Electrical Passive Fire Protection for Tyre Manufacturing Plants

Substations · Cable Galleries · Control Rooms · Safety-Critical Circuits

Section A | Electrical Zone-Wise Fire Risk Map

A1. Substations, MCC Rooms & Cable Galleries

Main substation, mixing / Banbury MCC, calendering / extrusion panels, curing press control, warehouse distribution, and the plant CCR.

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
Main substation	Transformer + cable fire	Cable coatings, firestops, panel FP	**Critical**
Banbury / mixing MCC	Rubber + oil fire at high temp	Panel FP, cable coatings, firestops	**Critical**
Mill room cable gallery	Cable fire overhead	Cable coatings	**Critical**
Calendering / extrusion panels	Rubber fire, motor fire	Panel FP, cable coatings	**Critical**
Curing press control panels	Steam + hydraulic oil fire	Panel FP, cable coatings	**Critical**
Carbon black handling panels	Dust fire	Panel FP, firestops	**High**
Warehouse electrical distribution	Class A fire load adjacent	Panel FP, firestops	**Critical**
Cable tunnels	Propagating cable fire	Cable coatings + transverse firestops	**Critical**
CCR / DCS	Panel + cable fire	Panel FP, firestops, FR doors	**Critical**
DG room	Fuel + lube oil fire	Panel FP, firestops	**Critical**

A2. Safety-Critical Electrical Systems

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
Fire water pump house	Must survive the fire it fights	Fireproofed structure, FR cables	**Non-negotiable**
Banbury emergency stop	Over-temp, over-current trip	Fire-survival cable	**Critical**
Curing press safety interlocks	Pressure relief, temperature trip	Fire-survival cable	**Critical**
Warehouse AV alarm + sprinkler supervisory	Evacuation signalling	Fire-survival cable	**Non-negotiable**

Section B | Product-to-Application Matrix

This section maps each of the four priority Stanvac product lines to the specific tyre manufacturing plants locations and circuits where they must be specified. Use these tables to build the bill of quantities (BOQ) for any tyre manufacturing plants 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
Main substation cable gallery	All HT and LT trays	**Critical**
Mill room cable trays	Above Banbury and dump mills	**Critical**
MCC cable trenches	Bottom-entry cable bunches	**Critical**
Cable tunnels	Full-length coating + transverse firestops every 30 m	**Critical**
Curing press area cable routes	Hydraulic oil exposure	**Critical**
Warehouse perimeter cable routes	Lighting + sprinkler	**Critical**
Calendering / extrusion cable routes	Motor and heater	**High**
Boiler / TF heater cable routes	Fuel and process	**High**

Zone	Specific Application	Priority
DG room cable entries	Start, alternator, control	**Critical**
Compressor cable routes	Motor and instrumentation	**High**

B2. Cable Coatings — Fire Survivability

240-minute circuit integrity, thickness ≤ 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**
Emergency DG start & transfer	Battery to engine panel	**Critical**
Emergency lighting + PA / GA	Plant-wide egress	**Critical**
Sprinkler system supervisory	Flow switch, tamper switch	**Critical**
Heat / smoke detection circuits	Detector to panel	**Critical**
Banbury emergency stop	Over-temperature, over-current	**Critical**
Curing press safety interlocks	Pressure relief, temperature trip	**Critical**
UPS feeders to DCS	UPS to marshalling	**High**
Boiler trip circuits	Fuel trip, drum level	**Critical**
Warehouse AV alarm	Evacuation signalling	**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
Compound / green / cured tyre warehouse perimeter	Every wall, floor, duct penetration	**Critical**
Mill room to adjacent area boundary	Cable and conveyor penetrations	**Critical**
Curing press area boundary	Cable and pipe penetrations	**Critical**
Oil storage bund area	Pump and instrumentation	**Critical**
Main substation cable trench to building	Sand-seal + firestop pillows + mortar	**Critical**
Cable tunnel transverse barriers	Every 30–50 m	**Critical**
MCC room cable entries	Trench and wall penetrations	**Critical**
DG room boundary	Fuel and cable penetrations	**Critical**
Fire water pump house entries	Power and control cable penetrations	**Non-negotiable**

Location	Specific Application	Priority
HVAC duct penetrations	Fire dampers + collar seals	**Critical**

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

For more information, please connect with us.

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