

Electrical Passive Fire Protection for Gas Storage & Distribution Facilities

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

Section A | Electrical Zone-Wise Fire Risk Map

A1. Substations, MCC Rooms & Cable Galleries

Main and satellite substations, LPG bottling control rooms, compressor station MCCs, LNG terminal electrical buildings, and the central control room.

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
Main & satellite substations	Cable + transformer fire	Cable coatings, firestops, panel FP	Critical
LNG regasification electrical building	External HC fire + cable fire	Blast + jet-fire rated coatings, cable coatings	Critical
LPG bottling plant MCC & controls	Pool fire exposure from carousel leak	Panel FP, firestops, cable coatings	Critical
Compressor station MCC (CGD, pipeline, CNG)	HC compressor seal fire	Panel FP, cable coatings, firestops	Critical
Cable tunnels / overhead trays	Propagating cable fire	Cable coatings + transverse firestops	Critical
CGS / MRS / DRS electrical panels	HC leak + cable fire	Panel FP, firestops	High
Control room (CCR, pigging & metering)	External blast + internal panel fire	Panel FP, firestops, FR doors	Critical
Battery / UPS room	H ₂ accumulation	Firestops, FR doors, panel FP	High

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
CNG dispensing / daughter station panels	High-pressure gas 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
F&G / ESD / SIS cable routing	Circuit integrity during fire	Fire-survival cable coating, ablative wrap	Non-negotiable
LNG ship-to-shore ESD (ESD1 / ESD2)	Emergency release couplings + shut-off	Fire-survival cable, panel FP	Non-negotiable

Section B | Product-to-Application Matrix

This section maps each of the four priority Stanvac product lines to the specific gas storage & distribution facilities locations and circuits where they must be specified. Use these tables to build the bill of quantities (BOQ) for any gas storage & distribution facilities 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 galleries	All HT and LT trays	Critical
Cable tunnels (SS to CCR, SS to process)	Full-length coating + transverse firestops every 30 m	Critical
Overhead cable trays in process area	Trays above pump rows and under pipe racks	Critical
LPG bottling plant cable routing	Motor, conveyor, and control cables	Critical

Zone	Specific Application	Priority
CGS / MRS / DRS cable trenches	Incoming and field cables	High
LNG regasification cable routes	All process cables	Critical
Compressor station cable trays	All motor and instrumentation	Critical
Tank farm cable routing	Trays to MOVs, level tx, rim-seal detectors	Critical
Loading gantry cable runs	Earthing, interlock, MOV cables	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
ESD (Emergency Shutdown) loops	Field SDVs to logic solver to CCR	Non-negotiable
F&G detection circuits	HC / CO ₂ / cryogenic detectors to F&G panel	Non-negotiable
Fire water pump power (electric + diesel)	Switchgear to motor; battery to diesel	Non-negotiable
Deluge / water-curtain / foam system controls	Solenoid and MOV actuation	Non-negotiable
Cathodic protection & isolation	Pipeline integrity during fire	Critical
Emergency lighting + PA / GA	Egress routes plant-wide	Critical
UPS feeders to DCS / SIS / F&G	UPS to marshalling panels	Critical
LNG ship-to-shore ESD (ESD1, ESD2)	Emergency release couplings + shut-off	Non-negotiable
LPG emergency blowdown controls	Blowdown valve actuation	Non-negotiable
Compressor emergency trip	Vibration, seal pressure, trip valve	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 cable trench to building entry	Sand-seal + firestop pillows + mortar	Critical
Wall between MCC and switchgear rooms	Cable + tray penetrations	Critical
Control room external wall cable entries	Marshalling cable bundles	Critical
CCR under-floor void boundary	Slab penetrations + void sealing	Critical
Cable tunnel transverse barriers	Every 30–50 m	Critical
Battery / UPS room boundary	Cable and ventilation duct penetrations	High
Fire water pump house entries	Power and control cable penetrations	Non-negotiable

Location	Specific Application	Priority
LPG bottling carousel compartment walls	Cable, ventilation and conveyor penetrations	Critical
LNG jetty to control building	Cable tray penetrations	Critical
DG room boundary	Fuel and cable penetrations	Critical
HVAC duct penetrations in CCR / battery	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.

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