

Electrical Passive Fire Protection for Shopping Malls

Substations · Tenant Distribution · Atria & Food Courts · Underground Parking · Safety-Critical Circuits

Section A | Electrical Zone-Wise Fire Risk Map

A1. Substations, MCC Rooms & Cable Galleries

Multi-tenant retail malls including main substations and DG yards, anchor and tenant electrical distribution, food court kitchens, underground parking ventilation, atrium smoke management, central HVAC plant and the fire pump house.

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
Main substation (multi-feeder)	Transformer + cable fire	Cable coatings, firestops, panel FP	Critical
CPP transformer yard / outdoor switchyard	Transformer oil fire	Fire walls with firestopped penetrations, cable wraps	3 hr / Critical
DG yard (multiple sets)	Diesel pool fire	Cable coatings, firestops, panel FP	Critical
UPS room (BMS, fire, security)	Battery thermal event	Cable coatings, firestops, panel FP, FR doors	Critical
Tenant MCC / sub-distribution rooms	Tenant fit-out cable fire	Cable coatings, firestops, panel FP	Critical
Anchor store MCC	Stockroom Class A fire load	Cable coatings, panel FP	High
Food court hood and kitchen MCC	Cooking oil + LPG fire	Panel FP, cable coatings, firestops	Critical
Cinema sub-tenant MCC	As per cinema occupancy	Cable coatings, panel FP	Critical
Underground parking lighting + jet-fan MCC	Vehicle fire + smoke build-up	Cable coatings, fire-survival cabling for jet fans	Critical
Atrium smoke extract fan MCC	Must run during fire	Cable coatings, fire-survival cabling, panel FP	Critical
Central HVAC chiller plant	Refrigerant + lubricant fire	Cable coatings, panel FP	High
Cable risers (substation → floors)	Vertical fire propagation	Cable coatings + firestops at every floor	Critical
Service corridor electrical	Common-area cable fire	Cable coatings, firestops	High
Loading dock electrical	Vehicle + packaging fire	Cable coatings, panel FP	High
Fire water pump house electrical	Must survive the fire	Structural intumescent, fire-survival cable	Non-negotiable

A2. Safety-Critical Electrical Systems

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
Fire water pump house (high-duty: 4500–9100 LPM)	Switchgear to motor	Fireproofed structure, FR cables	Non-negotiable

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
Atrium smoke extract fan power	Must run minimum 2 hours during fire	Fire-survival cable	Non-negotiable
Underground parking jet-fan power	Smoke clearance from car-park fires	Fire-survival cable	Non-negotiable
Stairwell pressurization fan power	Egress shaft pressurization	Fire-survival cable	Non-negotiable
Lift homing circuit	Fire-floor recall	Fire-survival cable	Non-negotiable
PA / Voice evacuation system	Mall-wide announcement	Fire-survival cable, panel FP	Non-negotiable
Sprinkler pump power	Switchgear to motor	Fire-survival cable	Non-negotiable
Kitchen hood suppression release	Hood detector to wet-chemical release	Fire-survival cable	Critical
Emergency lighting + exit signage	Mall-wide egress	Fire-survival cable	Critical
Emergency DG start & transfer	Battery to engine panel	Fire-survival cable	Critical

Section B | Product-to-Application Matrix

This section maps each of the four priority Stanvac product lines to the specific shopping malls locations and circuits where they must be specified. Use these tables to build the bill of quantities (BOQ) for any shopping malls 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
Substation cable galleries	All HT/LT trays + transverse firestops every 30 m	Critical
Vertical cable risers between floors	All floor-to-floor power, data, BMS	Critical
Tenant fit-out cable routes	All tenant LT cabling	Critical
Food court kitchen cable routes	Hood, oven, refrigeration, lighting	Critical
Underground parking cable routes	Lighting + jet-fan + sprinkler	Critical
Atrium smoke extract fan cable routes	Switchgear to fan motor	Critical
Central HVAC plant cable routes	Chiller, AHU, pump	High
Service corridor cable routes	Common-area lighting and BMS	High
Loading dock and back-of-house cable routes	Lighting + signage	High
DG yard 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
Sprinkler pump power	Switchgear to motor	Non-negotiable
Atrium smoke extract fan power	Switchgear to fan motor	Non-negotiable
Underground parking jet-fan power	Switchgear to jet-fan motor	Non-negotiable
Stairwell pressurization fan power	Switchgear to fan motor	Non-negotiable
Lift homing circuit	Lift control to landing call	Non-negotiable
PA / Voice evacuation system	Amplifier to speaker circuits	Non-negotiable
Kitchen hood suppression release	Detector to suppression actuator	Critical
Emergency lighting + exit signage	Mall-wide egress	Critical
Fire alarm panel feeders	Panel to repeaters and field devices	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
Substation room boundary	Cable, pipe, duct penetrations	Critical
CPP transformer yard fire walls	Cable and pipe penetrations	3 hr / Critical
DG room boundary	Fuel and cable penetrations	Critical
Tenant MCC / sub-distribution boundary	Cable and HVAC penetrations	Critical
Food court / kitchen boundary	Hood ducting, gas, cable	Critical
Cinema sub-tenant boundary	Cable and HVAC penetrations	Critical
Atrium smoke extract shaft penetrations	Floor and wall seals	Critical
Underground parking compartment walls	Cable, pipe, duct penetrations	Critical
Vertical cable riser shafts (every floor)	Floor-to-floor seal	Critical
Stairwell and lift shaft penetrations	Cable and pipe penetrations	Critical
Fire water pump house entries	Power and control cable penetrations	Non-negotiable
HVAC duct penetrations through fire walls	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.