UL 1551

Outline of Investigation for Sprinkler Systems Wire

Issue Number: 4

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Summary of Topics

This fourth issue of the Outline of Investigation for Sprinkler Systems Wire, UL 1551 dated June 2, 2026, allows for a single-conductor jacketed construction.

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INTRODUCTION

1 Scope

1.1 These cables are rated 30, 300, or 600 V, and 60 °C (140 °F) or 75 °C (167 °F). The insulated-conductor sizes in a jacketed, multi-conductor cable are 30 V: 22 – 14 AWG, 150 – 300 V: 20 – 8 AWG, 600 V: 18 – 2 AWG. Single conductor cables rated 300 V or 600 V utilize 18 – 2 AWG conductors.

1.2 This outline covers the construction and performance requirements for sprinkler systems wire intended for direct burial to provide service for satellite solenoid control on golf courses and lawns, to be terminated to Type UF or USE cable.

2 Units of Measurement

2.1 Values stated without parentheses are the requirements. Values in parentheses are explanatory or approximate information.

3 Undated References

3.1 Any undated reference to a code or standard appearing in the requirements of this Outline of Investigation shall be interpreted as referring to the latest edition of that code or standard.

CONSTRUCTION

4 Conductor

4.1 Conductors shall be annealed solid or stranded copper, bare or tinned, in sizes 22 – 2 AWG.

4.2 Each wire in a bare copper conductor shall comply with the requirements of ASTM B3. Each wire in a tin-coated conductor shall comply with the requirements of ASTM B33.

4.3 The nominal, maximum (1.01 x nominal), and minimum (0.98 x nominal) diameters of solid and stranded conductors shall meet the requirements in Tables 20.1, 20.2, 20.3, 20.3.1, 20.4, and 20.6 of UL 1581, as appropriate. Conductor Diameter is to be measured in accordance with the test Conductor Diameter, in UL 2556.

4.4 The direct-current resistance of any length of conductor in ohms per thousand conductor feet or in ohms per conductor kilometer shall not be higher than the maximum (nominal x 1.02) resistance indicated in the applicable table in D-C Conductor Resistance, Section 30 of UL 1581 at 20 °C (68 °F) or at 25 °C (77 °F) when measured in accordance with the test DC resistance, in UL 2556.

5 Insulation

5.1 Conductors shall be insulated with LDPE, LLDPE, HDPE, or PVC (compounds suitable for Types TW, THW, or THWN) using a wet locations insulating compound rated for at least 60 °C (167 °F) wet.

5.2 Insulated conductors other than those described in 5.1 shall have materials in thicknesses described in Table 5.1 and with temperature ratings appropriate for the specific construction of the sprinkler systems wire in which they are to be used. The materials shall be evaluated for the requested temperature rating in accordance with the test, Dry temperature rating of new materials (long-term aging test), in UL 2556. Investigation of the electrical, mechanical, and physical characteristics of these insulated conductors shall show these conductors to be comparable in performance to the conductors described in 5.1. The investigation shall include tests such as crushing, impact, deformation, heat shock, and cold bend.

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