

# SPECIFICATION CONTROL DRAWING

**WXA-0059**

TITLE

WIRE, ELECTRIC, RADIATION-CROSSLINKED, POLYALKENE-INSULATED  
TIN-COATED COPPER, LIGHTWEIGHT, GENERAL PURPOSE, 600 VOLT

Date

08-15-01

Revision

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This specification sheet forms a part of the latest issue of Raychem Specification 44.

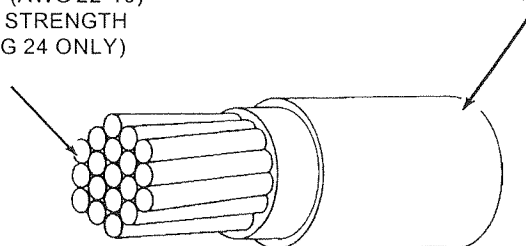
CONDUCTOR - TIN-COATED COPPER (AWG 22-10)  
SILVER-COATED HIGH STRENGTH  
COPPER ALLOY (AWG 24 ONLY)JACKET - RADIATION-CROSSLINKED, MODIFIED ETFE  
20 - 24 AWG THICKNESS: .007 ± .001 in.  
10 - 18 AWG THICKNESS: .005 ± .001 in.PRIMARY INSULATION - RADIATION-CROSSLINKED,  
EXTRUDED POLYALKENE  
COLOR - LIGHT ORANGE

TABLE I. CONSTRUCTION DETAILS

| PART NUMBER   | WIRE SIZE (AWG) | CONDUCTOR STRANDING (number x AWG) | DIAMETER OF STRANDED CONDUCTOR (in.) |         | FINISHED WIRE                            |                |                             |
|---------------|-----------------|------------------------------------|--------------------------------------|---------|------------------------------------------|----------------|-----------------------------|
|               |                 |                                    | MINIMUM                              | MAXIMUM | MAXIMUM RESISTANCE AT 20°C (ohms/1000ft) | DIAMETER (in.) | MAXIMUM WEIGHT (lb/1000 ft) |
| WXA-0059-24-* | 24              | 19 x 36                            | .023                                 | .025    | 28.4                                     | .045 ± .002    | 2.3                         |
| WXA-0059-22-* | 22              | 19 x 34                            | .029                                 | .032    | 16.2                                     | .052 ± .002    | 3.3                         |
| WXA-0059-20-* | 20              | 19 x 32                            | .037                                 | .041    | 9.88                                     | .060 ± .002    | 4.9                         |
| WXA-0059-18-* | 18              | 19 x 30                            | .046                                 | .051    | 6.23                                     | .071 ± .002    | 7.3                         |
| WXA-0059-16-* | 16              | 19 x 29                            | .052                                 | .058    | 4.81                                     | .079 ± .002    | 9.2                         |
| WXA-0059-14-* | 14              | 19 x 27                            | .065                                 | .073    | 3.06                                     | .093 ± .002    | 13.6                        |
| WXA-0059-12-* | 12              | 37 x 28                            | .084                                 | .090    | 2.02                                     | .114 ± .003    | 20.7                        |
| WXA-0059-10-* | 10              | 37 x 26                            | .106                                 | .114    | 1.26                                     | .139 ± .003    | 32.5                        |

TABLE II. PERFORMANCE DETAILS

| PART NUMBER   | BEND TESTING                                |           |                                             |           |
|---------------|---------------------------------------------|-----------|---------------------------------------------|-----------|
|               | MANDREL DIAMETER (inch) (± 3%)              |           | WEIGHT (lb) (± 3%)                          |           |
|               | IMMERSION, LIFE CYCLE AND ACCELERATED AGING | COLD BEND | IMMERSION, LIFE CYCLE AND ACCELERATED AGING | COLD BEND |
| WXA-0059-24-* | .500                                        | 1.00      | .500                                        | 3.00      |
| WXA-0059-22-* | .750                                        | 1.00      | 1.50                                        | 3.00      |
| WXA-0059-20-* | .750                                        | 1.00      | 2.00                                        | 4.00      |
| WXA-0059-18-* | 1.00                                        | 1.25      | 2.00                                        | 4.00      |
| WXA-0059-16-* | 1.00                                        | 1.25      | 2.00                                        | 5.00      |
| WXA-0059-14-* | 1.25                                        | 2.00      | 2.00                                        | 5.00      |
| WXA-0059-12-* | 2.00                                        | 2.00      | 2.00                                        | 5.00      |
| WXA-0059-10-* | 3.00                                        | 3.00      | 2.00                                        | 5.00      |

NOTE: Nominal values are for information only.  
Nominal values are not requirements.

COLORS AND COLOR CODE DESIGNATORS SHALL BE IN ACCORDANCE WITH MIL-STD-681.

DIMENSIONS ARE IN INCHES, AND UNLESS OTHERWISE DESIGNATED ARE NOMINAL.

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**WIRE RATINGS AND ADDITIONAL REQUIREMENTS**

TEMPERATURE RATING: 150°C

Maximum continuous conductor temperature

VOLTAGE RATING: 600 volts (rms)

ACCELERATED AGING: 300 ± 3°C for 7 hours

BLOCKING: 200 ± 3°C for 24 hours, per Raychem Spec 55A

COLOR: White preferred

FLAMMABILITY: 30 seconds (maximum); 3 inch (maximum);  
no flaming of facial tissue

HUMIDITY RESISTANCE: After humidity exposure, wire shall  
meet the requirements for initial Insulation Resistance

IDENTIFICATION AND COLOR STRIPING DURABILITY: 125 cycles  
(250 strokes) (minimum), 500 g weight

IMMERSION: Diameter increase 5% (maximum);  
no cracking, no dielectric breakdown

INSULATION RESISTANCE: 5000 megohms for 1000 ft. (minimum) AWG 24-14,  
3000 megohms for 1000 ft. (minimum) AWG 12-10

INSULATION ELONGATION AND TENSILE STRENGTH:  
(Primary insulation and jacket pulled together at 2 inches/minute)  
Tensile Strength, 3000 lbf/in<sup>2</sup> (minimum)  
Elongation, 75% (minimum)

INSULATION FLAWS:

Primary Insulation,

Spark Test, 1.5 kV, 60 Hz (rms), 100% test

Impulse Dielectric Test, 6.0 kV (peak), 100% test

Finished Wire,

Impulse Dielectric Test, 8.0 kV (peak), 100% test

LIFE CYCLE: 200 ± 2°C for 168 hours

LOW TEMPERATURE-COLD BEND: -65 ± 2°C for 4 hours

SHRINKAGE: 230 ± 2°C, 0.125 inch (maximum) in 12 inches

SMOKE TEST: 200 ± 5°C

SURFACE RESISTANCE: 500 megohms-inch (minimum), both readings

THERMAL SHOCK RESISTANCE: 150 ± 2°C, 0.060 inch (maximum)

VOLTAGE WITHSTAND TEST (POST ENVIRONMENTAL):

2500 volts (rms), 60 Hz, 5 minutes

PART NUMBER:

The "\*" in the part numbers on page 1 shall be replaced by color code designators.

Example: AWG 20, white: WXA-0059-20-9