FIRE SURVIVAL CABLES

Manufacturing Standards

Testing Standards

Certifications


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FIRE SURVIVAL CABLES

BONTON CABLES BORNSAFE

- Resistance to Fire:
  - Maintaining Circuit Integrity under fire, water sprinkling and Mechanical shock conditions.
- Usage: Fire alarm system, water sprinkler pumps, smoke exhausts, emergency lighting, fireman's lift, etc.
- Areas which are hazardous/ High Public Gathering/ Areas where the machinery is expensive
- Widely used in Oil and Natural Gas/ Petroleum Industries/ Refineries/ Airports/ Chemical Industry/ Pharma Industry

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MANUFACTURING STANDARDS

TYPES OF FS CABLES

(Manufacturing Standard)

BS 7846- Mica Tape Armored Cable

BS 7629- HPSR Cable

(High Performance Silicon Rubber Cable)

BSEN 60702- MICC Cable

(Mineral Insulated Copper Cables)

Construction Of BSEN 60702 (MICC)

- Mineral insulated MICC cable BSEN60702.
- **Conductor:** Plain annealed solid copper
- **Insulation:** Compressed magnesium oxide (Inorganic)
- **Core identification:** There is no identifying marks on the conductors.
- **Armour/Protection:** Plain
- annealed copper tube
- sheath (Inorganic)
- **Sheath/Jacket:** LSZH
- (Low smoke zero halogen)

BSEN 60702- MICC

- Most widely used in India- FS started with MICC Cables
- **Exclusive Tie-up with MICC Cable Company UK**
- The **advantages** over other FS Cables are:
  - More Current Carrying Capacity
  - Life – More than 100 yrs
- **Flame Barrier-** Compressed magnesium Oxide
  - **Temperature rating-** 2100^{0}C
  - Technically this is still the most superior cable
  - **Only cable with Brass Glands** – Entire system is fire proof
  - Installation is **not difficult but typical**
- Testing Standards as per BS 6387 CWZ, BS 50200, BSEN 50200 Annexure E, BS 8434
- Certification: LPCB Approved

Construction of BS 7629

Conductor

Plain annealed copper to BS 6360
Solid (class 1) for
1-1.5-2.5 sqmm*
Standed (class 2)
for 4 sqmm
*1.5-2.5 sqmm are available with standed conductor
(class 2)
(SR 114H-R)

Insulation

High performance silicone
rubber EI 2 to BS 7655: section 1.1

Earth Conductor

Tinned annealed
copper to BS 6360 (drain wire for
multicore cables)

