



FORMASHIELD

FIRE-SPREAD PREVENTION SYSTEM · TECHNICAL BROCHURE

Stopping the spread of fire by structural design

Expandable-graphite thermal-bridge blocking technology — cables, busduct, curtain wall,
facade, BIPV, ESS

EZ ONE is a fire-stop and fire-spread-prevention specialist built on core technology transferred from KICT. With integrated engineering (design, control, HVAC, fire-stop) and 20%+ of revenue invested in R&D, it has grown into the parent of the EZONE family — FORMASHIELD (fire-spread prevention), AEROCLAD (ducts) and PYROSOL (BIPV).

History

- **2014** KICT core-tech transfer
- **2018** Venture certification · Plant 1
- **2020** 1st quality-certified structure
- **2022** Plant 2 expansion (Hwaseong)
- **2024** HMFd fire damper · PID launch
- **2025** 3rd quality cert · FM cert started

**79+**

Projects

10+

Patents/Designs

7,466m²

Factory area

20%+

R&D of revenue

6

KICT-certified structures

FORMASHIELD is an expandable-graphite (EG#5) fire-stop technology. Applied to penetrations and facade systems of cables, busduct, curtain wall, facades, BIPV and ESS, it physically blocks the spread of flame, smoke and radiant heat between floors and compartments.



Mechanism — Foam · Shield · Seal

1

Foam

Graphite foams 10× + at ~150–200°C

2

Shield

Char layer blocks heat transfer

3

Seal

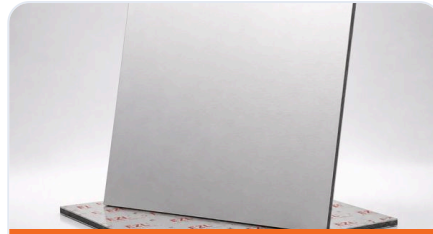
Seals gaps/cavity, stops flame & smoke

The same expandable-graphite core is supplied in nine forms matched to each application.



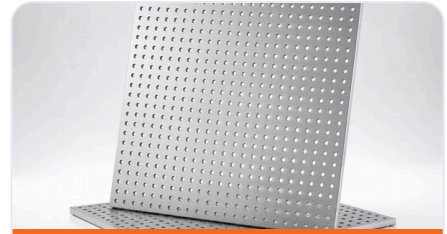
Roll Sheet

Wraps trays/bundles



Board

Penetration fill



Perforated

Perforated for cables



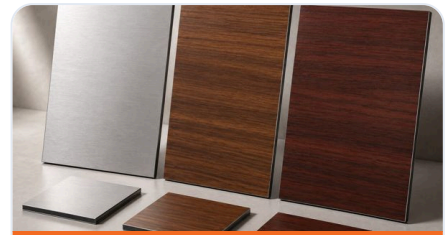
Perf. Sleeve

Integrated sleeve



Bent Profile

Corners/odd shapes



Cladding Panel

Facade-integrated



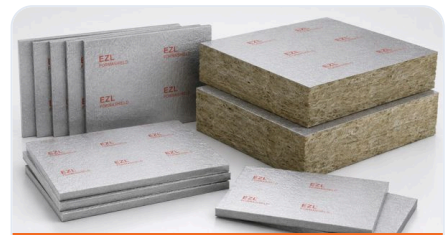
BIPV

BIPV module rear



ACP

Composite core



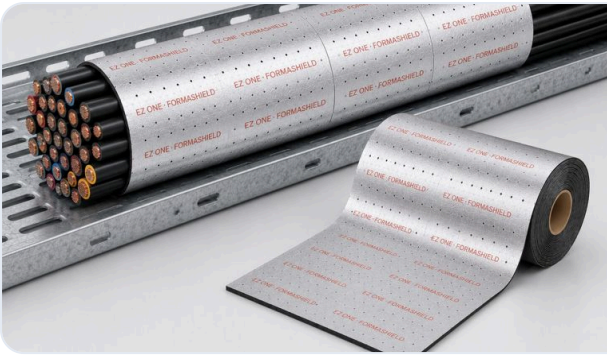
SCP

Steel composite



One core, nine forms

Every form starts from the same expandable-graphite (EG#5) core — thin and stable in normal use, foaming at ~150–200°C to seal gaps and cavities.



