

**MIL-DTL-81381** wires have stranded conductors of copper or high-strength copper alloy, and insulation of FEP/polyimide tape with a polyimide coating (or polyamide braid) for enhanced abrasion resistance. All are rated at 600 volts.

Conductors are available with silver plating (40 μ" minimum), nickel plating (50μ" minimum), or tin plating (per ASTM B 33).

Although these wires were designed for aerospace use, they are ideal for commercial applications which can benefit from their high temperature rating and resistance to abrasions and solvents.

**Construction characteristics—MIL-DTL-81381 wires**

MIL-W-81381 Specification	Insulation Material (Wall Thickness)	Conductor Material	Temperature Rating	Page
M81381/7	FEP/polyimide/FEP tape with polyimide coating (.0065")	SPC	200	58
M81381/8	FEP/polyimide/FEP tape with polyimide coating (.0065")	NPC	200	58
M81381/9	FEP/polyimide/FEP tape with polyimide coating (.0065")	SPCA	200	59
M81381/10	FEP/polyimide/FEP tape with polyimide coating (.0065")	NPCA	200	59
M81381/11	FEP/polyimide/FEP tape with polyimide coating (10 AWG and smaller), or polyamide braid (8 AWG and larger) (.0085" or .0170")	SPC	200	60
M81381/12	FEP/polyimide/FEP tape with polyimide coating (10 AWG and smaller), or polyamide braid (8 AWG and larger) (.0084" or .0154")	NPC	200	60
M81381/13	FEP/polyimide/FEP tape with polyimide coating (.0095")	SPCA	200	61
M81381/14	FEP/polyimide/FEP tape with polyimide coating (.0095")	NPCA	200	61
M81381/17	FEP/polyimide/FEP tape with polyimide coating (.0050")	SPC	200	62
M81381/18	FEP/polyimide/FEP tape with polyimide coating (.0050")	NPC	200	62
M81381/19	FEP/polyimide/FEP tape with polyimide coating (.0050")	SPCA	200	63
M81381/20	FEP/polyimide/FEP tape with polyimide coating (.0050")	NPCA	200	63
M81381/21	FEP/polyimide/FEP tape with polyimide coating (.0065")	TPC	150	64
M81381/22	FEP/polyimide/FEP tape with polyimide coating (10 AWG and smaller), or polyamide braid (8 AWG and larger) (.0085" or .0170")	TPC	150	64

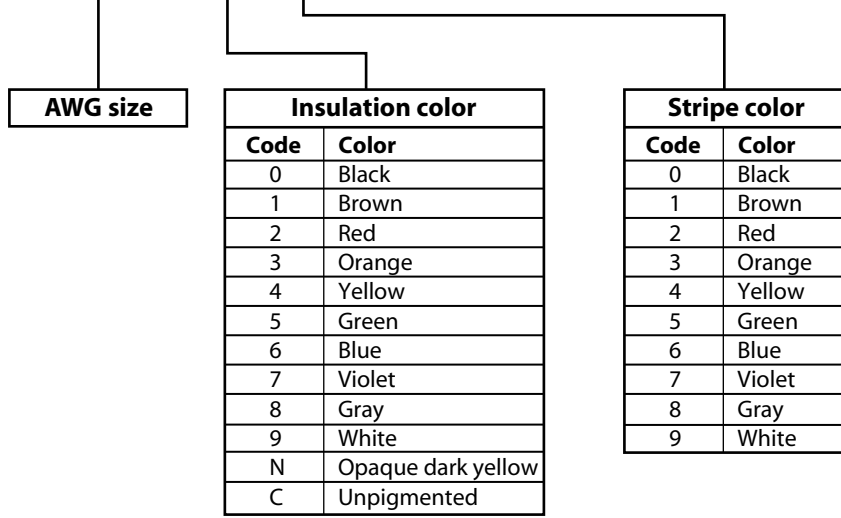
Temperatures are maximum in °C. All values are nominal unless otherwise indicated.

**Materials abbreviations:** NPC: Nickel-plated copper. NPCA: Nickel-plated high-strength copper alloy.

SPC: Silver-plated copper. SPCA: Silver-plated high-strength copper alloy. TPC: Tin-plated copper.

**MIL-DTL-81381 part numbering and example**

M81381/7 - 30 - 9 2



## MIL-DTL-81381/7, /8 wire—light weight

MIL-DTL-81381/7 and /8 wires have two layers of FEP/polyimide/FEP tape insulation with a polyimide hard coat for increased cut-through and abrasion resistance.

Originally designed for aerospace use, these wires are ideal for other applications requiring excellent thermal stability, tight dimensional tolerances, and high reliability.

