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8 FACTS YOU MUST KNOW ABOUT CIRCUIT INTEGRITY (CI) CABLES AND FIRE-RESISTIVE CABLE SYSTEMS

COMPOSED BY

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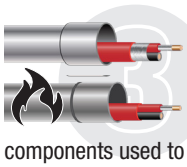
1. FIRE-RESISTIVE CABLES ENSURE SURVIVABILITY

Circuit integrity (CI) or other fire-resistive cables, such as Southwire's Circuit Defender™ cables, are used for remote-control, signaling, power-limited, fire alarm, or communications systems that supply critical circuits to ensure survivability for continued circuit operation for a specified period under fire conditions. Survivability refers to the ability of an electrical circuit to remain functional during a fire. When designing and installing fire-resistive cable systems, refer to the relevant codes and standards to ensure compliance with local regulations.

2. CIRCUIT INTEGRITY RATING

The circuit integrity rating is defined as the time during which the cable or cable system continues to operate in its designated manner under specified fire conditions and after the hose stream test for fire-resistive cable or free air installation circuit integrity cable. These tests are not intended to represent all fire and firefighting conditions but instead provide a relative measure of the performance of comparable assemblies under the specified conditions. Constructions or operating conditions different from those tested could substantially change the cable's or system's performance.



3. FIRE-RESISTIVE CABLE SYSTEMS

A fire-resistive cable system is comprised of the cable and components used to ensure the survivability of critical circuits for a specified time under fire conditions. Fire-resistive cables and conductors and their components are tested and listed as a complete system, are designated for use in a specific system, and are non-interchangeable between systems.

4. CABLES SHALL COMPLY WITH STANDARDS

One method of defining a system's fire rating is by testing the system in accordance with UL 2196, *Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control, and Data Cables*. Southwire's Circuit Defender™ cables have been qualified and listed to the demanding requirements of UL 2196 system #44 (FHIT/7 44) and the CAN/ULC-S139 Test for Fire Resistive Cable. They are also UL listed as FPLR and CMR and are CSA-certified as FAS.

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5. CI CABLES AND FIRE-RESISTIVE CABLE SYSTEMS ARE USED IN CRITICAL APPLICATIONS

Circuit integrity (CI) cables and fire-resistive cable systems are used in locations where critical emergency circuits need to remain operational during a fire. These are typically high-occupancy and large-area facilities such as stadiums, convention centers, or government buildings; healthcare facilities such as hospitals; and high-rise structures. They can also be used in mass transit tunnels, bridges, and subways. CI cables and fire-resistive cable systems are primarily used for fire alarm systems, area of refuge systems, and emergency voice/alarm communication (EVAC) systems to ensure proper evacuation or relocation of occupants and to ensure safety of first responders during a fire emergency.

6. PROPER INSTALLATION IS PARAMOUNT

Circuit integrity (CI) cables, fire-resistive cable systems, or listed electrical circuit protective systems installed outside the fire-rated rooms that they serve (e.g., electrical rooms or fire pump rooms) must be installed according to the system and product listings and the product manufacturers' installation instructions. This includes considerations for cable routing, raceways and couplings, mounting, supports, cable trays, boxes, lubricants, vertical supports, and splices. The installation instructions for Southwire's Circuit Defender™ cables are found in the Circuit Defender™ Type FPLR, FAS, or CMR installation instruction sheet on Southwire's website.

7. CABLES MUST BE MARKED WITH FIRE-RESISTIVE RATING

Cables and conductors for fire-resistive cable systems must be surface marked with the letters "FRR" (fire-resistive rating) followed by the circuit integrity duration in hours and with the system identifier. For example, the following is a sample print legend for Southwire's Circuit Defender™ cables with the relevant section shown in bold:
SOUTHWIRE CIRCUIT DEFENDER™ E75610 X/C XX AWG FPLR/CMR/90C - R26267 **FRR 2-HR (FHIT/7 44)** (UL) 2196 & (ULC) S139 MAX 72V --- CSA LL90458 FAS/300V

8. EMERGENCY COMMUNICATIONS SYSTEMS CAN REQUIRE FIRE-RESISTIVE CABLES OR CABLE SYSTEMS

NFPA 72, National Fire Alarm and Signaling Code®, requires the circuits for emergency communications systems (ECSs) such as fire alarm systems and EVAC systems to be protected according to certain survivability levels.

- **Level 0**: Does not require any provisions for survivability.

- **Level 1**: The building is fully protected by an automatic sprinkler system per NFPA 13, Standard for the Installation of Sprinkler Systems. Any interconnecting conductors, cables, or other physical pathways must be protected by metal raceways or metal armored cables.

- **Level 2**: The circuits are protected through the use of 2-hour fire-rated CI or fire-resistive cables, a 2-hour fire-rated cable system, and/or a 2-hour fire-rated enclosure or protected area. Other methods of protection may be permitted with AHJ approval.

- **Level 3:** The building is fully protected by an automatic sprinkler system per NFPA 13, and the circuit protections meet the requirements of Survivability Level 2.

- **Level 4**: Similar to Level 2, but only requires a 1-hour fire rating.

Southwire's Circuit Defender™ cables can be used for any pathway survivability level, subject to other installation restrictions.

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