Electrostatic Screen

Aluminium/polyester tape
125% coverage

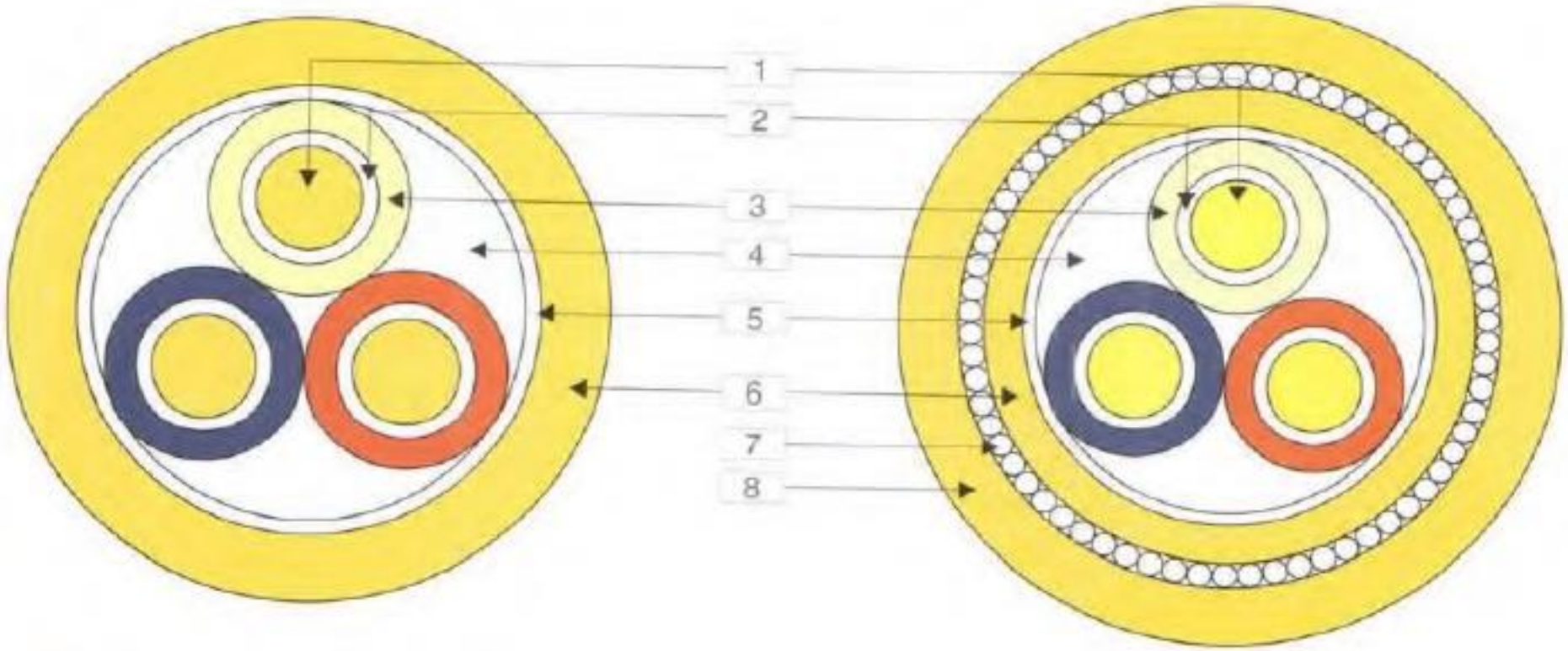
Sheath

Thermoplastic
Zero halogen,
Low smoke,
Flame retardant,
abrasion resistant
Type LTS3 to
BS 7655:section 6.1

BS 7629

- **Exclusive Tie-up with Cavicel Italy**
- **Flame Barrier-** HPSR – 1410^{0}C
- Outer Sheath- HFLS
- **Easy to install**
- The **cable is unarmored hence very flexible-** It can be installed in conduits/ clipped directly or put in cable trays.
- Technology not available in India so we are importing the cables
- Plan to set up manufacturing facility in India once a certain amount of volume is generated
- Testing Standards as per **BS 6387 CWZ**
- Certification: LPCB Approved, BASEC Approved, BRE Global
- **Competition:** Since the technology is not there in India- there are Distributors and Companies who are importing this cable from other companies like:
  - Parelli/ Draka/ Tyco

Construction of BS 7846



Cable Construction for BT-8

1.	Conductor	:	Plain Annealed Copper Wires, circular non-compacted or compacted stranded.
2.	Fire Proof Layer	:	Mica Tape.
3.	Insulation	:	Extruded Cross-linked Polyethylene (XLPE).
4.	Filler	:	Non-hygroscopic fillers (if necessary).
5.	Binder Tape	:	Non-hygroscopic tape.
6.	Sheath (Inner Sheath)	:	Extruded Low Smoke Non-halogen Flame Retardant Thermoplastic.
7.	Armouring	:	Multi-core-Galvanized Steel Wire.
8.	Outer Sheath	:	Extruded Low Smoke Non-halogen Flame Retardant Thermoplastic.