These wires are especially well-suited in applications where smoke emission, overload stability, and flammability are major concerns.

### Performance:

**Voltage rating:** 600V.

**Temperature rating:** -55 to 200° C.



### Construction Details

**Insulation:** Two layers of FEP/polyimide/FEP tape with modified aromatic polyimide coating.

**Conductor:** /7: Silver-plated copper;  
/8: Nickel-plated copper.

**Colors:** Color coded to MIL-STD-104 (see page 57 for details ).

**Identification:** to MIL-DTL-81381.

### Dimensions, Resistance, and Weights—M81381/7 (silver-plated conductor)

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance	
			Minimum	Maximum	Minimum	Maximum			
M81381/7-10-*	10	37/26	.106 (2.69)	.110 (2.79)	.120 (3.05)	.124 (3.15)	30.3 (44.8)	1.19 (3.90)	
M81381/7-12-*	12	37/28	.084 (2.13)	.087 (2.21)	.097 (2.46)	.101 (2.57)	19.4 (28.7)	1.90 (6.23)	
M81381/7-14-*	14	19/27	.065 (1.65)	.068 (1.73)	.078 (1.98)	.082 (2.08)	12.7 (18.8)	2.88 (9.45)	
M81381/7-16-*	16	19/29	.052 (1.32)	.054 (1.37)	.065 (1.65)	.068 (1.73)	8.3 (12.3)	4.52 (14.83)	
M81381/7-18-*	18	19/30	.046 (1.17)	.048 (1.22)	.059 (1.50)	.062 (1.57)	6.5 (9.6)	5.79 (19.00)	
M81381/7-20-*	20	19/32	.037 (.94)	.038 (.97)	.049 (1.24)	.052 (1.32)	4.3 (6.4)	9.19 (30.14)	
M81381/7-22-*	22	19/34	.029 (.74)	.030 (.76)	.041 (1.04)	.044 (1.12)	2.8 (4.1)	15.1 (49.53)	
M81381/7-24-*	24	19/36	.023 (.58)	.024 (.61)	.034 (.86)	.037 (.94)	1.9 (2.8)	24.3 (79.70)	
M81381/7-26-*	26	19/38	.018 (.46)	.019 (.48)	.031 (.79)	.034 (.86)	1.3 (1.9)	38.4 (125.96)	

### Dimensions, Resistance, and Weights—M81381/8 (nickel-plated conductor)

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance	
			Minimum	Maximum	Minimum	Maximum			
M81381/8-10-*	10	37/26	.106 (2.69)	.112 (2.84)	.120 (3.05)	.124 (3.15)	31.7 (46.9)	1.24 (4.07)	
M81381/8-12-*	12	37/28	.084 (2.13)	.089 (2.26)	.097 (2.46)	.101 (2.57)	20.2 (29.9)	1.98 (6.49)	
M81381/8-14-*	14	19/27	.065 (1.65)	.069 (1.75)	.078 (1.98)	.082 (2.08)	13.2 (19.5)	3.00 (9.84)	
M81381/8-16-*	16	19/29	.052 (1.32)	.055 (1.40)	.065 (1.65)	.068 (1.73)	8.5 (12.6)	4.76 (15.61)	
M81381/8-18-*	18	19/30	.046 (1.17)	.049 (1.24)	.059 (1.50)	.062 (1.57)	6.8 (10.1)	6.10 (20.01)	
M81381/8-20-*	20	19/32	.037 (.94)	.039 (.93)	.049 (1.24)	.052 (1.32)	4.5 (6.7)	9.77 (32.05)	
M81381/8-22-*	22	19/34	.029 (.74)	.031 (.79)	.041 (1.04)	.044 (1.12)	3.0 (4.4)	16.0 (52.48)	
M81381/8-24-*	24	19/36	.023 (.58)	.024 (.61)	.034 (.86)	.037 (.94)	2.0 (3.0)	25.9 (84.95)	
M81381/8-26-*	26	19/38	.018 (.46)	.020 (.51)	.031 (.79)	.034 (.86)	1.4 (2.1)	42.2 (138.42)	

Dimensions in inches (mm). Weights in pounds/1000 feet (Kg/1000 M). Resistance in Ω/1,000 feet (Ω/Km), @20° C. All values are nominal unless otherwise indicated. \* Add color coding per MIL-STD-104 (see page 57).

