance degradation.
- e) Minimum continuous length shall be 10 feet.

2.4 Environmental Properties

- a) Operating temperature shall be -110°C to +150°C
- b) Braid shall withstand thermal shock per MIL-STD-202, Method 107, Test Condition B-2
- c) Braided EMI shields shall withstand the fluids specified in Table I

JP-8 Military Jet Aircraft Fuel per MIL-DTL-83133	Methyl Isobutyl Ketone per ASTM D-1153
Lubricating Hydraulic Fluid per MIL-PRF-5606	Solvent per ASTM D-740 MEK
Coolant Fluid, Silicate Ester HT per MIL-C-47220B	Solvent 3M Novec HFE-72DE (methyl-ethyl-HFE/DCE blend)
Coolant Fluid, Polyalphaolefin per MIL-PRF-87252	Solvent 3M Novec HFE-7200 (ethyl-HFE blend)
Cleaning Compound, Aerospace Equipment per MIL-PRF-87937	Corrosion Inhibitor, Type III per MIL-PRF-81309
Cleaning Compound, Aircraft Surface per MIL-C-43616	Deicing/Anti-icing Fluid, Generic, Runways and Taxiways per SAE AMS 1435
Deicing/Anti-Icing Fluid, Aircraft, SAE Type I per SAE AMS 1424	Deicing/Anti-icing Fluid, Aircraft, SAE Type IV (Propylene Glycol) per SAE AMS 1428
JP-4 Turbine Fuel per MIL-DTL-5624	Deicing/Anti-icing Fluid, Aircraft, SAE Type I (Ethylene Glycol) per SAE AMS 1424
JP-5 Turbine Fuel per MIL-DTL-5624	Isopropyl Alcohol per TT-I-735
Cleaning Compound, Aircraft, Exterior per MIL-PRF-85570	Lubricating Oil per MIL-PRF-23699 (Aeroshell 500)
Fire Extinguishing Foam	Lubricating Hydraulic Fluid per AS1241 (Skydrol 5)
Refrigerant, R-134 (under pressure)	


Table I - Fluids

- d) Braided EMI shields shall exhibit less than 1% Total Mass Loss (TML) and 0.1% Collected Volatile Condensable Materials (CVCM) when tested per ASTM E-595. Water vapor recovered (VMR) is considered when performing calculations.
- e) Braided EMI shields shall not support the growth of fungus when tested in accordance with MIL-STD-810, Method 508.5.

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REV	ECO #	DATE	INIT.	APPROVALS		FSCM NO.		Carlisle IT 206 Jones Blvd. Pottstown, PA 19464
C	165153	3/18/16	JRB	DEPT.	DATE	64639		
D	165423	8/11/16	JRB	DWN DAS	9/27/11	TITLE:	Control Specification for Braid, ARACON, Silver-Plated, Class I	
E	1750582	11/15/17	SMT	CHK DMD	7/31/19	SHEET		
F	1850029	6/19/18	SMT	ENG SMT	7/31/19	1 of 3	DRAWING NO.	REV.
G	1950477	7/31/19	SMT	QA PJL	7/31/19		A-18514	G

- f) Braided EMI shields shall withstand 48-hour exposure to a salt fog environment in accordance with ASTM B-117.
- g) Braided EMI shields shall withstand 48-hour exposure to a sulfur dioxide environment in accordance with ASTM G-85, Annex A4 and X4.
- h) Braided EMI shields shall be capable of meeting FAA flammability requirements as specified in CFR 14 Part 25.
- i) Braided EMI shields shall be capable of meeting FAA smoke density requirements as specified in CFR 14 Part 25.
- j) Braided EMI shields shall be capable of meeting industry requirements for smoke toxicity as specified in BSS 7239 and AITM 2.0008.

2.5 Electrical Properties

- a) DC resistance shall be as specified in Table II.
- b) Transfer impedance will closely match the DC resistance of the braided EMI shield up to 10 MHz. After that, transfer impedance will increase approximately 10 to 20 dB/ decade.
- c) RF Shielding Effectiveness shall be per Figure I when tested per IEC 61000-4-21, Annex F.

