

## Electrical Passive Fire Protection for Tyre Industry

*Substations · Mixing & Curing · Solvent Areas · Finished Goods Warehouses · Safety-Critical Circuits*

### Section A | Electrical Zone-Wise Fire Risk Map

#### A1. Substations, MCC Rooms & Cable Galleries

*Main substation, captive power plant, mixing (Banbury) MCC, calender and extrusion MCCs, curing press hydraulic rooms, tyre building & solvent areas, finished tyre warehouse, and central control room. Hydrocarbon exposure (solvent vapour, hot-oil mist, diesel pool) and conventional cellulosic fire (rubber, paper interleaf, finished goods) must both be designed for.*

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
Main substation	Transformer + cable fire	Cable coatings, firestops, panel FP	3 hr / Critical
CPP / boiler-house electrical room	Coal/biomass dust + oil fire exposure	Cable coatings, firestops, panel FP, structural intumescent	3 hr / Critical
Banbury / mixing MCC	Carbon black dust + process oil fire	Cable coatings, firestops, panel FP	2 hr / Critical
Curing press hydraulic power-pack room	High-pressure hydraulic oil mist fire	Structural intumescent, cable coatings, panel FP	H60 + 2 hr / Critical
Calender drive & oil-heating MCC	Hot-oil + paper interleaf fire	Cable coatings, panel FP	H60 / High
Extrusion line MCC	Heated polymer + drive motor fire	Cable coatings, panel FP	2 hr / High
Tyre building MCC	Solvent-based cement vapour ignition	Panel FP (Zone 1 spec), cable coatings	H60 + 2 hr / Critical
Solvent storage electrical	Hydrocarbon vapour explosion + pool fire	Structural intumescent, cable wraps, panel FP	H120 + 2 hr / Critical
Carbon black handling MCC	Combustible dust deflagration	Panel FP, cable coatings, firestops	2 hr / High
Finished tyre warehouse lighting & sprinkler MCC	Class A high-hazard rubber fire	Cable coatings, fire-survival cabling, firestops	3 hr / Critical
Cable galleries (mixing → processing → curing)	Propagating cable fire	Cable coatings + transverse firestops every 30 m	3 hr / Critical
Compressor house MCC	Lube oil mist fire	Panel FP, cable coatings	2 hr / High
DG room	Diesel pool fire	Cable coatings, firestops, panel FP	H60 + 2 hr / Critical
CCR / DCS	Panel + cable fire	Panel FP, firestops, FR doors	2 hr / Critical

#### A2. Safety-Critical Electrical Systems

*These systems must remain operational throughout the fire event in order to control or extinguish it. Fire-survival cable integrity is mandatory under IEC 60331-21 and BS 6387 CWZ; failure to specify is a non-compliance under NBC Part 4 — Fire and Life Safety, and where solvent / hydrocarbon zones are involved, OISD-STD-117.*

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
Fire water pump house	Must survive the fire it fights	Fireproofed structure, FR cables	3 hr / Critical
Banbury fire suppression release	Steam / CO <sub>2</sub> dump trip integrity	Fire-survival cable, panel FP	IEC 60331 / BS 6387 CWZ / Non-negotiable
Curing press emergency hydraulic dump	Press de-pressurisation circuit	Fire-survival cable	IEC 60331 / BS 6387 CWZ / Non-negotiable
Solvent area F&G detection	Vapour detection + ESD trip	Fire-survival cable, panel FP	IEC 60331 / BS 6387 CWZ / Non-negotiable
Warehouse ESFR sprinkler pump power	Switchgear to motor	Fire-survival cable	IEC 60331 / BS 6387 CWZ / Non-negotiable
Emergency DG start & transfer	Battery to engine panel	Fire-survival cable	BS 6387 CWZ / Critical
Emergency lighting + PA / GA	Plant-wide egress	Fire-survival cable	BS 6387 CWZ / Critical
UPS feeders to DCS / SIS	UPS to marshalling	Fire-survival cable	BS 6387 CWZ / Critical

## Section B | Product-to-Application Matrix

This section maps each of the four priority Stanvac product lines to the specific tyre industry locations and circuits where they must be specified. Use these tables to build the bill of quantities (BOQ) for any tyre industry opportunity.

### B1. Cable Coatings — Fire Propagation Prevention

*Minimum 240 minutes protection, thickness ≤ 1.6 mm DFT.*

Purpose: prevent the spread of fire along cable trays, risers and bunches. The “Browns Ferry” scenario — one cable igniting an entire cable gallery — is the design basis.