## MIL-DTL-81381/9, /10 wire—light weight—high strength conductor



### Construction Details

**Insulation:** Two layers of FEP/polyimide/FEP tape with modified aromatic polyimide coating.

**Conductor:** /9: Silver-plated high-strength copper alloy;  
/10: Nickel-plated high-strength copper alloy.

**Colors:** Color coded to MIL-STD-104 (see page 57 for details).

**Identification:** to MIL-DTL-81381.

**MIL-DTL-81381/9 and /10** wires have two layers of FEP/polyimide/FEP tape insulation with a polyimide hard coat for increased cut-through and abrasion resistance, and a high-strength copper alloy conductor for greater break strength.

Originally designed for aerospace use, these wires are ideal for other applications requiring excellent thermal stability, tight dimensional tolerances, and high reliability.

These wires are especially well-suited in applications where smoke emission, overload stability, and flammability are major concerns.

### Performance:

**Voltage rating:** 600V.

**Temperature rating:** -55 to 200° C.

### Dimensions, Resistance, and Weights—M81381/9 (silver-plated high-strength conductor)

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance
			Minimum	Maximum	Minimum	Maximum		
M81381/9-20-*	20	19/32	.037 (.94)	.039 (.99)	.049 (1.24)	.052 (1.32)	4.4 (6.5)	10.7 (35.10)
M81381/9-22-*	22	19/34	.029 (.74)	.031 (.79)	.041 (1.04)	.044 (1.12)	2.9 (4.3)	17.5 (57.40)
M81381/9-24-*	24	19/36	.023 (.58)	.024 (.61)	.034 (.86)	.037 (.94)	1.9 (2.8)	28.4 (93.15)
M81381/9-26-*	26	19/38	.018 (.46)	.020 (.51)	.031 (.78)	.034 (.86)	1.3 (1.9)	44.8 (146.9)
M81381/9-28-*	28	7/36	.014 (.36)	.015 (.38)	.026 (.66)	.029 (.74)	.9 (1.3)	74.4 (244.0)
M81381/9-30-*	30	7/38	.011 (.28)	.012 (.30)	.023 (.58)	.026 (.66)	.6 (.9)	117.4 (385.0)

### Dimensions, Resistance, and Weights—M81381/10 (nickel-plated high-strength conductor)

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance
			Minimum	Maximum	Minimum	Maximum		
M81381/10-20-*	20	19/32	.037 (.94)	.040 (1.02)	.049 (1.24)	.052 (1.32)	4.6 (6.8)	11.4 (37.39)
M81381/10-22-*	22	19/34	.029 (.74)	.031 (.79)	.041 (1.04)	.044 (1.12)	3.0 (4.4)	18.6 (61.01)
M81381/10-24-*	24	19/36	.023 (.58)	.025 (.64)	.034 (.86)	.037 (.94)	2.0 (3.0)	30.1 (98.73)
M81381/10-26-*	26	19/38	.018 (.46)	.020 (.51)	.031 (.78)	.034 (.86)	1.4 (2.1)	49.4 (162.03)
M81381/10-28-*	28	7/36	.014 (.36)	.016 (.41)	.026 (.66)	.030 (.76)	1.0 (1.5)	79.0 (259.12)
M81381/10-30-*	30	7/38	.011 (.28)	.013 (.33)	.023 (.58)	.027 (.69)	.7 (1.0)	129.6 (425.09)

Dimensions in inches (mm). Weights in pounds/1000 feet (Kg/1000 M). Resistance in Ω/1,000 feet (Ω/Km), @20° C.

All values are nominal unless otherwise indicated. \* Add color coding per MIL-STD-104 (see page 57).

## MIL-DTL-81381/11, /12 wire—medium weight

**MIL-DTL-81381/11 and /12** wires have two layers of FEP/polyimide tape insulation with a polyimide hard coat (10 AWG and smaller) or polyamide braid (8 AWG and larger) for increased cut-through and abrasion resistance.

Originally designed for aerospace use, these wires are ideal for other applications requiring excellent thermal stability, tight dimensional tolerances, and high reliability.

These wires are especially well-suited in applications where smoke emission, overload stability, and flammability are major concerns.

**Performance:**

**Voltage rating:** 600V.

**Temperature rating:** -55 to 200° C.



**Construction Details**

**Insulation:** First layer: Polyimide/FEP tape;  
 Second layer: FEP/polyimide/FEP tape;  
 Third (outer) layer: modified aromatic polyimide coating (10 AWG and smaller);  
 Aromatic polyamide braid with clear finisher (8 AWG and larger).

