



199110

SPECIFICATIONS AND REQUIREMENTS FOR WELDING TRANSFORMER PRIMARY SERVICE CABLE

WK4X

Two conductor type W round cables (without grounding conductors), and single conductor cables.

1. SCOPE:

- 1.1 The purpose of this specification is to assure purchasers of obtaining neoprene jacketed cables of superior quality, for welding transformer primary service and portable power cables, that are reliable, dependable, and designed and manufactured in accordance with accepted industry standards.
- 1.2 This specification covers the construction of round type (W) two conductor and single conductor portable power cables designed for 600 volt service. Cables covered within this specification shall conform to the construction and engineering recommendations of the Insulated Power Cable Engineers Association (IPCEA). Specifications S-19-81.

2. GENERAL:

- 2.1.1 The copper used for the conductors shall be of electrolytic quality and 99.8% pure. Each strand within all conductors shall be annealed dead soft copper and tinned. The physical and electrical properties shall be equal to or exceed the requirements of the American Society for Testing Materials (ASTM) standard B-3.
- 2.1.2 The copper wires used in the makeup of the stranded conductors may be bunched concentric lay or rope lay as required. The size and number of the individual wires in each conductor, when stranded together, shall have a circular mil area equal to the circular mil area of each conductor size specified based on American Wire Gauge (AWG) sizes.
- 2.1.3 The minimum stranding for all cables shall be in accordance with the following Table I:

TABLE I

AWG Size	Minimum Stranding	AWG Size	Minimum Stranding
8	133	1	259
6	133	1/0	259
4	133	2/0	259
3	133	3/0	259
2	259	4/0	427



199110

SPECIFICATIONS AND REQUIREMENTS FOR WELDING TRANSFORMER PRIMARY SERVICE CABLE

WK4X

- 2.1.4 The ampacity or current carrying capacity of the cables in this specification shall be in accordance with Table II when operating with a copper temperature of 70 C (158 F) and an ambient air temperature of 40 C (104 F).

TABLE II

AWG Size	Amperes 1 Cond.	Amperes 2 Cond.	AWG Size	Amperes 1 Cond.	Amperes 2 Cond.
8	60	50	1	170	140
6	85	65	1/0	200	170
4	110	90	2/0	235	190
3	130	105	3/0	275	225
2	150	120	4/0	315	260

2.2 INSULATION:

- 2.2.1 The individual electrical conductors for all cables shall be insulated with a heat and moisture resistant synthetic rubber consisting of at least 40% neoprene. The insulation shall be capable of withstanding a conductor temperature of 70 C (158 F) and an ambient air temperature of 40 C (104 F) while in operation, and meet the requirements of ASTM-D 1352 and IPCEA S-19-81, Section 3.16.
- 2.2.2 There shall be no cotton or paper separator between the power conductor and the rubber insulation.
- 2.2.3 The test voltage and thickness of the insulation on all power conductors shall be in accordance with IPCEA recommendations, shown in Table III.

TABLE III

AWG Size	Insulation Thickness in 64ths	Test Voltage
8	4	6,000
6	4	6,000
4	4	6,000
3	4	6,000
2	4	6,000
1	5	7,500
1/0	5	7,500
2/0	5	7,500
3/0	5	7,500
4/0	5	7,500