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MIL-DTL-83420 — flexible steel wire rope for aircraft control

MIL-DTL-83420: flexible carbon steel and corrosion-resistant steel wire rope for aircraft control, nonjacketed (type I) and nylon jacketed (type II).

Specification

Item	Value
Type	Aircraft control wire rope
Material	Composition A: high carbon steel per SAE AIR4127, zinc or tin over zinc coated. Composition B: corrosion-resistant steel S30200 or S30400 per SAE HS-1086.
Temperature range	Type I: -65 °F to +250 °F. Type II: -65 °F to +200 °F.
Finish	Each wire coated with a friction-preventive, non-corrosive lubricant. Type II: virgin nylon jacket extruded over the rope.
Procurement	Qualified products only (QPL-83420)

Item	Value
Status	Check the current issue before design use.
Types	Type I: nonjacketed. Type II: jacketed (nylon).
Compositions	A: carbon steel, zinc or tin over zinc coated. B: corrosion-resistant steel.
Construction	3 x 7, 7 x 7 or 7 x 19, regular lay, preformed wires and strands
Supersedes	MIL-DTL-83420M with Amendment 2

Part numbers

Part no.	Type	Composition
MIL-DTL-83420/1	Type I (nonjacketed)	A: carbon steel, zinc or tin over zinc coated
MIL-DTL-83420/2	Type I (nonjacketed)	B: corrosion-resistant steel
MIL-DTL-83420/3	Type II (jacketed)	A: carbon steel, zinc or tin over zinc coated
MIL-DTL-83420/4	Type II (jacketed)	B: corrosion-resistant steel

Specification sheets of MIL-DTL-83420, one per type and composition. Size and construction are ordered from the sheet.

How to read the part number

Part	Meaning
Example	MIL-DTL-83420/2 — Specification sheet for type I (nonjacketed), composition B (corrosion-resistant steel) wire rope

Type I wire rope: construction and physical properties

Nominal dia, in (ref)	Min dia, in	Tolerance on dia (plus only), in	Allowable increase at cut end, in	Construction	MBS, composition A, lb	MBS, composition B, lb	Approx. weight per 100 ft, lb
1/32	.031	.006	.006	3 x 7	110	110	.16
3/64	.046	.008	.008	7 x 7	270	270	.42
1/16	.062	.010	.009	7 x 7	480	480	.75
1/16	.062	.010	.009	7 x 19	480	480	.75
3/32	.093	.012	.010	7 x 7	920	920	1.60
3/32	.093	.012	.010	7 x 19	1,000	920	1.74
1/8	.125	.014	.011	7 x 19	2,000	1,760	2.90
5/32	.156	.016	.017	7 x 19	2,800	2,400	4.50
3/16	.187	.018	.019	7 x 19	4,200	3,700	6.50
7/32	.218	.018	.020	7 x 19	5,600	5,000	8.60
1/4	.250	.018	.021	7 x 19	7,000	6,400	11.00
9/32	.281	.020	.023	7 x 19	8,000	7,800	13.90
5/16	.312	.022	.024	7 x 19	9,800	9,000	17.30
3/8	.375	.026	.027	7 x 19	14,400	12,000	24.30

MBS: minimum breaking strength. The allowable increase in diameter at the cut end applies to the actual diameter of the wire rope being tested.

Type II (jacketed) wire rope: jacket dimensions

Nominal dia, in	Construction	Jacket O.D., in	Tolerance on jacket O.D. (plus only), in	Jacket wall thickness (ref), in	Approx. weight per 100 ft, lb
1/32	3 x 7	.046 (3/64)	.008	.008	.22
3/64	7 x 7	.062 (1/16)	.010	.008	.49
3/64	7 x 7	.078 (5/64)	.012	.016	.76
1/16	7 x 7	.093 (3/32)	.012	.016	.93
1/16	7 x 7	.125 (1/8)	.014	.031	1.18
1/16	7 x 19	.093 (3/32)	.012	.016	.93
1/16	7 x 19	.125 (1/8)	.014	.031	1.18
3/32	7 x 7	.125 (1/8)	.014	.016	1.85

Nominal dia, in	Construction	Jacket O.D., in	Tolerance on jacket O.D. (plus only), in	Jacket wall thickness (ref), in	Approx. weight per 100 ft, lb
5/32	7 x 19	.218 (7/32)	.018	.031	6.10
5/32	7 x 19	.281 (9/32)	.022	.063	7.51
3/16	7 x 19	.250 (1/4)	.018	.031	7.75
3/16	7 x 19	.312 (5/16)	.022	.063	9.20
7/32	7 x 19	.281 (9/32)	.020	.031	9.76
7/32	7 x 19	.343 (11/32)	.024	.063	11.55
1/4	7 x 19	.312 (5/16)	.020	.031	12.30
1/4	7 x 19	.375 (3/8)	.024	.063	14.42

Reference data. The aircraft manufacturer's documentation (SRM / IPC) takes precedence.

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Nominal dia, in	Construction	Jacket O.D., in	Tolerance on jacket O.D. (plus only), in	Jacket wall thickness (ref), in	Approx. weight per 100 ft, lb
3/32	7 x 7	.156 (5/32)	.016	.031	2.18
3/32	7 x 19	.125 (1/8)	.014	.016	1.99
3/32	7 x 19	.156 (5/32)	.016	.031	2.32
1/8	7 x 19	.187 (3/16)	.018	.031	3.62
9/32	7 x 19	.406 (13/32)	.024	.063	16.18
5/16	7 x 19	.437 (7/16)	.024	.063	19.80
3/8	7 x 19	.500 (1/2)	.027	.063	27.20

Notes

- 3 x 7: three strands of 7 wires laid together without a core; the lay of the finished rope is 5 to 7 times the nominal diameter.
- 7 x 7: six outer strands of 7 wires laid around a 7-wire strand core. 7 x 19: six outer strands of 19 wires laid around a 19-wire strand core. In both, the lay of the finished rope is 6 to 8 times the nominal diameter.
- Type I wire rope processed as type II is not certified or shipped as type I, and type II wire rope is not remanufactured into type I.
- Wire rope comes on reels, with no more than two pieces per reel; the shorter piece is at least 20 percent of the reel length, and the distance to the break point is marked on the reel and package.
- Each manufacturer is identified by colour tracer filaments in the rope. They are not mandatory in 3 x 7 construction and do not by themselves show conformance.
- Order by: specification number and date; type and composition; size and construction (from the specification sheet); for type II, the jacket outside diameter; for composition A, the protective coating (zinc, or tin over zinc); length per reel.

SOURCES · MIL-DTL-83420 Rev. N, Mar 2016 — Wire Rope, Flexible, for Aircraft Control, General Specification for

SCAN · OPEN THIS DATA SHEET
theaviationpoint.com/parts/cable-hardware/mil-dtl-83420/

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