

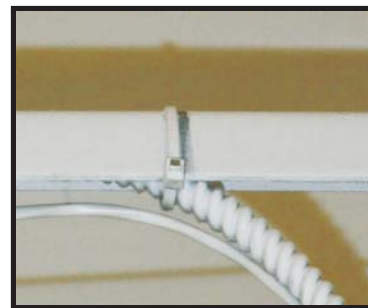
Type 21S Supporting Cable Ties

The new 2017 National Electrical Code (NEC) now permits UL Type 21S certified cable ties to be used as Supporting Devices in electrical installations.

Type 21S Supporting Device classification certifies products for their suitability in providing primary support for flexible conduits, tubing, and cables in accordance with the maximum spacing intervals when specified in the relevant national installation codes, such as the 2017 National Electrical Code (NEC) and the 2015 Canadian Electrical Code (CEC).

Please notify installers to retain the product package. Electrical inspectors will review the packaging for the UL Type 21S Supporting Device certification symbol.

ACT is Type 21S certified for 50 lb. and 120 lb. Natural, Burgundy, Colors, and UV Black cable ties. ACT continually strives to provide you with products that are certified to the highest industry standards.



Reference documents:

NEC Articles effective January, 2017: 300.22 (C1) AH-2, 320.30 (A) Armored Cable Type AC, 328.30 Medium Voltage Cable Type MV, 330.30 Metal Clad Cable Type MC, 334.30 Non-metallic Sheathed Cable, 348.30 (A) Flexible Metal Conduit Type FMC, 350.30 (A) Liquid-tight Flexible Metal Conduit Type LFMC, 356.30 (1) Liquid-tight Flexible Non-metal Conduit Type LFNC, 362.30 (A) Electrical Non-metallic Tubing Type ENT

2015 CEC Articles: 12-510 (4) Non-metallic Sheathed Cable, 12-706 (1) Mineral-insulated Cable, Aluminum Sheathed Cable, Copper Sheathed Cable, 12-1010 (3) Flexible Metal Conduit, 12-1308 (1) Liquid Tight Flexible Conduit, 12-1504 Non-metallic Tubing



Contact us for more information or samples:

Advanced Cable Ties, Inc.

245 Suffolk Lane, Gardner, MA 01440

Sales@actfs.com - 800.861.7228 - www.advancedcableties.com





UL 62275, Cable Ties for electrical installations

New “Type” Designators Simplified

With the publication of UL 62275, *Cable ties for electrical installations*, a set of new “Type” designations for cable ties and fixing devices used with cable ties was introduced. UL 62275 is the adoption of IEC 62275 in the United States. IEC 62275 includes classifications: Type 1 and Type 2 while UL 62275 contains additional type designators including Type 11, Type 2S, Type 21 and Type 21S.

UL 62275 is harmonized with CSA C22.2 No. 62275 (Canada) and NMX-J-623-ANCE (Mexico). Types 11, 2S, 21 and 21S are not recognized outside Canada and the United States.

This paper summarizes the distinctions between the different Type designators. For a comprehensive review of cable tie types and performance criteria included in UL 62275 you are invited to view or download “[New Cable Tie Type Designations](#)” from the NEMA website.

UL 62275/IEC 62275 Type 1 and Type 2

Nonmetallic or composite cable ties and their fixing devices classified as Type 1 or Type 2 may be molded from any nonmetallic material. Cable ties and fixing devices made completely of metallic material are only permitted to be designated as Type 2.

Performance ratings for Type 1 and Type 2 products are declared by the manufacturer and confirmed solely by the results of the appropriate tests in the standard.

Third-party testing laboratories, when used for product certification of these product Types, will typically perform specific material identification tests and record reference identity for each nonmetallic material for comparison during future audits. This is an important control since the material composition can affect product performance as much as the product’s design.

The mechanical performance characteristic of a cable tie is its **loop tensile strength**. The mechanical performance characteristic of a fixing device is its **mechanical strength** (static load rating). The most important distinction between Type 1 products and those designated as Type 2 is the demonstrated ability of the product to retain its respective declared loop tensile strength or mechanical strength value during tests according to the following:

A cable tie or fixing device classified as Type 1 maintains 100% of its declared loop tensile strength, or mechanical strength for a fixing device, when tested in its original (as-received) condition, but needs only to retain 50% after heat aging and temperature cycling and after UV light exposure if appropriate.



A cable tie or fixing device classified as Type 2 maintains 100% of its declared loop tensile strength, or mechanical strength in the case of a fixing device, when tested in its original (as-received) condition, and retains 100% after heat aging, temperature cycling, and UV light exposure if appropriate. In the case of cable ties of all-metallic construction, additional vibration conditioning testing is required. In addition, for Type 2 products the test load is maintained for one minute without excessive slippage as defined in the standard.

