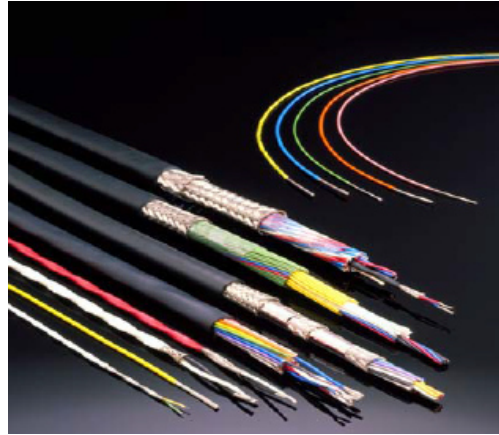


SPEC 55 High Performance Wire and Cable with ETFE coat

- Single or Dual Wall Construction
- Ultra Light Weight
- Small Diameter due to very precisely extruded cross-linked ETFE coat
- Resistant to electrical arc tracking in wet or dry conditions
- Exceptional chemical resistance
- Space and weight saving



SPEC 55 wire is insulated with modified radiation cross-linked ETFE polymer. It has a temperature rating of -65°C to 200°C [-85°F to 392°F] continuous using a silver plated copper conductor, and combines the easy handling of a flexible wire with excellent scrape abrasion and cut-through characteristics.

The dual wall airframe construction of SPEC 55 wire is currently used on numerous aircraft programs. It has a choice of two total wall thicknesses, 0.25 [.010] (55A08XX 10 mil) and 0.2 [.008] (55A02XX 8 mil). Both have a contrasting core colour to act as a damage indicator.

Chosen for its balance of properties, SPEC 55 wire has outstanding resistance to chemicals and solvents, excellent electrical arc track resistance, and is not susceptible to UV and moisture degradation. Single wall equipment wire constructions are available in 0.10 [.004] (55/03XX 4 mil) and 0.15 [.006] (6 mil) wall thicknesses for use inside black boxes where flexibility and solder-iron resistance make it a wire which is very easy to install reliably.

Both single and dual wall insulated wires are available in twisted pairs, triples, etc., and as shielded and jacketed cables.

Physical Characteristics Size and Weight

SPEC 55 wire provides one of the most comprehensive wiring product ranges for aerospace users, with a wide choice of conductor sizes and insulation wall thicknesses. The dual wall airframe wire has an insulation wall thickness of either 0.2 [.008] or 0.25 [.010] for robustness in unprotected harnesses and has excellent wire to wire abrasion properties. The single wall equipment wire has a 0.15 [.006] wall thickness for use inside equipment and protected harnesses. For high density, interconnect wiring, the 450 volt 55M041X series of equipment wire has a nominal 0.1 [.004] wall and provides considerable weight and size savings over other comparable wires.

Handling

The excellent flexibility and handleability makes SPEC 55 the ideal wire to install, both in new aircraft and equipment and for maintenance purposes. The wire is easily stripped with conventional tooling. The insulation is readily marked by hot stamp, ink jet or laser, and can be potted without pre-etching.

SPEC 55PC Wire and Cable Insulation System

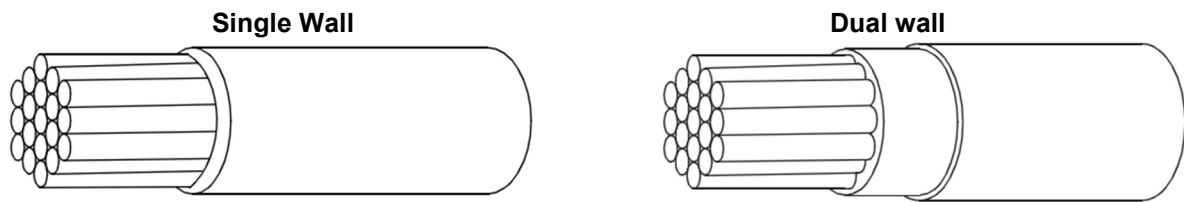
This product was originally developed to meet Boeing's material standard BMS13-48 for the 777 airliner. SPEC 55PC provides lightweight, compact insulation that matches the proven performance of our SPEC 55 wire. Today, 55PC is specified and utilized on the majority of aerospace platforms worldwide.