**Conductor:** /11: Silver-plated copper;  
 /12: Nickel-plated copper.

**Colors:** Color coded to MIL-STD-104 (see page 57 for details).

**Identification:** to MIL-DTL-81381.

**Dimensions, Resistance, and Weights—M81381/11 (silver-plated conductor)**

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance	
			Minimum	Maximum	Minimum	Maximum			
M81381/11-2-*	2	665/30	.320 (8.13)	.340 (8.64)	.350 (8.89)	.378 (9.60)	235 (347.8)	.170	(.56)
M81381/11-4-*	4	133/25	.250 (6.35)	.263 (6.68)	.280 (7.11)	.306 (7.77)	148 (219.0)	.264	(.87)
M81381/11-6-*	6	133/27	.198 (5.03)	.208 (5.28)	.228 (5.79)	.251 (6.38)	95.1 (140.7)	.418	(1.37)
M81381/11-8-*	8	133/29	.158 (4.01)	.166 (4.22)	.188 (4.78)	.206 (5.23)	61.8 (91.5)	.658	(2.16)
M81381/11-10-*	10	37/26	.106 (2.69)	.110 (2.79)	.122 (3.10)	.127 (3.23)	31.1 (46.0)	1.19	(3.90)
M81381/11-12-*	12	37/28	.084 (2.13)	.087 (2.21)	.100 (2.54)	.105 (2.67)	20.2 (29.9)	1.90	(6.23)
M81381/11-14-*	14	19/27	.065 (1.65)	.068 (1.73)	.081 (2.06)	.086 (2.18)	13.2 (19.5)	2.88	(9.45)
M81381/11-16-*	16	19/29	.052 (1.32)	.054 (1.37)	.068 (1.73)	.073 (1.85)	8.7 (12.9)	4.52	(14.83)
M81381/11-18-*	18	19/30	.046 (1.17)	.048 (1.22)	.063 (1.60)	.067 (1.70)	7.0 (10.4)	5.79	(19.00)
M81381/11-20-*	20	19/32	.037 (.94)	.038 (.97)	.053 (1.35)	.057 (1.45)	4.6 (6.8)	9.19	(30.14)
M81381/11-22-*	22	19/34	.029 (.74)	.030 (.76)	.045 (1.14)	.049 (1.24)	3.0 (4.4)	15.1	(49.53)
M81381/11-24-*	24	19/36	.023 (.58)	.024 (.61)	.040 (1.01)	.044 (1.12)	2.1 (3.1)	24.3	(79.70)

**Dimensions, Resistance, and Weights—M81381/12 (nickel-plated conductor)**

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance	
			Minimum	Maximum	Minimum	Maximum			
M81381/12-2-*	2	665/30	.320 (8.13)	.340 (8.64)	.350 (8.89)	.378 (9.60)	235 (347.8)	.177	(.58)
M81381/12-4-*	4	133/25	.250 (6.35)	.268 (6.81)	.280 (7.11)	.306 (7.77)	148 (219.0)	.275	(.90)
M81381/12-6-*	6	133/27	.198 (5.03)	.212 (5.38)	.228 (5.79)	.251 (6.38)	95.1 (140.7)	.436	(1.43)
M81381/12-8-*	8	133/29	.158 (4.01)	.169 (4.29)	.188 (4.78)	.206 (5.23)	61.8 (91.5)	.694	(2.28)
M81381/12-10-*	10	37/26	.106 (2.69)	.112 (2.84)	.122 (3.10)	.129 (3.28)	32.4 (19.5)	1.24	(4.07)
M81381/12-12-*	12	37/28	.084 (2.13)	.089 (2.26)	.100 (2.54)	.107 (2.72)	20.9 (30.9)	1.98	(6.49)
M81381/12-14-*	14	19/27	.065 (1.65)	.069 (1.75)	.081 (2.06)	.087 (2.21)	13.8 (20.4)	3.00	(9.84)
M81381/12-16-*	16	19/29	.052 (1.32)	.055 (1.40)	.068 (1.73)	.074 (1.88)	9.0 (13.3)	4.76	(15.61)
M81381/12-18-*	18	19/30	.046 (1.17)	.049 (1.24)	.063 (1.60)	.068 (1.73)	7.2 (10.7)	6.10	(20.01)
M81381/12-20-*	20	19/32	.037 (.94)	.039 (.99)	.053 (1.35)	.058 (1.47)	4.8 (7.1)	9.77	(32.05)
M81381/12-22-*	22	19/34	.029 (.74)	.031 (.79)	.045 (1.14)	.050 (1.27)	3.2 (4.7)	16.0	(52.48)
M81381/12-24-*	24	19/36	.023 (.58)	.024 (.61)	.040 (1.01)	.045 (1.14)	2.2 (3.3)	25.9	(84.95)

Dimensions in inches (mm). Weights in pounds/1000 feet (Kg/1000 M). Resistance in Ω/1,000 feet (Ω/Km), @20° C. All values are nominal unless otherwise indicated. \* Add color coding per MIL-STD-104 (see page 57).