BS 7846

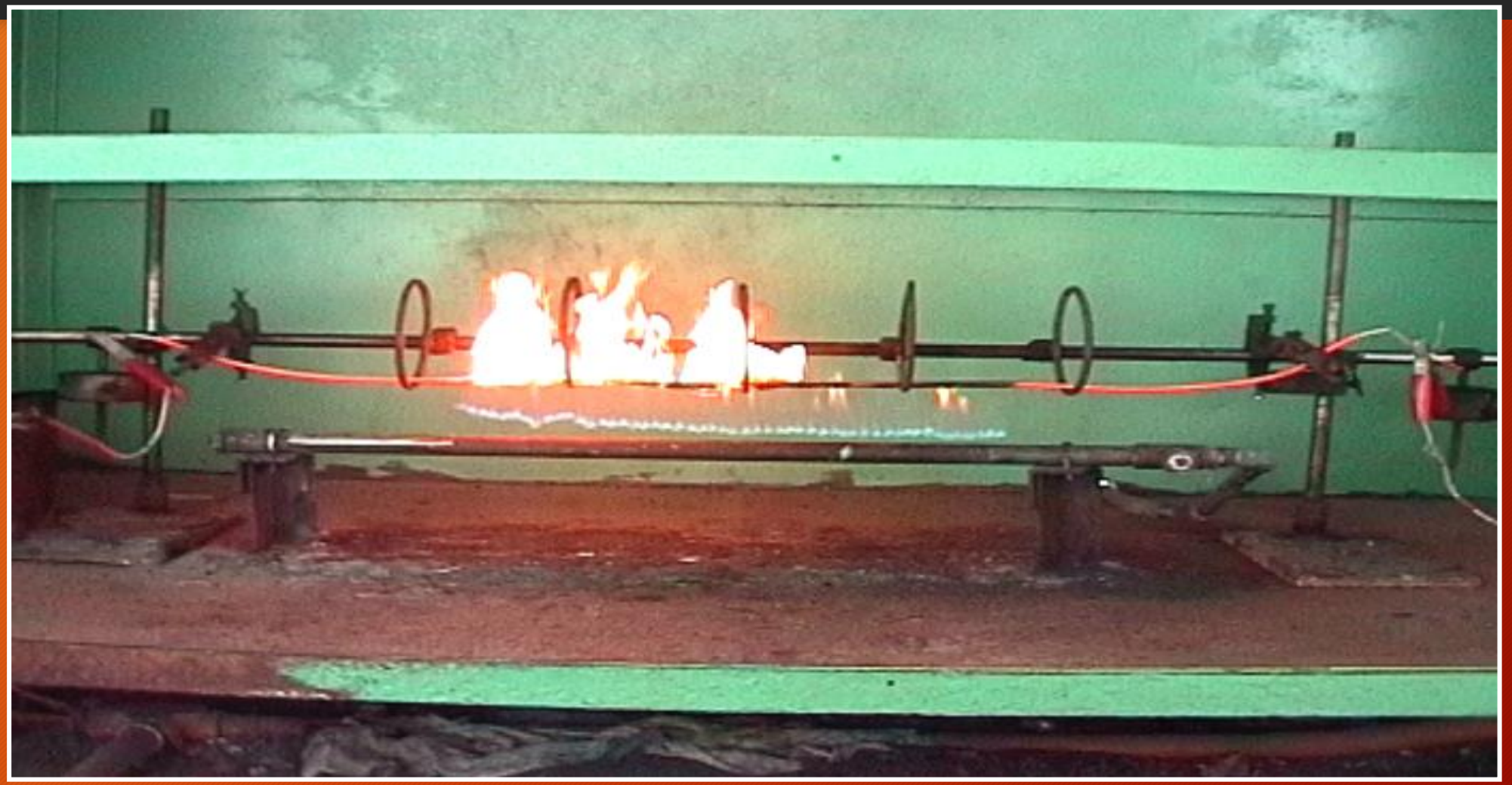
- Almost like a **regular armored cable** only- with an **additional Flame barrier**
- **Flame Barrier is Mica Tape** – withstand 1200^{0}C
- Inner and Outer Sheath – Halogen Free Low smoke
- Insulation- GP8/ Ei5
- Sizes Available upto 400 sqmm 4 Core
- Now very widely used as the **Installation is like a regular armored cable only.** Testing Standards as per **BS 6387 CWZ**
- Only Company in this category that gives **LPCB Certificate** and Clears **enhanced tests (BS 50200, BSEN 50200 Annexure E, BS 8434)**