TE's rigorous, statistical process-controlled manufacturing has produced wiring that is rugged and versatile enough for a wide range of commercial and defence aerospace applications, including electronic hook-ups in harsh, open airframe environments.

SPEC 55PC wire and cable systems feature an 8-mil airframe wire that is lighter and smaller than typical 10-mil wire, with little reduction in key mechanical performance features. SPEC 55PC wire offers flame resistance superior to FAA standards and also resists scrape abrasion, notch, propagation, cut-through, and electrical arc tracking.

■ Meets Boeing material standard BMS 13-48.

■ Exceeds FAR 25 test requirements for flame resistance and smoke density



Specifications / Approvals

- SAE AS22759/32-35 and /41 to /46 and NEMA-WC-27500 (Cables)
- Defense Standard 61-12 Part 33 Issue 5
- Part 1001 and Part 1002
- VDE 9426, 9427, 9428
- British Standard 3G233
- Boeing BMS 13-48
- Airbus ABS 0820 to 0826
- NASA preferred product list
- European Space Agency 3901/012, 3901/020 and 3901/022
- TE Specification 55
- Civil Aviation Authority Accessory Approval E11623

Typical Properties

Temperature rating	(Tin plated conductor)	-65°C to +150°C [-85°F to +302°F]
	(Silver or nickel plated conductor)	-65°C to +200°C [-85°F to +392°F]
Thermal endurance		200 °C [392°F], 10000 h
Scrape abrasion (BS 3G233)		>100 cycles at 150°C [302°F]
Flexing endurance (Boeing BSS 7324)		>1000 cycles
Voltage rating		600 V, 1000V
Tensile strength + elongation (core only)		(Dual wall wire) 35 N/mm ² , 125% min.
Tensile strength + total elongation (core & primary jacket)		(Dual wall wire) 35 N/mm ² , 75% min.
Notch propagation BS 3G230 0.05 mm notch		Pass
Solder iron resistance (370 °C, 1 minute)		Pass
Solderability	Tin plated copper conductor	<0.8 secs to wet
	BS 3G233 conditions	
Shrinkage		<1%
Long term water resistance		Will not hydrolyze
Permittivity 1 KHz (ASTM D150)		2.7
Dissipation factor (ASTM D150)		0.001
Afterburn (sec)		30 sec. max.
Burn length		75 mm [3 in.] max.

Environmental Performance

Temperature Rating

SPEC 55 wire and cable is rated for continuous operation from -65°C to +200°C [-85°F to +392°F] and for short periods at temperatures as high as 400°C [752°F].

Mechanical Performance

Radiation crosslinking of the SPEC 55 insulation significantly improves the following mechanical characteristics; scrape (sharp edges), cross wire abrasion, cut-through resistance and creep resistance.

Solder Iron/Overload Resistance

Radiation crosslinking ensures that the insulation resists melting at high temperatures. As a result, SPEC 55 wire is resistant to hot solder irons and current overloads, which would melt most thermoplastic insulation.

Chemical Resistance

SPEC 55 is unaffected by all commonly used chemicals, eg. fuels, hydraulic fluids, defluxing agents, cleaners, coolants and de-icers. It also shows excellent resistance to weathering (UV, ozone, pollutants, and water).

Space Wire

SPEC 55 is available in special versions suitable for use in outer space meeting both ESA and NASA requirements for outgassing.

Flammability

Special additives increase the flame retardance of SPEC 55 compared to unirradiated ETFE so that it meets the latest high performance tests, eg. BS 3G230 and vertical test FAR25.

Electrical Arc Tracking Resistance

SPEC 55 insulation demonstrates resistance to arc tracking under both wet and dry conditions at aircraft system voltages.