## MIL-DTL-81381/13, /14 wire—medium weight—high strength conductor



### Construction Details

**Insulation:** (26 AWG and larger):

- First layer: Polyimide/FEP tape;
- Second layer: FEP/polyimide/FEP tape;
- Third (outer) layer: modified aromatic polyimide coating.

(28 AWG):

- Three layers of FEP/polyimide/FEP tape with modified aromatic polyimide coating.

**Conductor:** /13: Silver-plated high-strength copper alloy;  
/14: Nickel-plated high-strength copper alloy.

**Colors:** Color coded to MIL-STD-104 (see page 57 for details).

**Identification:** to MIL-DTL-81381.

**MIL-DTL-81381/13 and /14** wires have two layers of FEP/polyimide/FEP tape insulation (three layers for 28 AWG) with a polyimide hard coat for increased cut-through and abrasion resistance, and a high-strength copper alloy conductor for greater break strength.

Originally designed for aerospace use, these wires are ideal for other applications requiring excellent thermal stability, tight dimensional tolerances, and high reliability.

These wires are especially well-suited in applications where smoke emission, overload stability, and flammability are major concerns.

### Performance:

**Voltage rating:** 600V.

**Temperature rating:** -55 to 200° C.

### Dimensions, Resistance, and Weights—M81381/13 (silver-plated high-strength conductor)

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance	
			Minimum	Maximum	Minimum	Maximum			
M81381/13-20-*	20	19/32	.037 (.94)	.039 (.99)	.055 (1.40)	.059 (1.50)	4.8 (7.1)	10.7 (35.10)	
M81381/13-22-*	22	19/34	.029 (.74)	.031 (.79)	.047 (1.19)	.051 (1.30)	3.1 (4.6)	17.5 (57.40)	
M81381/13-24-*	24	19/36	.023 (.58)	.024 (.61)	.041 (1.04)	.045 (1.14)	2.2 (3.3)	28.4 (93.15)	
M81381/13-26-*	26	19/38	.018 (.46)	.020 (.51)	.036 (.91)	.040 (1.02)	1.5 (2.2)	44.8 (146.94)	
M81381/13-28-*	28	7/36	.014 (.36)	.015 (.38)	.031 (.79)	.035 (.89)	1.2 (1.8)	74.4 (244.03)	

### Dimensions, Resistance, and Weights—M81381/14 (nickel-plated high-strength conductor)

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance	
			Minimum	Maximum	Minimum	Maximum			
M81381/14-20-*	20	19/32	.037 (.94)	.040 (1.02)	.055 (1.40)	.060 (1.52)	5.0 (7.4)	11.4 (37.39)	
M81381/14-22-*	22	19/34	.029 (.74)	.031 (.79)	.047 (1.19)	.051 (1.30)	3.3 (4.9)	18.6 (61.01)	
M81381/14-24-*	24	19/36	.023 (.58)	.025 (.64)	.041 (1.04)	.045 (1.14)	2.3 (3.4)	30.1 (98.73)	
M81381/14-26-*	26	19/38	.018 (.46)	.020 (.51)	.036 (.91)	.040 (1.02)	1.6 (2.4)	49.4 (162.03)	
M81381/14-28-*	28	7/36	.014 (.36)	.016 (.41)	.031 (.79)	.035 (.89)	1.2 (1.8)	79.0 (259.12)	

Dimensions in inches (mm). Weights in pounds/1000 feet (Kg/1000 M). Resistance in Ω/1,000 feet (Ω/Km), @20° C.

All values are nominal unless otherwise indicated. \* Add color coding per MIL-STD-104 (see page 57).

## MIL-DTL-81381/17, /18 wire—light weight

MIL-DTL-81381/17 and /18 wires have one layer of FEP/ polyimide/FEP tape insulation with a polyimide hard coat for increased cut-through and abrasion resistance.

Originally designed for aerospace use, these wires are ideal for other applications requiring excellent thermal stability, tight dimensional tolerances, and high reliability.

These wires are especially well-suited in applications where smoke emission, overload stability, and flammability are major concerns.

