Electrical Passive Fire Protection for Ports and Marine Terminals

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

Section A | Electrical Zone-Wise Fire Risk Map

A1. Substations, MCC Rooms & Cable Galleries

Main port-wide substations, LNG / POL / LPG terminal electrical buildings, bulk-handling conveyor MCCs, container yard power distribution, and the VTS control tower.

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
Main port-wide substations	Cable + transformer fire	Cable coatings, firestops, panel FP	**Critical**
LNG / POL terminal electrical building	External HC fire + cable fire	Blast + jet-fire rated coatings, cable coatings	**Critical**
LPG bottling / terminal MCC	BLEVE / pool fire exposure	Panel FP (jet-fire rated), firestops	**Critical**
Bulk handling conveyor drive panels	Belt + cable fire	Panel FP, cable coatings, firestops	**Critical**
Ship loader / unloader control	Cable + motor fire	Panel FP, cable coatings	**Critical**
Container yard power distribution	Gantry, RTG, lighting	Panel FP, cable coatings	**High**
Cable tunnels	Propagating cable fire	Cable coatings + transverse firestops	**Critical**
VTS / port operations control tower	Panel + cable fire	Panel FP, firestops, FR doors	**Critical**
CFS / warehouse electrical	Class A load adjacent	Panel FP, firestops	**High**

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
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**
LNG / POL terminal ESD	Field SDVs to logic solver	Fire-survival cable, panel FP	**Non-negotiable**
Ship-to-shore ESD (ESD1 / ESD2)	Emergency release couplings	Fire-survival cable	**Non-negotiable**
F&G detection at fuel terminals	Detector to F&G panel	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 ports and marine terminals locations and circuits where they must be specified. Use these tables to build the bill of quantities (BOQ) for any ports and marine terminals 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
Conveyor gallery cables (bulk terminal)	All belt motor and control	**Critical**
Main substation cable galleries	Incoming and outgoing	**Critical**
LNG / POL terminal cable routes	All process cables	**Critical**
Container yard power cables	Gantry, RTG, lighting	**High**

Zone	Specific Application	Priority
Cable tunnels (SS to CCR)	Full-length coating + transverse firestops	**Critical**
Tank farm cable routing	Trays to MOVs, level tx	**Critical**
CFS / warehouse cable routes	Lighting + sprinkler	**High**
Control tower cable routes	Marshalling + SCADA	**Critical**
DG room cable entries	Start, alternator, 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
LNG / POL terminal ESD	Field SDVs to logic solver	**Non-negotiable**
Ship-to-shore ESD (ESD1 / ESD2)	Emergency release couplings	**Non-negotiable**
Fire water pump power (electric + diesel)	Switchgear to motor	**Non-negotiable**
F&G detection at fuel terminals	Detector to F&G panel	**Non-negotiable**
Emergency DG start & transfer	Battery to engine panel	**Critical**
Emergency lighting + PA / GA	Port-wide egress	**Critical**
Conveyor emergency stop	Pull-cord + belt-drift	**Critical**
VTS / control tower UPS	Must operate during fire	**Critical**
Bunkering operation shut-off	Loading arm ERC	**Non-negotiable**
Deluge / foam system controls	Solenoid and MOV	**Non-negotiable**

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
Fuel terminal bund area penetrations	Pump and instrumentation	**Critical**
LNG / POL cable trench to building	Sand-seal + firestop pillows + mortar	**Critical**
Conveyor transfer tower compartment walls	Cable, belt, duct penetrations	**Critical**
Main substation cable trench to building	Sand-seal + firestop pillows + mortar	**Critical**
VTS / control tower cable entries	Marshalling bundles	**Critical**
CFS / warehouse compartment walls	Cable and conveyor penetrations	**High**
Cable tunnel transverse barriers	Every 30–50 m	**Critical**

Location	Specific Application	Priority
Bunkering area boundary	Cable + pipe penetrations	**Critical**
DG room boundary	Fuel and cable penetrations	**Critical**
Fire water pump house entries	Power and control cable penetrations	**Non-negotiable**

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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