

FLAME SPREAD, SMOKE, AND FIRE TESTS



FIRE TEST

UL 2196 & ULC-S139

The North American standard fire test for electrical cables. Cable mounted on a masonry wall is exposed to flames raising the temperature to 1000°F in 5 minutes, 1700°F in 1 hour, and 1850°F in 2 hours, followed by the full force of a firefighter's hose stream. Throughout the fire test and after the hose stream test, the cable is energized and must maintain the electrical integrity of the circuit.

FLAME SPREAD AND SMOKE TESTS

UL 1581 (VW-1) and CSA 2556 (FT1)

This test establishes the resistance of a cable to the vertical propagation of flame. A vertically mounted 0.6 m sample is subjected to 5 x 15 second applications of a defined laboratory burner flame. The extent of flame damage along the sample and the time to self-extinguish are determined.

UL 1581 and CSA 2556 (FT2)

This test establishes the resistance of a cable to the horizontal propagation of flame and the dropping of flaming particles. A horizontally mounted 0.25 m sample is subjected to a 30 second application of a defined laboratory burner flame. The extent of flame damage along the sample is determined.

IEEE 1202 and UL1685 and CSA 2556 (FT4)

This test establishes the resistance of a cable to the propagation of flame while installed in a vertical tray. 2.4 m samples are mounted in a vertical tray, filling the tray to a defined extent. A defined ribbon burner flame is applied at the bottom of the samples for 20 minutes. The char height must not exceed 1.5 m from the burner.

UL 1666 and Fire Propagation/ RPI

This test establishes the resistance to fire propagation of a cable while installed in a vertical run (e.g. between floors or in a shaft). Two vertically mounted 5.33 m samples are subjected to a defined flame in a chamber with specified air flow and under specific test conditions. The length of degradation of the cable is determined.

NFPA 262 AND ULC S102.4 (FT6)

This test establishes the resistance of a cable to the propagation of flame and production of smoke while installed in a horizontal run.

7.3 m samples of cable are placed across the width of a "Steiner Tunnel" and subjected to defined flame and airflow conditions. The length of damaged cable, the smoke density and peak smoke release rate are determined.

UL 1685 AND CSA 2556 (ST1 LIMITED SMOKE)

This test establishes the total smoke released and peak smoke release rate in a cable during the vertical tray flame tests (See "IEEE 1202 and UL 1685 and CSA 2556 (FT4)" above).

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