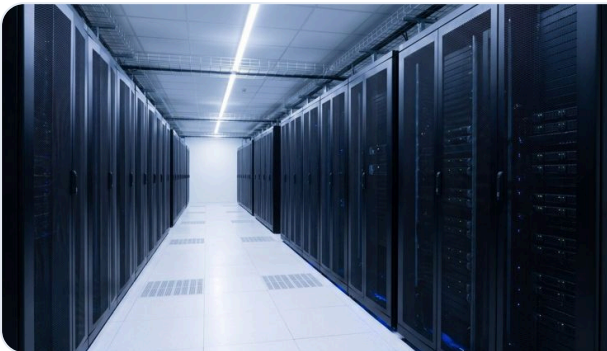
Electrical · Cable

Roll-sheet & sleeve fire-stop for cable trays and penetrations in utility tunnels. Uniform quality, easy rework vs. coatings.



Building · Facade

Heat-shield barriers at curtain-wall joints, composite facades and cavities block vertical fire spread at full-scale level.



EZONE Family

Connected with PYROSOL (fire-safe BIPV) and AEROCLAD (insulated duct) as one family — power, HVAC and fire safety integrated.

Power ducts and utility tunnels pack bundled cables into a confined space. FM defends in four layers — the cable, its protection, the penetration and the installer — and FORMASHIELD roll-sheet/sleeve forms cover cable-tray fire-spread prevention and penetration fill.



FM 3972

The cable

FPI via FPA (ASTM E2058/ISO 12136) · FPI<10 (GP-1) non-propagating

FM 3971

Cable protection

Coatings/wraps on bundles
limit ignition & spread

FM 4990

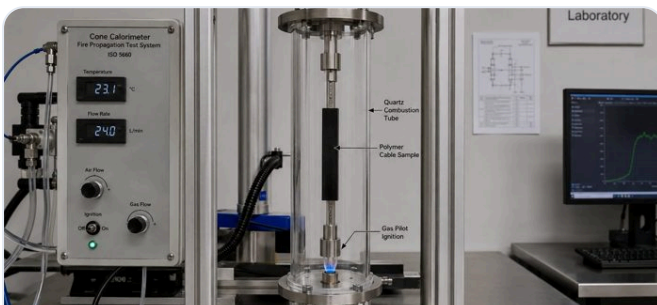
Penetration firestop

Wall/floor penetration
firestop · ASTM E814

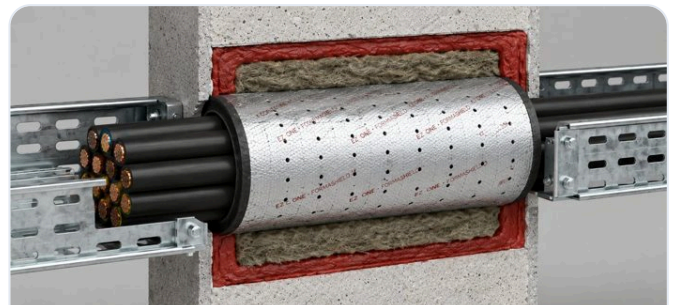
FM 4991

Installer

Approved contractor · DRI, 3-yr re-test



FM 3972 · FPI test. Quartz-tube apparatus measuring cable flammability.



FM 4990 · penetration. FORMASHIELD wrap + intumescent fill seals the cable penetration.

Domestic — NFTC 605 (Korea's utility-tunnel fire-safety standard, NFA Notice 2022-243). Its cable flame-retardancy, deluge, fire-wall and penetration requirements map onto FM's "non-propagating cable + FM 3971 wrap + penetration firestop + detection" package.

BIPV Fire Certification — Domestic & Global

BIPV facade fire safety is not guaranteed by module-level certification (IEC/UL 61730) alone. FM's 2025 full-scale tests confirmed module certs do not correlate with facade performance — only cavity-compartmented whole systems passed.

