

US Military Specification

Product Selection Guide for Wire and Cable



Military Specification Product Selection Guide From Nexans Berk-Tek Electronics Cable

Specification	Main Insulation Material	Voltage Rating	Conductor Type	Temp Rating °C	AWG Size	MIL-DTL27500 Symbol	MIL Composite Equivalent
Military Hook-up Wire MIL-W-22759/5 To /27 (AS 22759/5 to 27)							
MIL-W-22759/5	.0255-.036 Extruded PTFE Mineral Filled	600	SPC	200	24-10	VA	
MIL-W-22759/6	.0255-.036 Extruded PTFe Mineral Filled	600	NPC	260	24-10	WA	
MIL-W-22759/7	.019-.025 Extruded PTFE Minteral Filled	600	SPC	200	24-10	SA	
MIL-W-22759/8	.019-.025 Extruded PTFE Mineral Filled	600	NPC	260	24-10	TA	
MIL-W-22759/9	.015 Extruded PTFE	1000	SPC	200	28-8	LE	
MIL-W-22759/10	.015 Extruded PTFE	1000	NPC	260	28-8	LH	
MIL-W-22759/11	.010 Extruded PTFE	600	SPC	200	28-8	RC	/86
MIL-W-22759/12	.010 Extruded PTFE	600	NPC	260	28-8	RE	/87
MIL-W-22759/13	.011 Extruded FEP	600	TPC	135	24-10	CA	/88
MIL-W-22759/14	.008 Extruded FEP	600	TPC	135	26-12	CB	/88
MIL-W-22759/15	.008 Extruded FEP	600	SP Alloy	135	26-20	CC	/89
MIL-W-22759/16	.010 Extruded ETFE	600	TPC	150	24-02	TE	/88
MIL-W-22759/17	.010 Extruded ETFE	600	SP Alloy	150	26-20	TF	/89
MIL-W-22759/18	.006 Extruded ETFE	600	TPC	150	26-10	TG	/80
MIL-W-22759/19	.006 Extruded ETFE	600	SP Alloy	150	26-20	TH	/81
MIL-W-22759/20	.015 Extruded PTFE	1000	SP Alloy	200	28-20	TK	
MIL-W-22759/21	.015 Extruded PTFE	1000	NP Alloy	260	28-20	TL	
MIL-W-22759/22	.010 Extruded PTFE	600	SP Alloy	200	28-20	TM	/89
MIL-W-22759/23	.010 Extruded PTFE	600	NP Alloy	260	28-20	TN	/90
MIL-W-22759/24	.010 Extruded PTFE	600	SPC	260	28-20	JB	/86
MIL-W-22759/25	.010 Extruded PTFE	600	NPC	260	28-20	JC	/87
MIL-W-22759/26	.010 Extruded PTFE	600	SP Alloy	200	28-20	JD	/89
MIL-W-22759/27	.010 Extruded PTFE	600	NP Alloy	260	28-20	JE	/90

Military Hook-up Wire MIL-W-16878/4 To /13 (HP3 & HP4)

MIL-W-16878/4	.010 in. Extruded PTFE	600	SPC	200	32-10		
MIL-W-16878/5	.015 in. Extruded PTFE	1000	SPC	200	32-10		
MIL-W-16878/6	.006 in. Extruded PTFE	250	SPC	200	32-20		
MIL-W-16878/11	.010 in. Extruded FEP	600	SPC	200	32-10		
MIL-W-16878/12	.015 in. Extruded FEP	1000	SPC	200	32-10		
MIL-W-16878/13	.006 in. Extruded FEP	250	SPC	200	32-20		

