Electrical Passive Fire Protection for Auto Component Manufacturing

Substations · Heat Treatment & Forging · Paint & Plating Shops · Machining & Assembly · Safety-Critical Circuits

Section A | Electrical Zone-Wise Fire Risk Map

A1. Substations, MCC Rooms & Cable Galleries

Main substation, captive utilities, press shop, machining and welding bays, heat-treatment and forging shops, casting / foundry, plating shop, paint and powder-coating booths, assembly lines, finished goods warehouse, compressor house and central control. Hydrocarbon exposure (paint solvents, oil quench, hydraulic oil mist) and conventional cellulosic fire (cardboard packaging, oils, electrical insulation) 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	Fuel + oil fire exposure	Cable coatings, firestops, panel FP	3 hr / Critical
Press shop MCC	Hydraulic oil mist + drive motor	Cable coatings, panel FP	H60 / High
Machining bay MCC	Cutting oil mist + chip fire	Cable coatings, panel FP	2 hr / Critical
Heat treatment furnace electrical	Gas furnace + oil quench bath fire	Cable coatings, panel FP, firestops	H60 + 2 hr / Critical
Forging shop electrical	Gas furnace + lubricant fire	Cable coatings, panel FP	H60 + 2 hr / Critical
Casting / foundry electrical	Molten metal + sand fire	Cable coatings, panel FP	2 hr / Critical
Plating shop electrical	Chemical bath + H_2 evolution	Panel FP (corrosion-resistant), cable coatings	2 hr / Critical
Paint shop / paint booth MCC	Solvent vapour ignition + pool fire	Panel FP (Zone 1 spec), cable coatings, firestops	H60 + 2 hr / Critical
Paint kitchen / mix room	Solvent inventory fire	Structural intumescent, cable wraps, panel FP	H120 + 2 hr / Critical
Powder coating MCC	Combustible powder dust	Panel FP, cable coatings	2 hr / High
Solvent storage electrical	Hydrocarbon vapour explosion + pool fire	Structural intumescent, cable wraps, panel FP	H120 + 2 hr / Critical
Welding line MCC	Sparks + gas cylinder + cable	Cable coatings, panel FP	2 hr / High
Assembly line MCC	Drive + cable fire	Cable coatings, panel FP	2 hr / High
Logistics / FG warehouse MCC	Class A high-hazard fire load	Cable coatings, fire-survival cabling, firestops	3 hr / Critical
Compressor house MCC	Lube oil mist fire	Panel FP, cable coatings	2 hr / High
Cable galleries (utility → shops)	Propagating cable fire	Cable coatings + transverse firestops every 30 m	3 hr / Critical

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
DG room	Diesel pool fire	Cable coatings, firestops, panel FP	2-3 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 / paint and oil-quench zones are involved, OISD-STD-117 hydrocarbon-fire ratings apply.

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
Heat treatment oil quench fire suppression	Quench bath suppression release	Fire-survival cable	IEC 60331 / BS 6387 CWZ / Non-negotiable
Paint booth fire suppression release	CO_2 / IG release on detection	Fire-survival cable, panel FP	IEC 60331 / BS 6387 CWZ / Non-negotiable
Paint kitchen F&G + ESD	Vapour detection + ESD trip	Fire-survival cable, panel FP	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
Plating shop H_2 detection + vent	H_2 detector to vent fan	Fire-survival cable, panel FP	IEC 60331 / BS 6387 CWZ / Non-negotiable
Warehouse 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 / SCADA	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 auto component manufacturing locations and circuits where they must be specified. Use these tables to build the bill of quantities (BOQ) for any auto component manufacturing 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
Press shop cable trays	All hydraulic and drive cables	Critical
Machining bay cable routes	Drive, coolant, lighting	High
Heat treatment hall cable routes	Furnace controls + quench bath	Critical
Forging shop cable routes	Furnace controls + manipulator	Critical
Casting / foundry cable routes	Pour control + ladle drive	Critical
Plating shop cable routes	All cables in chemical zones (corrosion-resistant)	Critical
Paint shop / booth cable routes	All cables crossing classified zones	Critical
Paint kitchen cable routes	All cables in solvent storage area	Critical
Solvent storage cable entries	All cables crossing classified zones	Critical
Powder coating cable routes	Heater + transfer + booth	High
Welding and assembly cable routes	Drive, control, lighting	High
FG warehouse cable routes	Lighting + sprinkler	Critical
Main substation cable gallery	Incoming and outgoing	Critical
DG room cable entries	Start, alternator, control	Critical

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
Heat treatment quench suppression release	Detector to suppression actuator	Non-negotiable
Paint booth fire suppression release	Detector to suppression actuator	Non-negotiable
Paint kitchen F&G + ESD	Detector to ESD logic	Non-negotiable
Solvent area F&G detection	Detector to F&G panel	Non-negotiable
Plating shop H_2 vent fan	Detector to vent fan motor	Non-negotiable
Warehouse sprinkler pump power	Switchgear to motor	Non-negotiable

Circuit Type	Where Applied	Priority
Emergency lighting + PA / GA	Plant-wide egress	Critical
UPS feeders to DCS / SCADA	UPS to marshalling	Critical
Emergency DG start & transfer	Battery to engine panel	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
Heat treatment hall boundary	Cable, pipe, duct penetrations	Critical
Forging shop boundary	Cable and pipe penetrations	Critical
Casting / foundry boundary	Cable and pipe penetrations	Critical
Plating shop compartment walls	Corrosion-resistant firestops	Critical
Paint shop / booth boundary	Cable, duct, pipe penetrations	Critical
Paint kitchen compartment walls	All wall, floor, duct penetrations	Critical
Solvent storage compartment walls	All wall, floor, duct penetrations	Critical
FG warehouse perimeter	Every wall, floor, duct penetration	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.