TESTING STANDARDS

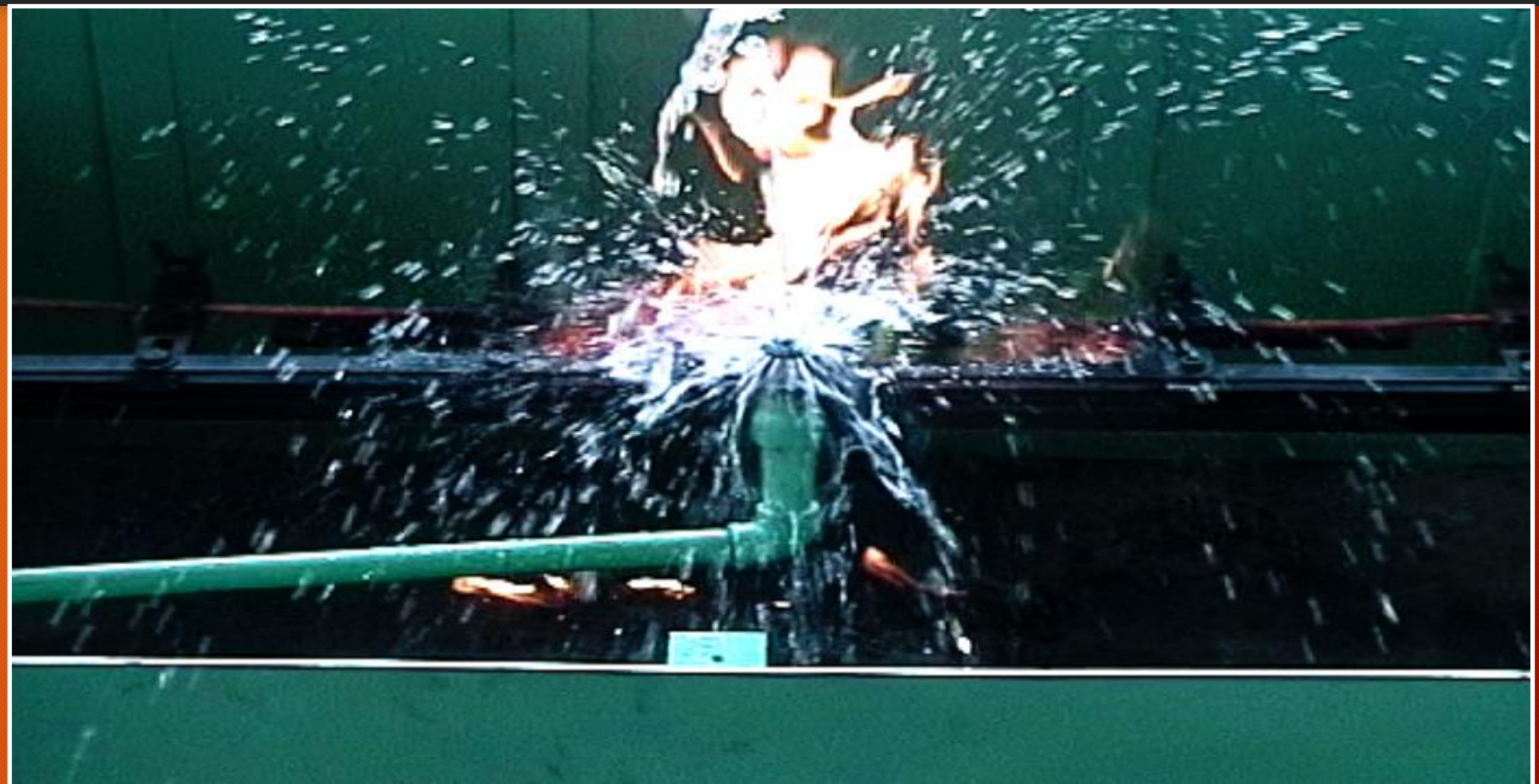
- Basis Test: BS 6387 CWZ

- Enhanced Test:
  1. BSEN 50200
  2. BSEN 50200 Annexure E
  3. BS 8434
  4. BS 8491

BS 6387 CWZ: Category C- 950^0 C for 3 hours



Category W: Fire at 650^0 C- 15 min
Water Sprinkling – 15 min



Category Z: Fire at 950^0 C
Mechanical shocks (1 impact/ 30 sec)
For 15 Minutes

ENHANCED TESTS

1. BSEN 50200

2. BSEN 50200 Annexure E

3. BS 8434

4. BS 8491

BSEN 50200 Annexure E

1. Fire at 830^0 C + Mechanical Shocks (1 impact/5 min)
   For 15 minutes

2. Fire at 830^0 C + Mechanical Shocks (1 impact/ 5min) + Water Sprinkling
   For 15 minutes

Total Time – 30 minutes

BSEN 50200

This test is carried out to verify the circuit integrity of cables exposed to fire at 830°C and mechanical shocks (1 impact/ 5 min)

CLASSIFICATION:

- PH 15: Flame exposure for 15 min
- PH 30: Flame exposure for 30 min
- PH 60: Flame exposure for 60 min
- PH 90: Flame exposure for 90 min
- PH 120: Flame exposure for 120 min

BS 8434-2

1. Fire at 930^0 C + Mechanical Shocks (1 impact/5 min)
   For 60 minutes

2. Fire at 930^0 C + Mechanical Shocks (1 impact/ 5min) + Water Sprinkling
   For 60 minutes

Total Time – 120 minutes

BS 8491

- This is test for **large diameter power cables** (cables with diameter more than 20 mm)
- Fire at 830^0 C + Mechanical Shocks (1 impact/ 10min) + Water Sprinkling (5 minutes at the end of test (5 sec/ 60 sec)- **Total 120 min**
- Mechanical shocks- Directly on the sample and not on the board that the sample is clapped to
- Water Sprinkling- By a strong jet of water- 2.5 l/min.)

THANK YOU