

MIL-DTL-17 Coaxial Cables



A Tensolite coaxial cable is a transmission line in which one conductor is centered inside and insulated from an outer flexible metal braid that serves as the second outer conductor.

The basic dielectric material for coaxial cables supplied by Tensolite is PTFE because of its electrical and mechanical performance. Some attractive properties of PTFE are extremely low loss, high dielectric strength, no measurable water absorption, and electrical efficiency at both high and low temperatures.

Common Conductors*	Shield Wires:	Jacket
Solid or Stranded	Silver Coated Copper	FEP
Silver Coated Copper Covered Steel		PFA
Silver Coated Copper		
Silver Coated Copper Alloy		

*Other conductor materials may be used to give maximum strength, flexibility and conductivity properties to completed cable.

Description (Tensolite Part Number)	Conductor		Swept Version	Impedance
	AWG	Construction	Yes/No	
M17/60-RG142	18	Solid	yes	50 ohms
M17/86-00001	12	Stranded	no	50 ohms
M17/93-RG178	30	Stranded	yes	50 ohms
M17/94-RG179	30	Stranded	no	75 ohms
M17/95-RG180	30	Stranded	no	95 ohms
M17/110-RG302	22	Solid	no	75 ohms
M17/111-RG303	18	Solid	yes	50 ohms
M17/113-RG316	25	Stranded	yes	50 ohms
M17/127-RG393	12	Stranded	yes	50 ohms
M17/128-RG400	20	Stranded	yes	50 ohms
M17/136-00001	30	Stranded	no	75 ohms
M17/137-00001	30	Stranded	no	95 ohms
M17/152-00001	25	Stranded	yes	50 ohms
M17/158-00001	18	Solid	no	50 ohms
M17/169-00001	30	Stranded	no	50 ohms
M17/170-00001	18	Solid	no	50 ohms
M17/172-00001	25	Stranded	no	50 ohms
M17/174-00001	12	Stranded	no	50 ohms
M17/175-00001	20	Stranded	no	50 ohms
M17/176-00002	24	Stranded	no	77 ohms balanced line

MIL Spec Approval Summary

NEMA HP-3(PTFE) and HP-4(FEP) (Formerly MIL-W-16878)

This specification covers unshielded wire for hook-up and lead wiring for electrical and electronic components and equipment. The following table is a partial list of the more popular constructions. Further details on all the constructions in this specification can be found in Tensolite's Product and Technical Handbook.

Traditional Call Out	Voltage Rating	Temperature Rating (°C)	Insulation	AWG	Nominal Wall Thickness (in.)
Type E	600	200	PTFE	32-10	0.010
Type EE	1000	200	PTFE	32-10	0.015
Type ET	250	200	PTFE	32-20	0.006
Type K	600	200	FEP	32-8	0.010
Type KK	1000	200	FEP	32-4/0	0.015
Type KT	250	200	FEP	32-20	0.016

AS22759

This specification covers fluoropolymer-insulated single conductor electrical wires. These wires are suitable for installation on aerospace electrical systems within the limitations of applicable performance requirements. Further details can be found in Tensolite's Product and Technical Handbook or in MIL-W-22759 specifications.