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Military Hook-up Wire MIL-W-81044/5 To /13 (AS 81044/5 To /13)							
MIL-W-81044/5	Extruded XL Polyalkene	600	SPC	150	24-0	MD	
MIL-W-81044/6	Extruded XL Polyalkene	600	TPC	150	24-0	ME	
MIL-W-81044/7	Extruded XL Polyalkene	600	SP Alloy	150	26-20	MF	
MIL-W-81044/8	Extruded XL Polyalkene	600	SPC	150	24-0	MG	
MIL-W-81044/9	Extruded XL Polyalkene	600	TPC	150	24-0	MH	
MIL-W-81044/10	Extruded XL Polyalkene	600	SP Alloy	150	26-20	MJ	
MIL-W-81044/11	Extruded XL Polyalkene	600	SPC	150	30-12	MK	
MIL-W-81044/12	Extruded XL Polyalkene	600	TPC	150	30-12	ML	
MIL-W-81044/13	Extruded XL Polyalkene	600	SP Alloy	150	30-20	MM	
Military Hook-up Wire MIL-W-22759/32 To /46 (AS 22759/32 To 46)							
MIL-W-22759/32	.006 XL-ETFE Single Layer	600	TPC	150	30-12	SB	/80
MIL-W-22759/33	.006 XL-ETFE Single Layer	600	SP Alloy	200	30-20	SC	/81
MIL-W-22759/34	.010 XL-ETFE Dual Layer	600	TPC	150	24-00	SD	/88
MIL-W-22759/35	.010 XL-ETFE Dual Layer	600	SP Alloy	200	26-20	SE	/89
MIL-W-22759/41	.010 XL-ETFE Dual Layer	600	NPC	200	26-00	SM	/87
MIL-W-22759/42	.010 XL-ETFE Dual Layer	600	NP Alloy	200	26-20	SN	/90
MIL-W-22759/43	.010 XL-ETFE Dual Layer	600	SPC	200	26-00	SP	/86
MIL-W-22759/44	.006 XL-ETFE Single Layer	600	SPC	200	28-12	SR	/91
MIL-W-22759/45	.006 XL-ETFE Single Layer	600	NPC	200	28-12	SS	/92
MIL-W-22759/46	.006 XL-ETFE Single Layer	600	NP Alloy	200	28-20	ST	/82
Aerospace MIL-Composite Wire MIL-DTL-22759/80 To /92 (AS 22759/80 To /92)							
MIL-DTL-22759/80	Light Weight Composite	600	TPC	150	26-10	WB	
MIL-DTL-22759/81	Light Weight Composite	600	SP Alloy	200	26-20	WC	
MIL-DTL-22759/82	Light Weight Composite	600	NP Alloy	260	26-20	WE	
MIL-DTL-22759/83	Normal Weight Composite	600	SPC	200	02-0000	WF	
MIL-DTL-22759/84	Normal Weight Composite	600	NPC	260	02-0000	WG	
MIL-DTL-22759/85	Normal Weight Composite	600	TPC	150	02-0000	WH	
MIL-DTL-22759/86	Normal Weight Composite	600	SPC	200	26-0000	WJ	
MIL-DTL-22759/87	Normal Weight Composite	600	NPC	260	26-0000	WK	
MIL-DTL-22759/88	Normal Weight Composite	600	TPC	150	26-0000	WL	
MIL-DTL-22759/89	Normal Weight Composite	600	SP Alloy	200	26-20	WM	
MIL-DTL-22759/90	Normal Weight Composite	600	NP Alloy	260	26-20	WN	
MIL-DTL-22759/91	Light Weight Composite	600	SPC	200	26-10	WP	
MIL-DTL-22759/92	Light Weight Composite	600	NPC	260	26-10	WR	

SPC- Silver plated copper, NPC - Nickel Plated Copper, TPC- Tin Plated Copper, SP Alloy - Silver Plated, High Strength Copper Alloy, Conductor, NP Alloy - Nickel Plated, High Strength Copper Alloy Conductor NP

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This specification covers the requirements for electronic control cables used in aircraft and missile applications. These cables may be constructed from a variety of insulating materials having different characteristics. Nexans manufactures most of the combinations available in this specification. The cables can be obtained in configurations up to 15 conductors with just a shield, or just a jacket, or both single and double shields and jacket. Conductor colors are specified and the cable must be identified by methods described in the body of MIL-DTL-27500.

Cable Designation

Cable will be identified by a combination of digits and letter (not to exceed 16), in accordance with the following:

M27500	=	22	SD	3	I	23
Specification number	ID method of cable wire & shield coverage	Conductor size	Basic wire specification (Chart B)	Number of wires in cable (Chart C)	Shield style & material (Chart D)	Jacket material (Chart E)
	(Chart A)					

Example

M27500-22SD3T23 = 22 AWG, 3 conductor, tin shielded 85%, white XLETFE jacket

Chart A Identification method of cable wire & shield

When an unshielded cable or wire, or a cable with a minimum shield coverage of 85 percent is required, specify:

-	for the preferred identification method using Table III A
F	for the preferred identification method using Table III B
A	for optional identification method A, Table III A
G	for optional identification method A, Table III B
B	for optional identification method B, Table III C
K	for optional identification method C
L	for optional identification method D
P	for optional identification method E
S	for optional identification method F

When a minimum shield coverage of 90 percent is required, specify:

C	for the preferred identification method using Table III A
H	for the preferred identification method using Table III B
D	for optional identification method A, Table III A
J	for optional identification method A, Table III B
E	for optional identification method B, Table III C
M	for optional identification method C
N	for optional identification method D
R	for optional identification method E
T	for optional identification method F