**Applicable standards: IEC 60332-3 (FM 3971 has limited use — it provides only short-duration protection against arcs and sparks)**

Zone	Specific Application	Priority
Banbury / mixing MCC and cable basement	All HT and LT trays + transverse firestops every 30 m	Critical
Curing press hall cable trays	All hydraulic-power-pack and press control cables	Critical
Calender and extrusion line cable routes	Drive, heater and instrumentation	High
Tyre building bay cable routes	Lighting and machine power (solvent vapour zone)	Critical
Solvent storage cable entries	All cables crossing classified zones	Critical
Finished tyre warehouse cable routes	Lighting + ESFR sprinkler + smoke vent	Critical
Carbon black silo and conveyor cable routes	Bucket elevator and screw conveyor drives	High
CPP cable tunnels	All HT/LT trays + transverse firestops every 30 m	Critical
Main substation cable gallery	Incoming and outgoing	Critical

Zone	Specific Application	Priority
DG room cable entries	Start, alternator, control	Critical

## B2. Cable Coatings — Fire Survivability

240-minute circuit integrity, thickness  $\leq 1.6$  mm DFT.

Purpose: keep the cable electrically functional while burning, so the safety circuit continues to operate through the fire event. Fire-survival coatings are specified where loss of the circuit would defeat the fire-fighting or shutdown system itself.

**Applicable standards: IEC 60331-21 and IS 17505-1**

Circuit Type	Where Applied	Priority
Fire water pump power (electric + diesel)	Switchgear to motor	Non-negotiable
Warehouse ESFR sprinkler pump power	Switchgear to motor	Non-negotiable
Banbury fire suppression release circuit	Trip relay to actuator	Non-negotiable
Curing press emergency dump circuit	ESD logic to dump valve	Non-negotiable
Solvent area F&G detection	Detector to F&G panel	Critical
Emergency lighting + PA / GA	Plant-wide egress	Critical
UPS feeders to DCS / SIS	UPS to marshalling	Critical
Emergency DG start & transfer	Battery to engine panel	Critical
Tyre building machine e-stop & guard	Building machine safety	Critical

## B3. Electrical Panel Fireproofing

Purpose: protect field control panels, junction boxes, MCC panels and logic cabinets from external fire and internal electrical fire. Stanvac offers three complementary solutions under this product line.

Option	Stanvac Solution	Description & Typical Use
A	Two-hour rated firestop sealant	For sealing cable gland openings, panel cut-outs, conduit entries and small penetrations at the panel boundary. Silicone / acrylic intumescent sealant certified to UL 1479 / IS 12458 at 2-hour rating.
B	Non-combustible intumescent paint	For external coating of panel enclosures, cable glands and junction boxes exposed to radiant heat or hydrocarbon fire. Non-combustible base with intumescent top-coat.
C	Two-hour rated intumescent translucent coating for small-dia. cables (aerosol spray)	Aerosol-delivered translucent intumescent coating for small-diameter instrumentation, control and signal cables entering panels. Clean application in congested panel interiors; 2-hour rated.

## B4. Two-Hour Rated Firestop Barriers

Hybrid combination of mineral wool and firestop mortar.

Purpose: seal every penetration through a fire-rated wall, floor or cable tunnel so compartmentation is maintained. Stanvac's hybrid system combines high-density mineral wool (for bulk void filling and thermal insulation) with firestop mortar (for load-bearing, smoke-tight surface seal). This dual-material approach delivers superior 2-hour rating performance across a wider range of penetration sizes than single-material systems.

**Applicable standards: UL 1479 · ASTM E814 · IS 12458**

Location	Specific Application	Priority
Mixing / Banbury hall boundary	Cable, pipe, duct penetrations	Critical
Curing press hall to adjacent area	Hydraulic and cable penetrations	Critical
Solvent storage compartment walls	All wall, floor, duct penetrations	Critical
Finished tyre warehouse perimeter	Every wall, floor, duct penetration	Critical
Tyre building bay boundary	Cable and pipe penetrations	Critical
CPP boundary	Cable and pipe penetrations	Critical
Main substation cable trench to building	Sand-seal + firestop pillows + mortar	Critical
Cable tunnel transverse barriers	Every 30–50 m	Critical
DG room boundary	Fuel and cable penetrations	Critical
Fire water pump house entries	Power and control cable penetrations	Non-negotiable
HVAC duct penetrations	Fire dampers + collar seals	High

*Detailed product data sheets, certifications, specimen specifications and project BOQ support are available on request.*

**For more information, please connect with us.**