Electrical Passive Fire Protection for Alcohol Distilleries and Breweries

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

Section A | Electrical Zone-Wise Fire Risk Map

A1. Substations, MCC Rooms & Cable Galleries

Main substation, still-house MCC, ethanol tank farm panels, bottling hall electrical, bonded warehouse distribution, and the plant control room.

Area	Fire Scenario	Stanvac PFP Product Application	Rating / Priority
Main substation	Transformer + cable fire	Cable coatings, firestops, panel FP	**Critical**
Still-house MCC / field LCPs	Ethanol fire exposure	Panel FP (jet-fire rated), cable coatings, firestops	**Critical**
Ethanol tank farm control panels	Bund fire + radiant heat	Panel FP (jet-fire rated), firestops	**Critical**
Ethanol loading bay panels	Pool fire during transfer	Panel FP, firestops, cable coatings	**Critical**
Bottling hall MCC	Ethanol vapour + motor fire	Panel FP, cable coatings, firestops	**High**
Bonded warehouse electrical distribution	Ethanol-laden Class A load adjacent	Panel FP, firestops	**Critical**
Fermentation plant electrical	CO_2 release + cable fire	Panel FP, cable coatings	**High**
Boiler / ETP electrical	Fuel + cable fire	Panel FP, cable coatings	**High**
DG room	Fuel + lube oil fire	Panel FP, firestops, cable coatings	**Critical**
CCR / DCS	Panel + cable fire	Panel FP, firestops, FR doors	**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 / BDV on distillation & tank farm	Ethanol vapour detection, trip circuits	Fire-survival cable, panel FP	**Non-negotiable**
Boiler trip circuits	Fuel trip, drum level	Fire-survival cable	**Critical**

Section B | Product-to-Application Matrix

This section maps each of the four priority Stanvac product lines to the specific alcohol distilleries and breweries locations and circuits where they must be specified. Use these tables to build the bill of quantities (BOQ) for any alcohol distilleries and breweries 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 gallery	All HT and LT trays	**Critical**
MCC cable trenches	Bottom-entry cable bunches	**Critical**
Still house cable routes	All distillation column cables	**Critical**
Ethanol tank farm cable routing	Trays to MOVs, level tx, detectors	**Critical**
Loading gantry cable runs	Earthing, interlock, MOV cables	**Critical**
Bottling hall cable routes	Motor and filler line	**High**
Bonded warehouse perimeter cable routes	Lighting and sprinkler	**Critical**

Zone	Specific Application	Priority
Boiler house cable routes	Fuel and process	**Critical**
DG room cable entries	Start, alternator, control	**Critical**
Molasses / grain handling cable routes	Motor and conveyor	**High**

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 loops on distillation column	Field SDVs to DCS	**Non-negotiable**
F&G detection (ethanol vapour)	Detector to F&G panel	**Non-negotiable**
Fire water pump power (electric + diesel)	Switchgear to motor	**Non-negotiable**
Deluge / foam system controls	Solenoid and MOV actuation	**Non-negotiable**
Emergency DG start & transfer	Battery to engine panel	**Critical**
Emergency lighting + PA / GA	Plant-wide egress	**Critical**
Ethanol tank farm BDV controls	Emergency blowdown	**Non-negotiable**
Bonded warehouse alarm circuits	AV alarm + detector	**Critical**
Boiler trip circuits	Fuel trip, drum level	**Critical**
UPS feeders to DCS	UPS to marshalling	**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
Still house to adjacent block boundary	Cable and pipe penetrations	**Critical**
Ethanol tank farm bund area penetrations	Cable and instrumentation	**Critical**
Bonded warehouse perimeter	Every wall, floor, duct penetration	**Critical**
Bottling hall to warehouse boundary	Cable and conveyor penetrations	**Critical**
Main substation cable trench to building	Sand-seal + firestop pillows + mortar	**Critical**
MCC room cable entries	Trench and wall penetrations	**Critical**
Cable tunnel transverse barriers	Every 30–50 m	**Critical**
Boiler room boundary	Fuel and cable penetrations	**Critical**
DG room boundary	Fuel and cable penetrations	**Critical**
Fire water pump house entries	Power and control cable penetrations	**Non-negotiable**

Location	Specific Application	Priority
HVAC duct penetrations in CCR / admin	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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