Chart B Basic wire specification

Symbol sequence	Symbol sequence		
CA	MIL-W-22759/13	SC	MIL-W-22759/33
CB	MIL-W-22759/14	SD	MIL-W-22759/34
CC	MIL-W-22759/15	SE	MIL-W-22759/35
E	MIL-W-22759/2	SM	MIL-W-22759/41
EA	MIL-W-22759/1	SN	MIL-W-22759/42
JA	MIL-W-25038/1	SP	MIL-W-22759/43
JB	MIL-W-22759/28	SR	MIL-W-22759/44
JC	MIL-W-22759/29	SS	MIL-W-22759/45
JD	MIL-W-22759/30	ST	MIL-W-22759/46
JE	MIL-W-22759/31	TA	MIL-W-22759/8
JF	MIL-W-25038/3	TE	MIL-W-22759/16
LE	MIL-W-22759/9	TF	MIL-W-22759/17
LH	MIL-W-22759/10	TG	MIL-W-22759/18
MR	MIL-DTL-81381/7	TH	MIL-W-22759/19
MS	MIL-DTL-81381/8	TK	MIL-W-22759/20
MT	MIL-DTL-81381/9	TL	MIL-W-22759/21
MV	MIL-DTL-81381/10	TM	MIL-W-22759/22
MW	MIL-DTL-81381/11	TN	MIL-W-22759/23
MY	MIL-DTL-81381/12	VA	MIL-W-22759/5
NA	MIL-DTL-81381/13	WA	MIL-W-22759/6
NB	MIL-DTL-81381/14	WB	MIL-DTL-22759/80
NE	MIL-DTL-81381/17	WC	MIL-DTL-22759/81
NF	MIL-DTL-81381/18	WE	MIL-DTL-22759/82
NG	MIL-DTL-81381/19	WF	MIL-DTL-22759/83
NH	MIL-DTL-81381/20	WG	MIL-DTL-22759/84
NK	MIL-DTL-81381/21	WH	MIL-DTL-22759/85
NL	MIL-DTL-81381/22	WJ	MIL-DTL-22759/86
P	MIL-W-5086/4	WK	MIL-DTL-22759/87
RA	MIL-W-22759/3	WL	MIL-DTL-22759/88
RB	MIL-W-22759/4	WM	MIL-DTL-22759/89
RC	MIL-W-22759/11	WN	MIL-DTL-22759/90
RE	MIL-W-22759/12	WP	MIL-DTL-22759/91
SA	MIL-W-22759/7	WR	MIL-DTL-22759/92
SB	MIL-W-22759/32		

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Chart C Number of wires per cable

- 1 to 15 for shielded or shielded and jacketed cables
- 2 to 15 for unshielded, unjacketed or unshielded jacketed cables
- Cables with 10 to 15 conductors will be limited to conductor size 12 and smaller

Chart D Shield style and material

Symbol single shield style	Symbol double shield style	Shield Material	Maximum temperature limit for shield material
U		No shield	-
T	V	Tin-coated cooper, round	150°C
S	W	Silver-coated copper, round	200°C
N	Y	Nickel-coated cooper, round	260°C
F	Z	Stainless steel, round	400°C
C	R	Heavy nickel coated copper, round	400°C
M	K	Silver-coated high strength copper alloy, round	200°C
P	L	Nickel-coated high strength copper alloy, round	260°C
G	A	Silver-coated copper, flat	200°C
H	B	Silver-coated high strength copper alloy, flat	200°C
*	#	Nickel-coated copper, flat	260°C
J	D	Tin-coated copper, flat	150°C
E	X	Nickel-coated high strength copper alloy, flat	260°C
I	Q	Nickel-chromium alloy, flat	400°C

