

Types of Fire Testing

IEC 60331

IEC 60332

BS 6387 C, S, W & Z

UL 1709

Fire Testing – IEC 60332

- IEC 60332 - Vertical Flame Propagation
- Parts 1 & 2 - Specifies test methods for vertical flame spread of a single insulated wire or cable
- It is not recommended that compliance to this standard alone is sufficient to demonstrate the cables ability to limit flame spread. Bunched cables will most likely behave differently. See IEC 60332-3.

IEC 60332 – Part 1 & 2

Part 1

- 1KW flame intended for general use
- Flame duration varies from 60 – 480 seconds and is dependent on diameter
- Char height must be between 50 and 540 mm from lower edge of top support
- Filter paper under burner must not ignite from flaming droplets

Part 2

- Diffused flame intended for small diameters less than 0.5mm²
- Flame duration is 20 seconds maximum or 2 seconds less than melt time
- Char height must be between 50 and 540 mm from lower edge of top support

IEC 60332 – Part 3

- **Part 3** - Specifies test methods for vertical flame spread of bunched cables
- This part of the standard is most often referred to when flame propagation is of concern. The different categories are used to demonstrate the cables ability to limit flame spread.
- Category A is the most difficult to achieve because the cable loading is the heaviest.

IEC 60332 – Part 3 Cat A,B,C

60332-3-22 Category A

Cables bunched on test ladder to achieve a non-metallic volume of 7 l/m
Flame duration is 40 minutes
Char height must be less than 2.5 m from bottom edge of burner

60332-3-23 Category B

Cables bunched on test ladder to achieve a non-metallic volume of 3.5 l/m
Flame duration is 40 minutes
Char height must be less than 2.5 m from bottom edge of burner

60332-3-24 Category C

Cables bunched on test ladder to achieve a non-metallic volume of 1.5 l/m
Flame duration is 20 minutes
Char height must be less than 2.5 m from bottom edge of burner

Fire Testing - IEC 60331

- IEC 60331 - Specifies test methods for circuit integrity cables under fire conditions
- This test is a horizontal flame test of an energized cable. The standard is broken down into four parts depending on type of cable tested.

IEC 60331

- Part 21 - Cables rated up to 600/1,000 volts
- Part 22 - Cables rated greater than 1,000 volts
- Part 23 - Electric data cables
- Part 25 - Optical fiber cables

IEC 60331 – Part 21

- [Part 21 is applicable to Dekoron's product](#)
- Cable is energized to the rated voltage and has indicator lamp wired for continuity check.
- Flame temperature is user specified but 750C is minimum requirement.
- Flame duration is user specified but 90 minutes is usually recommended.
- Cable must maintain test voltage without fuses or circuit breakers being interrupted and indicator lamp must remain on for the specified test duration plus a 15 minute cool down period.

BS 6387 Fire Test Standard

- BS 6387 C, S, W & Z

Cable maintains circuit integrity for 20 minutes at 950° C and is then subjected to mechanical shock and water spray (sprinkler) with electrical integrity maintained.

UL 1709 Fire Test Standard

- Rapid Rise Fire Tests of Protection Materials for Structural Steel

2000° F within 5 Minutes

65,000 Btu/ft²-hour

- Closed Furnace

Customized Fire Test

- Hydrocarbon Pool Fire

Cable to maintain circuit integrity during fire test that simulated the actual fire condition during fire in refinery or chemical plant in term of fire intensity for 15 minutes

Dekoron CIC Cables

– Dekoron CIC Cable Circuit Integrity Cable

- Fire resistant cable that continues to function in the event of a fire.
- Meets BS 6387 C,S, W & Z. IEC 60331, UL 1709
- Uses ceramafiable silicone insulation that prevents the conductors from shorting out.
(replacement for Mica tape)
- Applications include
 - Emergency Communications
 - Motor Control
 - Flame Sensors
 - Sprinkler Activation
 - Temperature monitoring thermocouples

**Throw some cable
on the barbie !**

