

## Electrical Passive Fire Protection for Data Centres

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

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

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

Main incoming substation, LT / paralleling switchgear, UPS / battery rooms (VRLA + Li-ion), PDU rooms, DG sets, CRAC / mechanical rooms, NOC and MMR.

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
Main incoming HT substation	Transformer + cable fire	Cable coatings, firestops, panel FP	<b>Critical</b>
LT panels / paralleling switchgear	Cable + arc flash fire	Panel FP, cable coatings, firestops	<b>Critical</b>
UPS room (module + battery string)	Thermal runaway, cable fire	Firestops, FR doors, panel FP	<b>Critical</b>
PDU (power distribution unit) rooms	Cable + panel fire	Panel FP, cable coatings, firestops	<b>Critical</b>
Electrical cable galleries	Propagating cable fire	Cable coatings + transverse firestops every 30 m	<b>Critical</b>
VRLA + Li-ion BESS battery rooms	Thermal runaway, electrolyte fire, H <sub>2</sub>	Firestops, FR doors, panel FP	<b>Critical</b>
DG set rooms (N+N redundant)	Fuel + lube oil fire	Panel FP, firestops, cable coatings	<b>Critical</b>
CRAC / chiller plant electrical	Cable + refrigerant fire	Panel FP, firestops	<b>Critical</b>

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
Network operations centre (NOC)	Cable + panel fire	Panel FP, firestops, FR doors	<b>Critical</b>
Meet-me room (MMR) / cross-connect	Telecom entry fire propagation	Firestops at entry, cable coatings	<b>Critical</b>

## 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	<b>Non-negotiable</b>
Critical IT load cabling (tenant / hyperscale)	Must maintain power during fire (Tier III / IV SLA)	Fire-survival cable	<b>Non-negotiable</b>
Li-ion thermal runaway detection + isolation	BMS to central panel + discharge	Fire-survival cable	<b>Non-negotiable</b>
DG start & load transfer	Battery to engine panel + ATS	Fire-survival cable	<b>Non-negotiable</b>
Gaseous suppression system controls	FM-200 / Novec / Inergen	Fire-survival cable	<b>Non-negotiable</b>

## Section B | Product-to-Application Matrix

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

### B1. Cable Coatings — Fire Propagation Prevention

*Minimum 240 minutes protection, thickness  $\leq 1.6$  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
Under-floor cable trays in server halls	All cable trays in white space	Critical
Overhead basket trays in server halls	All overhead cable bunches	Critical
Main substation cable galleries	All HT and LT trays	Critical
Electrical gallery between SS and UPS / PDU	Full-length coating + transverse firestops every 30 m	Critical
UPS room cable entries	Cell interconnect and DC distribution	Critical
DG room cable entries	Start, alternator, control	Critical
MMR / telecom cable entry routes	Cross-connect bundles	Critical
NOC cable routes	Monitoring and marshalling	Critical
Chiller / CRAC cable routes	Motor and control	Critical
Fire water pump house cables	Incomer + motor	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
Critical IT load cabling (tenant / hyperscale)	Must maintain power during fire (Tier III / IV SLA)	Non-negotiable
Fire water pump power (electric + diesel)	Switchgear to motor	Non-negotiable
Gaseous suppression controls (FM-200, Novec, Inergen)	Agent release actuation	Non-negotiable
VESDA / early warning smoke detection	Detector to panel	Non-negotiable
UPS feeders to critical IT loads	UPS to PDU to rack	Non-negotiable

Circuit Type	Where Applied	Priority
DG start & load transfer	Battery to engine panel + ATS	<b>Non-negotiable</b>
Emergency lighting + PA	Egress + server halls	<b>Non-negotiable</b>
NOC UPS & backup	Must operate during fire	<b>Critical</b>
Li-ion thermal runaway detection & isolation	BMS to central alarm + discharge	<b>Non-negotiable</b>
BMS critical parameter monitoring	Temperature, humidity, leak	<b>Critical</b>

### 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
<b>A</b>	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>B</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.
<b>C</b>	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
Server hall compartment walls (minimum 2-hr)	Cable, duct, pipe penetrations	<b>Critical</b>
Customer cage partitions	Cable penetrations	<b>Critical</b>
UPS / battery room boundary	Cable and ventilation duct penetrations	<b>Critical</b>
Li-ion BESS room perimeter	Cable and ventilation duct penetrations, thermal runaway containment	<b>Critical</b>
DG room boundary	Fuel line, cable, exhaust penetrations	<b>Critical</b>
Fuel tank compartment walls	Cable and pipe penetrations	<b>Critical</b>
CRAC / mechanical room to server hall	Cable and refrigerant pipe penetrations	<b>Critical</b>
Every floor slab in cable risers	Slab firestops at each floor	<b>Critical</b>
MMR entry to building	Cable entry penetrations	<b>Critical</b>
NOC boundary	Cable and HVAC penetrations	<b>Critical</b>
Main LT / HT substation boundary	Cable + tray penetrations	<b>Critical</b>

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

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

*Stanvac Chemicals India Ltd · Passive Fire Protection Division*