### Performance:

**Voltage rating:** 600V.

**Temperature rating:** -55 to 200° C.



### Construction Details

**Insulation:** FEP/polyimide/FEP tape with modified aromatic polyimide coating.

**Conductor:** /17: Silver-plated copper;  
/18: Nickel-plated copper.

**Colors:** Color coded to MIL-STD-104 (see page 57 for details).

**Identification:** to MIL-DTL-81381.

### Dimensions, Resistance, and Weights—M81381/17 (silver-plated conductor)

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance	
			Minimum	Maximum	Minimum	Maximum			
M81381/17-12-*	12	37/28	.084 (2.13)	.087 (2.21)	.094 (2.39)	.098 (2.49)	19.2 (28.4)	1.90 (6.23)	
M81381/17-14-*	14	19/27	.065 (1.65)	.068 (1.73)	.075 (1.91)	.078 (1.98)	12.5 (18.5)	2.88 (9.45)	
M81381/17-16-*	16	19/29	.052 (1.32)	.054 (1.37)	.062 (1.57)	.065 (1.65)	8.0 (11.8)	4.52 (14.83)	
M81381/17-18-*	18	19/30	.046 (1.17)	.048 (1.22)	.055 (1.40)	.058 (1.47)	6.4 (9.5)	5.79 (19.00)	
M81381/17-20-*	20	19/32	.037 (.94)	.038 (.97)	.046 (1.17)	.049 (1.24)	4.2 (6.2)	9.19 (30.14)	
M81381/17-22-*	22	19/34	.029 (.74)	.030 (.76)	.038 (.97)	.041 (1.04)	2.7 (4.0)	15.1 (49.53)	
M81381/17-24-*	24	19/36	.023 (.58)	.024 (.61)	.032 (.81)	.035 (.89)	1.8 (2.7)	24.3 (79.70)	
M81381/17-26-*	26	19/38	.018 (.46)	.019 (.48)	.028 (.71)	.030 (.76)	1.2 (1.8)	38.4 (125.95)	

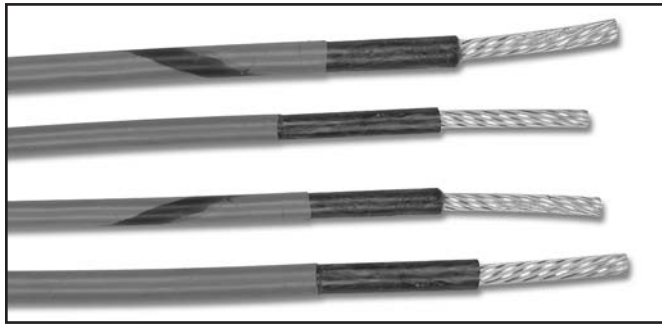
### Dimensions, Resistance, and Weights—M81381/18 (nickel-plated conductor)

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance	
			Minimum	Maximum	Minimum	Maximum			
M81381/18-12-*	12	37/28	.084 (2.13)	.089 (2.26)	.094 (2.39)	.099 (2.51)	19.9 (29.5)	1.98 (6.49)	
M81381/18-14-*	14	19/27	.065 (1.65)	.069 (1.75)	.075 (1.91)	.080 (2.03)	13.0 (19.2)	3.00 (9.84)	
M81381/18-16-*	16	19/29	.052 (1.32)	.055 (1.40)	.062 (1.57)	.066 (1.68)	8.3 (12.3)	4.76 (15.61)	
M81381/18-18-*	18	19/30	.046 (1.17)	.049 (1.24)	.055 (1.40)	.059 (1.50)	6.6 (9.8)	6.10 (20.01)	
M81381/18-20-*	20	19/32	.037 (.94)	.039 (.99)	.046 (1.17)	.050 (1.27)	4.4 (6.5)	9.77 (32.05)	
M81381/18-22-*	22	19/34	.029 (.74)	.031 (.79)	.038 (.97)	.041 (1.04)	2.9 (4.3)	16.0 (52.48)	
M81381/18-24-*	24	19/36	.023 (.58)	.024 (.61)	.032 (.81)	.035 (.89)	1.9 (2.8)	25.9 (84.95)	
M81381/18-26-*	26	19/38	.018 (.46)	.020 (.51)	.028 (.71)	.030 (.76)	1.3 (1.9)	42.2 (138.42)	

Dimensions in inches (mm). Weights in pounds/1000 feet (Kg/1000 M). Resistance in Ω/1,000 feet (Ω/Km), @20° C.

All values are nominal unless otherwise indicated. \* Add color coding per MIL-STD-104 (see page 57).

# MIL-DTL-81381/19, /20 wire—light weight—high strength conductor



## Construction Details

**Insulation:** FEP/polyimide/FEP tape with modified aromatic polyimide coating.

**Conductor:** /19: Silver-plated high-strength copper alloy;  
/20: Nickel-plated plated high-strength copper alloy.

**Colors:** Color coded to MIL-STD-104 (see page 57 for details).

**Identification:** to MIL-DTL-81381.

**MIL-DTL-81381/19 and /20** wires have one layer of FEP/ polyimide/FEP tape insulation with a polyimide hard coat for increased cut-through and abrasion resistance, and a high-strength copper alloy conductor for greater break strength.