Chart E - Jacket materials

Single jacket symbol	Double jacket symbol	Jacket Material	Temperature limit for jacket material
00	00	No jacket	-
03	53	White polyamide braid impregnated with clear polyamide finisher over a polyester tape	105°C
04	54	Polyester braid impregnated with high temperature finisher over polyester tape	150°C
05	55	Extruded clear fluorinated ethylene propylene (FEP)	200°C
06	56	Extruded or taped and heat sealed white polytetrafluoroethylene (PTFE)	260°C
07	57	White polytetrafluoroethylene (PTFE) treated glass braid impregnated and coated with polytetrafluoroethylene finisher over presintered polytetrafluoroethylene tape	260°C
08	58 ³	Crosslinked white extruded polyvinylidene fluoride (PVF ₂)	150°C
09	59	Extruded white fluorinated ethylene propylene (FEP)	200°C
10 ³	60 ³	Extruded clear polyvinylidene fluoride (PVF ₂)	125°C
11 ⁴	61 ⁴	Tape of natural polyimide combined with clear fluorinated ethylene propylene (FEP) wrapped and heat sealed with (FEP) outer surface	200°C
12 ⁴	62 ⁴	Tape of natural polyimide combined with fluorinated ethylene propylene (FEP) wrapped and heat sealed with polyimide outer surface	200°C
14	64	Extruded white ethylene-tetrafluoroethylene copolymer (ETFE)	150°C
15	65	Extruded clear ethylene-tetrafluoroethylene copolymer (ETFE)	150°C
16	66	Braid of aromatic polyamide with high temperature finisher over presintered polytetrafluoroethylene (PTFE) tape	200°C
17 ⁵	67 ⁵	White extruded ethylene chlorotrifluoro-ethylene (ECTFE)	150°C
18 ⁵	68 ⁵	Clear extruded ethylene chlorotrifluoro-ethylene (ECTFE)	150°C
20	70	Extruded white perfluoroalkoxy (PFA)	260°C
21	71	Extruded clear perfluoroalkoxy (PFA)	260°C
22	72	Taped of polyimide combined with clear fluorinated ethylene propylene (FEP) wrapped and heat sealed with opaque polyimide outer surface	200°C
23	73	White, cross linked, extruded, modified, ethylene tetrafluoroethylene copolymer (XLETFE)	200°C
24	74	Tape layer of white polytetrafluoroethylene (PTFE) wrapped over a tape layer of natural polyimide combined with FEP and heat sealed	200°C

1 - Polyvinyl chloride materials shall not be used for aerospace applications.

2 - Jacket material 02 is not to be used for cables having a diameter of 0.251 inch or greater.

3 - Jacket materials 08, 58, 10 & 60 are not to be used for cables having a diameter of 0.401 inch or greater.

4 - Not for Naval Air Systems Command usage.

5 - Inactive for new design.

COMMON MIL-C-17 CABLES

Non-Swept RG No.	Swept Designation	Nominal Designation	Max. Attenuation Impedance Ohms	Nominal @400 MHz (db/100ft)	Max. Operating Capacitance (pf/FT)	Operating Temp Voltage (volts RMS)	Range (C)
58	M 17/155-00001	M 17/28-RG 058	50	17.0	28.8	1,900	-40 + 85
59	M 17/29-RG 059		75	9.0	20.6	2,300	-40 + 85
142	M 17/158-00001	M 17/60-RG 142	50	11.7	29.4	1,900	-55 + 200
174	M 17/173-00001	M 17/119-RG 174	50	25.0	30.8	1,500	-40 + 85
178	M 17/169-00001	M 17/93-RG 178	50	33.0	29.4	1,000	-55 + 200
179	M 17/94-RG 179		75	21.0	19.5	1,200	-55 + 200
180	M 17/95-RG 180		95	17.0	15.4	1,500	-55 + 200
223	M 17/167-00001		50	12.0	30.8	1,900	-40 + 80
303	M 17/170-00001	M 17/111-RG 303	50	8.6	29.4	1,900	-55 + 200
316	M 17/172-00001	M 17/113-RG 316	50	21.0	29.4	1,200	-55 + 200
400	M17/175-00001	M 17/128-400	50	10.5	29.4	1,900	-55 + 200
Twinax	M17/176-00002		77	1.4 @ 1MHz	24.0	750	-55 + 200
Triax	M17/179-00001		75	21.0	23.0	900	-55 + 150

**** Additional MIL-C-17 Coaxial Designs available upon request at Nexans.**

**Nexans, Berk-Tek Electronics Cable
Elm City, North Carolina**

Nexans, Berk-Tek Electronics Cable manufactures high-temperature and high-performance wire and cable with a dedication to quality and innovation. Our mission is to be a premier manufacturer and global supplier of high performance wire and cable.

The Elm City, NC facility was founded in 1957. It has led in the development of fluoropolymer and polyimide insulated wire for aerospace and military markets. Many additional breakthroughs at the Elm City facility have taken place in recent years.

A new development is a product line of coaxial cables that can be used in place of Radio Frequency Grade coaxial cable but at a much lower cost and with less signal loss. By crosslinking the polyethylene core, our specialty coax can withstand temperatures of soldering operations.

Nexans provides you with the flexibility of designing custom cables that best meet the requirements of your specific application. Our engineering and sales staffs recognize that it is often impossible to find exactly the right cable from a standard catalog list. We work closely with our customers to develop and / or improve their wire and cable product needs.



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