Fire Hazard Performance

Flammability	Federal Aviation Reg FAR-25	Pass
	BS EN 50265 vertical Flammability	Pass
	S424 14751 (Swedish chimney)	Pass
	NFC 32070 (2) (French chimney)	Pass
	IEC 60332 part 3 (Cable ladder)	Pass
Smoke/Toxicity Index	Smoke Index, Def Stan 61-12 (18)	6 per meter of wire
	Toxicity Index, Def Stand 61-12 (18)	0.8 per meter of wire
	BS EN 150-4589 Part 2	30% Oxygen
	BS EN 150-4589 Part 3	
	Temperature Index, NES 715	>300°C

55A – AWG Conductor: Equipment and Interconnect Wires & Cables

Equipment / Interconnect Wires and Cables		55A011X		55A012X	
Wire Size (AWG)	Stranding (mm)	Nom OD	Max Weight (g/m)	Nom OD	Max Weight (g/m)
30	7/0.102	0.61	0.98	1.24	1.94
28	7/127	0.68	1.35	1.42	2.68
26	19/102	0.81	2.08	1.67	4.16
24	19/127	0.94	2.98	1.93	5.96
22	19/0.16	1.09	4.17	2.23	8.63
20	19/0.203	1.27	6.4	2.66	13.24
18	19/0.25	1.52	9.67	3.2	20.09
16	19/287	1.73	12.35	3.58	25.75
14	19/0.36	2.20	19.34	4.47	39.58
12	37/0.32	2.62	29.32	5.38	59.97
10	37/0.403	3.25	47.32	6.65	96.58
8	133/0.287	4.77	87.5	9.8	178.58

Equipment / Interconnect Wires and Cables		55A111X		55A112X	
Wire Size (AWG)	Stranding (mm)	Nom OD	Max Weight (g/m)	Nom OD	Max Weight (g/m)
30	7/0.102	1.51	5.06	2.12	8.03
28	7/127	1.59	5.80	2.27	9.37
26	19/102	1.71	6.85	2.53	11.75
24	19/127	1.84	8.19	2.80	14.58
22	19/0.16	1.99	10.27	3.07	18.15
20	19/0.203	2.20	13.40	3.50	24.10
18	19/0.25	2.45	17.86	4.10	32.60
16	19/287	2.67	21.73	4.43	39.73
14	19/0.36	3.10	30.36	5.30	57.13
12	37/0.32	3.55	42.41	6.30	81.98
10	37/0.403	4.20	62.65	7.40	123.63
8	133/0.287	5.80	110.42	10.60	226.15