Originally designed for aerospace use, these wires are ideal for other applications requiring excellent thermal stability, tight dimensional tolerances, and high reliability.

These wires are especially well-suited in applications where smoke emission, overload stability, and flammability are major concerns.

## Performance:

**Voltage rating:** 600V.

**Temperature rating:** -55 to 200° C.

## Dimensions, Resistance, and Weights—M81381/19 (silver-plated high-strength conductor)

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance
			Minimum	Maximum	Minimum	Maximum		
M81381/19-20-*	20	19/32	.037 (.94)	.039 (.99)	.047 (1.19)	.050 (1.27)	4.3 (6.4)	10.7 (35.10)
M81381/19-22-*	22	19/34	.029 (.74)	.031 (.79)	.038 (.97)	.041 (1.04)	2.8 (4.1)	17.5 (57.40)
M81381/19-24-*	24	19/36	.023 (.58)	.024 (.61)	.032 (.81)	.035 (.89)	1.8 (2.7)	28.4 (93.15)
M81381/19-26-*	26	19/38	.018 (.46)	.020 (.51)	.028 (.71)	.030 (.76)	1.2 (1.8)	44.8 (146.94)
M81381/19-28-*	28	7/36	.014 (.36)	.015 (.38)	.024 (.61)	.027 (.69)	.8 (1.2)	74.4 (244.03)
M81381/19-30-*	30	7/38	.011 (.28)	.012 (.30)	.021 (.53)	.024 (.61)	.6 (.8)	117.4 (385.07)

## Dimensions, Resistance, and Weights—M81381/20 (nickel-plated high-strength conductor)

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance
			Minimum	Maximum	Minimum	Maximum		
M81381/20-20-*	20	19/32	.037 (.94)	.040 (1.02)	.047 (1.19)	.050 (1.27)	4.5 (6.7)	11.4 (37.39)
M81381/20-22-*	22	19/34	.029 (.74)	.031 (.79)	.039 (.99)	.042 (1.07)	2.9 (4.3)	18.6 (61.01)
M81381/20-24-*	24	19/36	.023 (.58)	.025 (.64)	.032 (.81)	.035 (.89)	2.0 (3.0)	30.1 (98.73)
M81381/20-26-*	26	19/38	.018 (.46)	.020 (.51)	.028 (.71)	.030 (.76)	1.3 (1.9)	49.4 (162.03)
M81381/20-28-*	28	7/36	.014 (.36)	.016 (.41)	.024 (.61)	.027 (.69)	.9 (1.3)	79.0 (259.12)
M81381/20-30-*	30	7/38	.011 (.28)	.013 (.33)	.021 (.53)	.024 (.61)	.7 (1.0)	126.6 (415.25)

Dimensions in inches (mm). Weights in pounds/1000 feet (Kg/1000 M). Resistance in Ω/1,000 feet (Ω/Km), @20° C.

All values are nominal unless otherwise indicated. \* Add color coding per MIL-STD-104 (see page 57).

## MIL-DTL-81381/21, /22 wire—tin-plated conductor

MIL-DTL-81381/21 and /22 wires have two layers of polyimide/FEP tape insulation with a polyimide hard coat (or polyamide braid for AWG 8 and larger sizes of M81381/22 types) for increased cut-through and abrasion resistance.

Originally designed for aerospace use, these wires are ideal for other applications requiring excellent thermal stability, tight dimensional tolerances, and high reliability.

These wires are especially well-suited in applications where smoke emission, overload stability, and flammability are major concerns.

### Performance:

**Voltage rating:** 600V.

**Temperature rating:** -55 to 150° C.



### Construction Details

**Insulation:** (M81381/21): Two layers of FEP/polyimide/FEP tape with modified aromatic polyimide coating.

(M81381/22): First layer: Polyimide/FEP tape;  
Second layer: FEP/polyimide/FEP tape;  
Third (outer) layer: modified aromatic polyimide coating (10 AWG and smaller); Aromatic polyamide braid with clear finisher (8 AWG and larger).