Type	Voltage Rating	Temperature Rating (°C)	Insulation	AWG	Nominal Wall Thickness (in.)
22759/1	600	200	PTFE/Glass	22-4/0	0.025 - 0.055
22759/2	600	260	PTFE/Glass	22-2/0	0.025 - 0.055
22759/3	600	260	PTFE/Glass	22-2/0	0.020 - 0.055
22759/4	600	200	PTFE/Glass/FEP	22-2/0	0.021 - 0.055
22759/5	600	200	Mineral Filled PTFE	24-10	0.025 - 0.044
22759/6	600	260	Mineral Filled PTFE	24-10	0.025 - 0.044
22759/7	600	200	Mineral Filled PTFE	24-10	0.014 - 0.036
22759/8	600	260	Mineral Filled PTFE	24-10	0.014 - 0.036
22759/9	1000	200	PTFE	28-10	0.014 - 0.023
22759/10	1000	260	PTFE	28-10	0.014 - 0.023
22759/11	600	200	PTFE	28-10	0.009 - 0.021
22759/12	600	260	PTFE	28-10	0.009 - 0.021
22759/20	1000	200	PTFE	28-20	0.014
22759/21	1000	260	PTFE	28-20	0.014
22759/22	600	200	PTFE	28-30	0.009
22759/23	600	260	PTFE	28-30	0.009
22759/28	600	200	PTFE/Polyimide Top coat	28-16	0.009 - 0.012
22759/29	600	260	PTFE/Polyimide Top coat	28-16	0.009 - 0.012
22759/30	600	200	PTFE/Polyimide Top coat	28-20	0.010
22759/31	600	260	PTFE/Polyimide Top coat	28-20	0.010
22759/80	600	150	PTFE/Polyimide	26-10	0.006
22759/81	600	200	PTFE/Polyimide	26-20	0.006
22759/82	600	260	PTFE/Polyimide	26-20	0.006
22759/83	600	200	PTFE/Polyimide /NOMEX	2-4/0	0.017
22759/84	600	260	PTFE/Polyimide /NOMEX	2-4/0	0.017
22759/85	600	150	PTFE/Polyimide /NOMEX	2-4/0	0.017
22759/86	600	200	PTFE/Polyimide	26-4/0	0.008 - 0.017
22759/87	600	260	PTFE/Polyimide	26-4/0	0.008 - 0.017
22759/88	600	150	PTFE/Polyimide	26-4/0	0.008 - 0.017
22759/89	600	200	PTFE/Polyimide	26-20	0.008
22759/90	600	200	PTFE/Polyimide	26-20	0.008
22759/91	600	200	PTFE/Polyimide	26-10	0.006
22759/92	600	260	PTFE/Polyimide	26-10	0.006

MIL-DTL-81381

This specification covers polyimide-insulated single conductor electrical wires. These wires are suitable for installation on aerospace electrical systems within the limitations of applicable performance requirements. Further details can be found in Tensolite's Product and Technical Handbook or in MIL-DTL-81381 specifications.

Type	Voltage Rating	Temperature Rating (°C)	Insulation	AWG	Nominal Wall Thickness (in.)
81381/7	600	200	Polyimide/FEP	26-10	0.006
81381/8	600	200	Polyimide/FEP	26-10	0.006
81381/9	600	200	Polyimide/FEP	30-20	0.006
81381/10	600	200	Polyimide/FEP	30-20	0.006
81381/11	600	200	Polyimide/FEP	24-2	0.008 - 0.015
81381/12	600	200	Polyimide/FEP	24-2	0.008 - 0.015
81381/13	600	200	Polyimide/FEP	28-20	0.008
81381/14	600	200	Polyimide/FEP	28-20	0.008
81381/17	600	200	Polyimide/FEP	26-12	0.005
81381/18	600	200	Polyimide/FEP	26-12	0.005
81381/19	600	200	Polyimide/FEP	30-20	0.005
81381/20	600	200	Polyimide/FEP	30-20	0.005
81381/21	600	150	Polyimide/FEP	24-10	0.006
81381/22	600	150	Polyimide/FEP	24-2/0	0.008 - 0.015

MIL-W-81822

This specification covers insulated solid conductor wires designed for solderless wrap connections (wire-wrap) in electrical and electronic devices and equipment. Further details can be found in the MIL-W-81822 specification.

Type Rating	Voltage Rating (°C)	Temperature Insulation	AWG	Thickness (in.)	Nominal Wall
81822/4	300	200	PTFE/Polyimide topcoat	30-18	0.005 - 0.007
81822/5	300	200	PTFE/Polyimide tape	30-18	0.005 - 0.007
81822/6	300	200	PTFE	30-18	0.006 - 0.012



WC27500 MIL Spec Summary

Part Numbering Guide

Specification Number	Color Code Designator	Gauge of Wire	Basic Wire Spec	Number of Wires	Shield Style	Jacket Style
WC27500	-	22	TA	2	N	24
formerly M27500			M22759/8		Nickel-Coated Copper	Polymide/PTFE