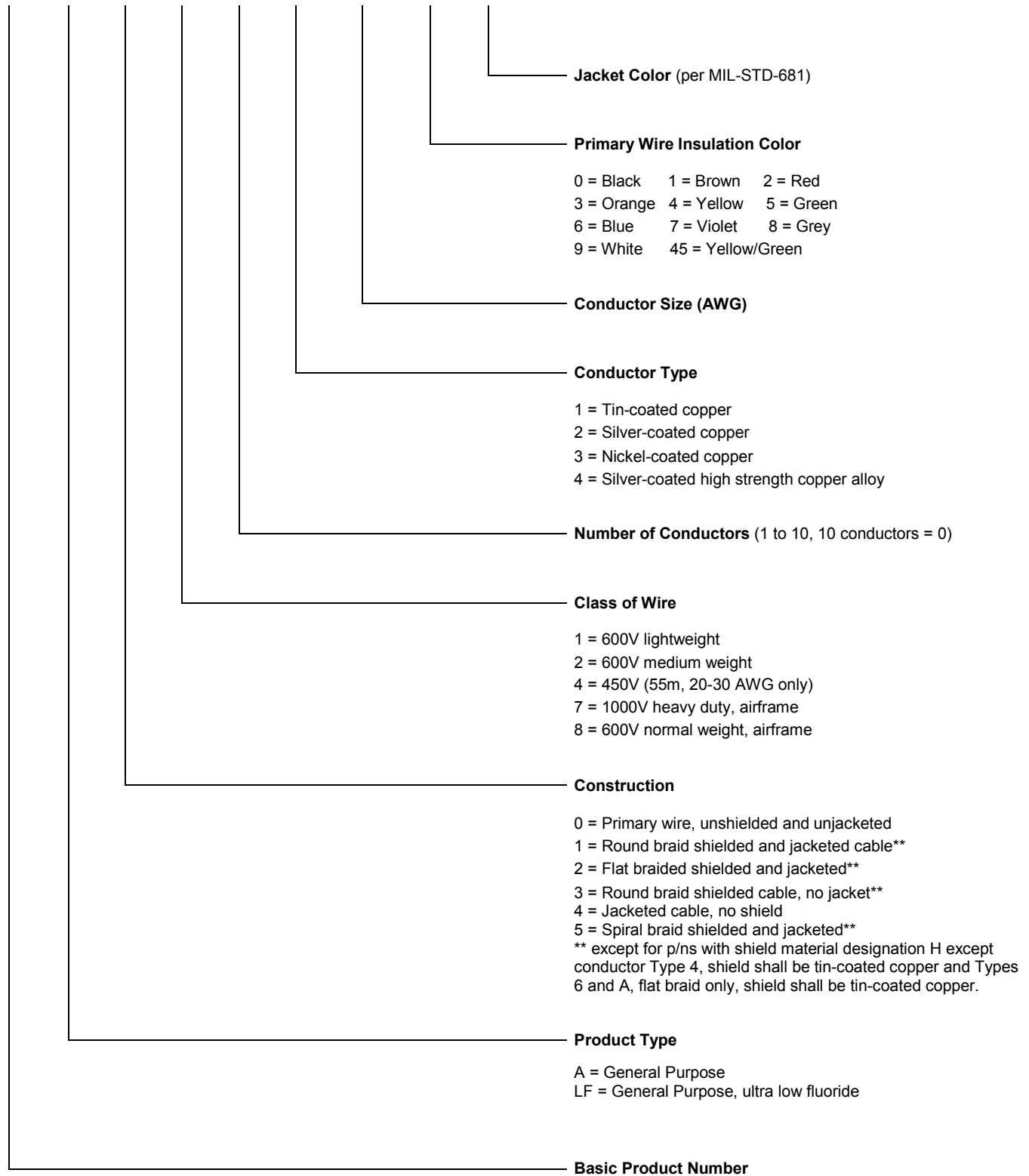
55A – AWG Conductor: Airframe Wires & Cables

Airframe Wires and Cables		55A081X		55A082X	
Wire Size (AWG)	Stranding (mm)	Nom OD	Max Weight (g/m)	Nom OD	Max Weight (g/m)
26	19/102	1.01	2.5	2.10	5.06
24	19/127	1.14	3.4	2.33	6.84
22	19/0.16	1.27	4.8	2.64	9.98
20	19/0.203	1.47	7.0	3.07	14.73
18	19/0.25	1.78	10.7	3.63	21.88
16	19/287	1.96	13.4	4.06	27.53
14	19/0.36	2.40	20.5	4.90	42.26
12	37/0.32	2.82	30.5	5.80	63.00
10	37/0.403	3.40	48.3	7.10	98.96

Airframe Wires and Cables		55A181X		55A182X	
Wire Size (AWG)	Stranding (mm)	Nom OD	Wire Size (AWG)	Stranding (mm)	Nom OD
26	19/102	1.71	7.89	2.63	14.29
24	19/127	1.84	9.37	2.80	16.37
22	19/0.16	1.99	11.76	3.07	20.68
20	19/0.203	2.20	14.88	3.50	27.08
18	19/0.25	2.45	19.79	4.10	36.46
16	19/287	2.67	23.81	4.43	42.86
14	19/0.36	3.10	33.03	6.30	61.61
12	37/0.32	3.55	45.09	6.30	85.42
10	37/0.403	4.20	66.97	--	127.54

Part Numbering System 55A and 55LF – General Purpose

55 - X - X - X - X - X - X - AWG - X/X - X



Part Numbering System 55/ - Outer Space

55 - / - X - X - X - X - AWG - X/X - X