**Conductor:** Tin-plated copper.

**Colors:** Color coded to MIL-STD-104 (see page 57 for details).

**Identification:** to MIL-DTL-81381.

### Dimensions, Resistance, and Weights—M81381/21 (tin-plated conductor)

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance	
			Minimum	Maximum	Minimum	Maximum			
M81381/21-10-*	10	37/26	.106 (2.69)	.114 (2.90)	.120 (3.05)	.125 (3.18)	32.4 (48.0)	1.26 (4.13)	
M81381/21-12-*	12	37/28	.084 (2.13)	.090 (2.29)	.097 (2.46)	.102 (2.59)	20.7 (30.6)	2.02 (6.63)	
M81381/21-14-*	14	19/27	.065 (1.65)	.073 (1.85)	.077 (1.96)	.083 (2.11)	12.8 (19.0)	3.06 (10.04)	
M81381/21-16-*	16	19/29	.052 (1.32)	.058 (1.47)	.064 (1.63)	.069 (1.75)	8.4 (12.4)	4.81 (15.78)	
M81381/21-18-*	18	19/30	.046 (1.17)	.051 (1.30)	.058 (1.47)	.063 (1.60)	6.6 (9.8)	6.23 (20.43)	
M81381/21-20-*	20	19/32	.037 (.94)	.041 (1.04)	.048 (1.22)	.053 (1.35)	4.4 (6.5)	9.88 (32.41)	
M81381/21-22-*	22	19/34	.029 (.74)	.033 (.84)	.041 (1.04)	.045 (1.14)	3.0 (4.4)	16.2 (53.14)	
M81381/21-24-*	24	19/36	.023 (.58)	.026 (.66)	.034 (.86)	.038 (.97)	2.0 (3.0)	26.2 (85.94)	
M81381/21-26-*	26	19/38	.018 (.46)	.021 (.53)	.030 (.76)	.034 (.86)	1.3 (1.9)	41.3 (135.46)	

### Dimensions, Resistance, and Weights—M81381/22 (tin-plated conductor)

M81381 P/N	AWG Size	Stranding	Conductor Diameter		Insulation Diameter		Weight	Maximum Resistance	
			Minimum	Maximum	Minimum	Maximum			
M81381/22-02-*	00	1330/30	.440 (11.18)	.475 (12.07)	.478 (12.14)	.518 (13.16)	470 (695.6)	.091 (.30)	
M81381/22-01-*	0	1045/30	.395 (10.03)	.425 (10.80)	.425 (10.80)	.461 (11.71)	374 (553.5)	.116 (.38)	
M81381/22-2-*	2	665/30	.320 (8.13)	.340 (8.64)	.350 (8.89)	.378 (9.60)	235 (347.8)	.183 (.60)	
M81381/22-4-*	4	133/25	.250 (6.35)	.274 (6.96)	.280 (7.11)	.306 (7.77)	148 (219.0)	.280 (.92)	
M81381/22-6-*	6	133/27	.198 (5.03)	.217 (5.51)	.228 (5.79)	.251 (6.38)	95.1 (140.7)	.445 (1.46)	
M81381/22-8-*	8	133/29	.158 (4.01)	.173 (4.39)	.188 (4.78)	.206 (5.23)	61.8 (91.5)	.701 (2.30)	
M81381/22-10-*	10	37/26	.106 (2.69)	.114 (2.90)	.122 (3.10)	.130 (3.30)	31.5 (46.6)	1.26 (4.13)	
M81381/22-12-*	12	37/28	.084 (2.13)	.090 (2.29)	.100 (2.54)	.107 (2.72)	20.4 (30.2)	2.02 (6.63)	
M81381/22-14-*	14	19/27	.065 (1.65)	.073 (1.85)	.081 (2.06)	.089 (2.26)	13.3 (19.7)	3.06 (10.04)	
M81381/22-16-*	16	19/29	.052 (1.32)	.058 (1.47)	.068 (1.73)	.074 (1.88)	8.7 (12.9)	4.81 (15.78)	
M81381/22-18-*	18	19/30	.046 (1.17)	.051 (1.30)	.063 (1.60)	.068 (1.73)	7.0 (10.4)	6.23 (20.43)	
M81381/22-20-*	20	19/32	.037 (.94)	.041 (1.04)	.053 (1.35)	.058 (1.47)	4.7 (7.0)	9.88 (32.41)	
M81381/22-22-*	22	19/34	.029 (.74)	.033 (.84)	.045 (1.14)	.049 (1.24)	3.2 (4.7)	16.2 (53.14)	
M81381/22-24-*	24	19/36	.023 (.58)	.026 (.66)	.040 (1.02)	.044 (1.12)	2.2 (3.3)	26.2 (85.94)	

Dimensions in inches (mm). Weights in pounds/1000 feet (Kg/1000 M). Resistance in Ω/1,000 feet (Ω/Km), @20° C.

All values are nominal unless otherwise indicated. \* Add color coding per MIL-STD-104 (see page 57).