Domestic

KS F 8414 — Full-scale facade fire test

KS C 8577 — BIPV module performance

MOLIT fire-stop quality cert

Global

FM 4411 / 4483 — cavity wall & wall BIPV

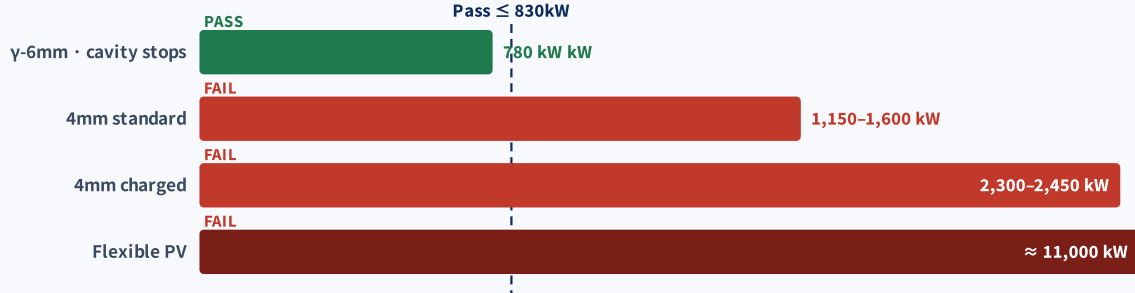
NFPA 285 (US)

BS 8414 / BR 135 (UK)

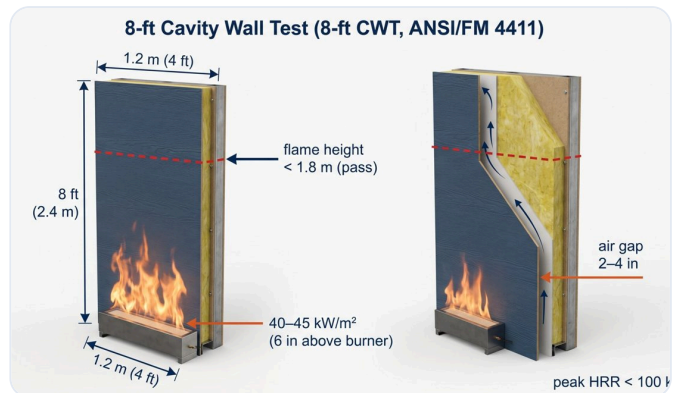
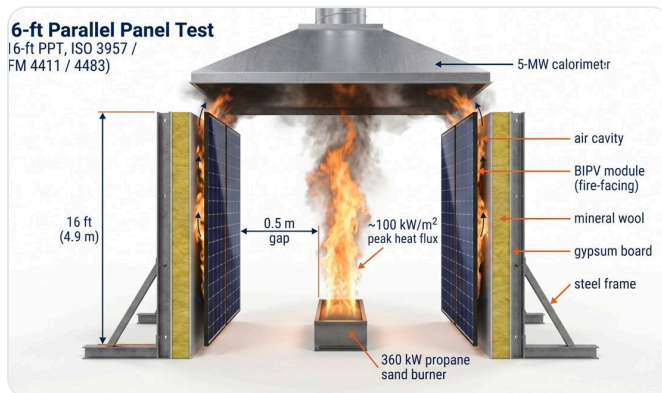
EN 13501-1 (EU)

Region	Facade fire test	Enforcement
International	— (IEC 63092)	Voluntary
USA	NFPA 285	IBC
USA · FM	FM 4483 = 4411 16-ft PPT	Insurance
Europe	BS 8414 borrowed	CPR
UK · Comm.	BS 8414 + BR 135	Bldg reg
Korea	KS F 8414	Quality cert

FM 16-ft PPT — peak HRR by BIPV configuration



FM 16-ft PPT evidence: only γ-6mm with cavity stops every 2 ft passed at 780 kW; all others failed (flexible ≈ 11,000 kW). Cavity compartmentation is the single decisive pass factor — exactly what FORMASHIELD's dynamic cavity barrier provides.



Test (standard)

Pass criteria

FM 16-ft PPT Peak HRR ≤ 830kW (unlimited) / ≤ 1100kW (50ft)

FM 8-ft CWT Peak HRR ≤ 100kW + flame < 1.8m

FM 4483 (BIPV) Cavity ≤ 200°C @ 12ft + top modules intact

KS F 8414 (KR) No 600°C > 30s at Level 2 in 15 min



Together, we stop the spread of fire

We welcome project specs, test reports and quote inquiries.

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