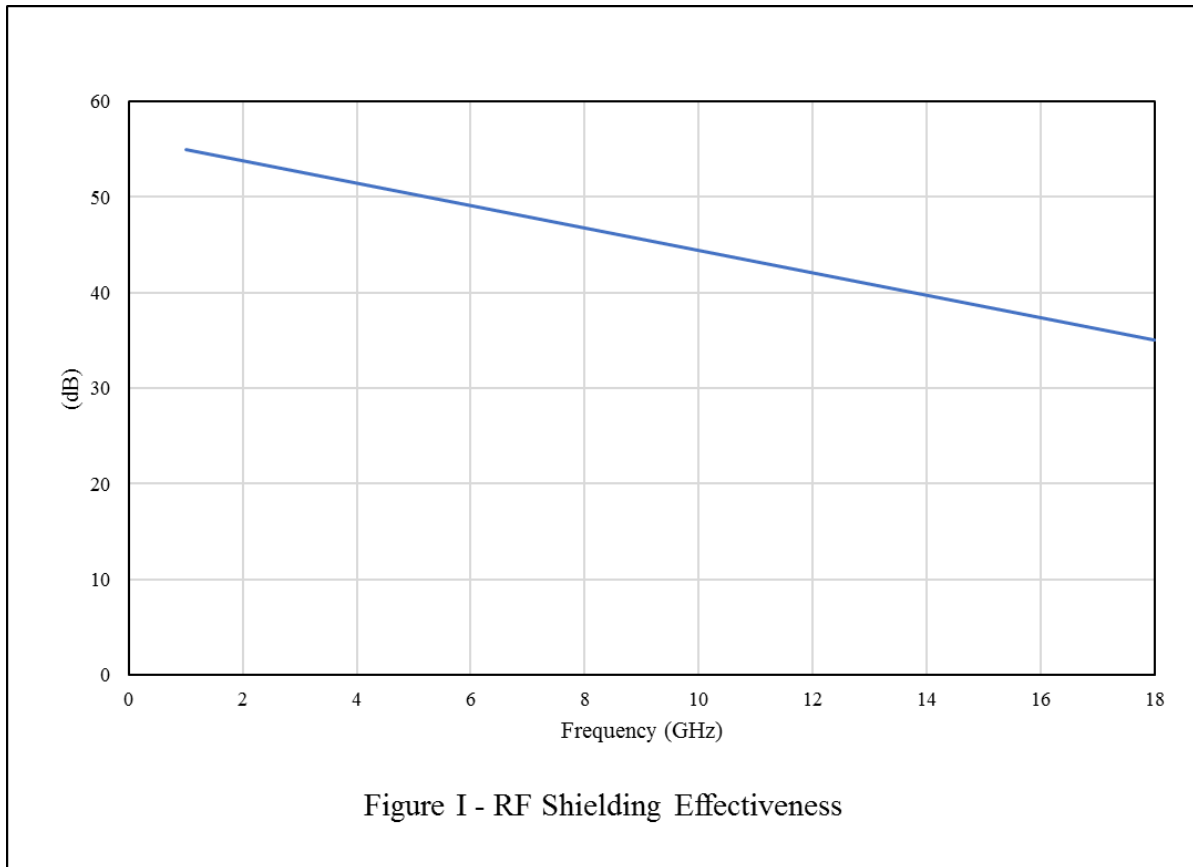
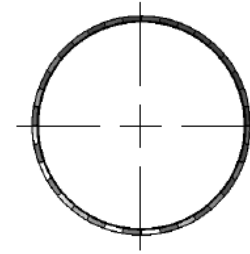
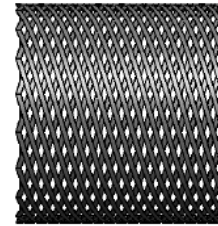
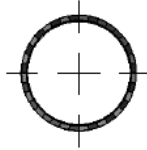
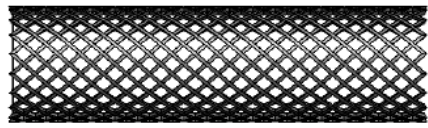


Figure I - RF Shielding Effectiveness



NOMINAL CONDITION
MINIMUM DIAMETER, MAXIMUM LENGTH

EXPANDED CONDITION
MAXIMUM DIAMETER, MINIMUM LENGTH

ARACON® Description	Nominal Size (in.)	Reference Wire Bundle Diameter		# of Ends	# of Carriers	Material/Finish	Weight (g/ft) [†]	Resistance (mΩ/ft) [†]
		Min (in.)	Max (in.)				Maximum	Maximum
BXS0200E/00-100/0-0062-1	0.0625	0.045	0.085	1	12	ARACON/Ag	0.57	214.5
BXS0400E/00-100/0-0125-1	0.125	0.090	0.150	1	16	ARACON/Ag	1.44	75.9
BXS0400E/00-100/0-0250-1	0.250	0.125	0.312	1	32	ARACON/Ag	2.79	36.7
BXS0400E/00-100/0-0375-1	0.375	0.187	0.562	1	48	ARACON/Ag	4.13	24.1
BXS0400E/00-100/0-0500-1	0.500	0.250	0.750	1	64	ARACON/Ag	5.44	17.8
BXS0400E/00-100/0-0625-1	0.625	0.375	0.875	1	72	ARACON/Ag	6.79	17.6
BXS0400E/00-100/0-0750-1	0.750	0.500	1.000	1	96	ARACON/Ag	8.15	11.9
BXS0400E/00-100/0-1000-1	1.00	0.780	1.187	2	72	ARACON/Ag	13.39	8.5
BXS0400E/00-100/0-1250-1	1.25	0.938	1.312	2	96	ARACON/Ag	16.56	5.9
BXS0400E/00-100/0-1500-1	1.50	1.187	1.875	3	72	ARACON/Ag	20.27	5.7
BXS0400E/00-100/0-2000-1	2.00	1.300	2.125	3	96	ARACON/Ag	27.02	4.3

[†]Weight and resistance specified at nominal size.

^{††}This braid is constructed from 200-denier ARACON.

TABLE II

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	64639	3 of 3	A-18514	G