UL 62275 Type 11 and Type 21

Type 11 cable ties and fixing devices correspond directly with Type 1, and Type 21 products correspond directly with Type 2 products, in every way except with respect to the selection of polymeric materials. Type 11 and Type 21 products are required to be molded from polymeric materials that have been separately evaluated according to UL 746A, *Polymeric Materials- Short Term Property Evaluations*, and UL 746B, *Polymeric Materials- Long Term Property Evaluations*, or CSA C22.2 No. 0.17, *Evaluation of Properties of Polymeric Materials*.

- The maximum operating temperature for the products declared by the manufacturer is limited to that determined for the material during a separate, long-term investigation by a third-party certifier (RTI-Strength).
- Flammability/flame propagation characteristics of the product are determined by separate investigation of the polymer material and identified using the very familiar designations typically ranging from “HB” to “V-0” according to UL 94, *Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances*, or CSA C22.2 No. 0.17, *Evaluation of Properties of Polymeric Materials*, or NMX-J-565/3-ANCE, *Safety Requirements – Flammability of Plastic Materials for Parts in Devices and Appliances – Test Method*.

These additional Types, Type 11 and Type 21, preserve a longstanding standard practice in both United States and Canadian markets. UL 62275 replaces the legacy requirements for cable ties in UL 1565, *Positioning Devices*.

While the full range of Type designations now available in UL 62275 offers broader options for both manufacturers and specifiers of the products, North American markets in particular continue to highly value products molded from polymeric materials that have been separately evaluated.



The declared maximum operating temperature for products designated and marked as "Type 2" is based solely on:

- The performance criteria in UL 62275; and
- That the product is not molded from a polymeric material that has been UL Recognized according to UL 94 or investigated for long-term thermal properties according to UL 746B

The declared maximum operating temperature for polymeric and composite products designated and marked as "Type 21" is based on:

- The performance criteria in UL 62275
- The Relative Thermal Index - Strength (RTI - Strength) at 1.5 mm (0.06 in.) thickness for the polymeric material that the product is molded from. The RTI - Strength for the material is determined by separate investigation for long-term thermal properties according to UL 746B, and
- The raw materials having their own UL Recognition under Category QMFZ2.

Type 2S and Type 21S Intended for “Support” of Flexible Conduit, Tubing and Cables

Type 2S cable ties and fixing devices correspond directly with Type 2, and Type 21S products correspond directly with Type 21, in every way except for the following:

- Cable tie loop tensile strength – minimum declaration 220 N (50 lbs)
- Fixing device or integral device mechanical strength – minimum declaration 220 N (50 lbs)
- Test load is maintained for five minutes without excessive slippage as defined in the standard

These classifications are intended to evaluate products for their suitability in providing primary support for flexible conduits, tubing and cables in accordance with the maximum spacing intervals when specified in the relevant national installation codes.



The following table summarizes in concise form, the UL Type classifications for cable ties and fixing devices:

Standard TYPE Classifications – Meaning and Where Applicable	
TYPE 1 Nonmetallic and composite cable ties and fixing devices, and integrally molded cable ties and fixing devices	Retains 100% declared loop tensile strength when tested in the as-received condition, and at least 50% of declared loop tensile strength after being subjected to specified test conditions
TYPE 11 Nonmetallic and composite cable ties and fixing devices, and integrally molded cable ties and fixing devices	Type 1 with additional pre-qualification to long-term performance characteristics of nonmetallic molding materials
TYPE 2 Metallic, nonmetallic and composite cable ties and ALL fixing devices, and integrally molded cable ties and fixing devices	Retains 100% declared loop tensile strength, or mechanical strength for fixing device, after being subjected to specified test conditions
TYPE 21 Nonmetallic and composite cable ties and fixing devices, and integrally molded cable ties and fixing devices	Type 2 with additional pre-qualification to long-term performance characteristics of nonmetallic molding materials
TYPE 2S and TYPE 21S Metallic (2S only), nonmetallic and composite cable ties, ALL fixing devices, and integrally molded cable ties and fixing devices	Type 2 or Type 21 with additional qualification for suitability to support flexible metal conduit and cables in building construction in accordance with the requirements in relevant installation codes.

Glossary:

Fixing device:

component (such as a block or bracket) specifically designed to secure the cable tie to a mounting surface

NOTE: A cable tie and the fixing device may be manufactured as an integrated component.

Loop tensile strength:

reference mechanical characteristic of a cable tie with its locking mechanism engaged.



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