Basic Wire Symbol & Specification

Symbol	Specification	Symbol	Specification	Symbol	Specification
E	AS22759/2	NB	Mil-DTL-81381/14	TN	AS22759/23
EA	AS22759/1	NE	Mil-DTL-81381/17	VA	AS22759/5
JB	AS22759/28	NF	Mil-DTL-81381/18	WA	AS22759/6
JC	AS22759/29	NG	Mil-DTL-81381/19	WB	AS22759/80
JD	AS22759/30	NH	Mil-DTL-81381/20	WC	AS22759/81
JE	AS22759/31	NK	Mil-DTL-81381/21	WE	AS22759/82
JF	AS22759/3	NL	Mil-DTL-81381/22	WF	AS22759/83
LE	AS22759/9	RA	AS22759/3	WG	AS22759/84
LH	AS22759/10	RB	AS22759/4	WH	AS22759/85
MR	Mil-DTL-81381/7	RC	AS22759/11	WJ	AS22759/86
MS	Mil-DTL-81381/8	RE	AS22759/12	WK	AS22759/87
MT	Mil-DTL-81381/9	SA	AS22759/7	WL	ASW-22759/88
MV	Mil-DTL-81381/10	TA	AS22759/8	WM	AS22759/89
MW	Mil-DTL-81381/11	TK	AS22759/20	WN	AS22759/90
MY	Mil-DTL-81381/12	TL	MAS22759/21	WP	AS22759/91
NA	Mil-DTL-81381/13	TM	AS22759/22	WR	AS-22759/92

Color Code Designations

Designation	1 cond	2 cond	3 cond	4 cond	5 cond	6 cond	Shield Coverage
-	9	9,96	9, 96, 93	9, 96, 93, 95	9, 96, 93, 95, 92	9, 96, 93, 95, 92, 90	85%
A		9,6	9, 6, 3	9, 6, 3, 5	9, 6, 3, 5, 2	9, 6, 3, 5, 2, 0	85%
B	Solid color; color denotes wire size (ref Table III C, per spec), Identify wire by banding marks (ref Table III D, per spec)						85%
F		92, 96	92, 96, 94	92, 96, 94, 95	92, 96, 94, 95, 9	92, 96, 94, 95, 9, 90	85%
G		2, 6	2, 6, 4	2, 6, 4, 5	2, 6, 4, 5, 9	2, 6, 4, 5, 9, 0	85%

Common color codes. Reference WC27500 for complete color code listings.

Shield Symbol Guide

Symbol	Double Shield	Shield style
U		No Shield
T	V	Tin Coated Copper, round
S	W	Silver Coated Copper, round
N	Y	Nickel Coated Copper, round
F	Z	Stainless Steel, round
C	R	27% Nickel Coated Copper, round
M	K	Silver Coated High Strength Copper Alloy, round
P	L	Nickel Coated High Strength Copper Alloy, round
G	A	Silver Coated Copper, flat
H	B	Silver Coated High Strength Copper Alloy, flat
*	#	Nickel Coated Copper, flat
J	D	Tin Coated Copper, flat
E	X	Nickel Coated High Strength Copper Alloy, flat

Jacket Symbol Guide

Single Jacket	Double Jacket	Jacket style
00	00	No Jacket
05	55	Extruded Clear FEP
06	56	Extruded or Tape PTFE
07	57	White PTFE Impregnated Glass over PTFE Tape
09	59	Extruded White FEP
11	61	Polymide/FEP Tape with FEP outer surface
12	62	Polymide/FEP Tape - Polymide Surface exposed Sintered TFE Barrier Tape
14	64	Extruded White ETFE (Tefzel)
15	65	Extruded Clear ETFE (Tefzel)
16	66	Braid of Aromatic Polyamide with high temperature finish over PTFE Tape (Nomex)
20	70	Extruded White PFA
21	71	Extruded Clear PFA
22	72	Polyimide/FEP Tape with opaque polyimide outer surface
24	74	Tape layer of PTFE wrapped over a tape layer of natural Polyimide/FEP