B2B CATALOG
2026

CARBON FIBER–MODIFIED MATERIALS

Carbon Fiber–Modified Construction Materials

PRODUCT CATALOG

Aerospace-grade carbon fiber for construction — crack resistance, seismic performance, waterproofing

ExCfiber™	TitanForce™	CarbDurax™	StrongEdge™	ACfiber™
Modified carbon fiber	Waterproof mortar	Wear-resistant coating	Window-corner reinforcement	Asphalt modification

Thermolysis Co., Ltd.

WWW.THERMOLYSIS-ASIA.COM

CARBON FIBER–MODIFIED MATERIALS

Carbon fiber, built into materials

Modified carbon fiber is strong, tough and corrosion-resistant. Fiber length and surface treatment are tailored to each matrix — cement, mortar, coatings and asphalt — so the fibers disperse evenly and reinforce the material from within. All key data are tested by third-party labs to CNS standard methods.

AWARDS

2025
MATERIALICA Design + Technology Award

31st
SME Innovation Research Award

[Year]
JEC World Startup Booster Finalist

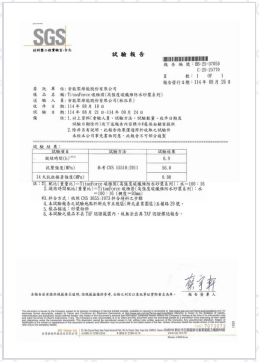
20th
National Innovation Award · Enterprise

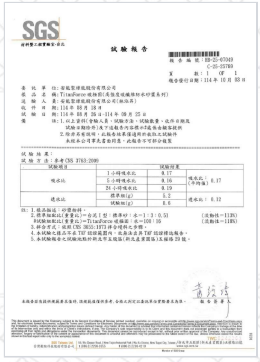
2023
Outstanding Innovative R&D Company

2024
Green World Awards · Global Gold

SGS

Third-party lab tested per CNS test methods





Test reports HB-25-07050 / HB-25-07049











Three Problems Solved

PROBLEMS SOLVED

01 Cracking

Micro-cracks from shrinkage, temperature swings and stress concentration are where leaks and deterioration begin. Carbon fiber restrains cracks from forming and spreading.

ExCfiber™ · StrongEdge™



Case Exposed concrete · windows

02 Leaking

Ordinary cement mortar is not waterproof: once a wall cracks, water gets in, and repairs keep leaking. Carbon fiber waterproof mortar bridges micro-cracks and blocks moisture.

TitanForce™



Case Roof screed · bathrooms

03 Damage

Ordinary cement and coatings are hard but brittle, chipping under impact and abrasion. A steel plant duct once repaired every 3 months has lasted over a year on our coating.

ExCfiber™ · CarbDurax™



Case Steel plant bulk-material duct

PREVENTION FIRST

Prevent Problems Before They Start

We study our customers' pain points and design solutions that address the root cause. Below are the five most common site problems and the material we recommend for each.

01	Concrete needs more durable reinforcement against long-term cracking, impact and vibration	→	**ExCfiber™** Modified carbon fiber for concrete reinforcement
02	Roofs, bathrooms and exterior walls keep leaking; patched cracks reopen	→	**TitanForce™** High-strength carbon fiber waterproof mortar
03	Conveying pipes, chutes and bins wear through under material impact, forcing frequent shutdowns	→	**CarbDurax™** High-performance carbon fiber wear-resistant coating
04	Stress concentrates at door and window corners — diagonal cracks in older homes, complaints after handover in new builds	→	**StrongEdge™** Carbon fiber window-corner reinforcement
05	Asphalt under heavy traffic ruts and deforms, requiring repeated mill-and-overlay and closures	→	**ACfiber™** Carbon fiber concentrate pellets for asphalt

APPLICATION MATRIX

● Primary ○ Secondary

	New build	Repair	Waterproofing	Industrial wear	Pavement
ExCfiber™ Carbon fiber for concrete	●	●	·	○	·
TitanForce™ Waterproof mortar	○	●	●	○	·
CarbDurax™ Wear-resistant coating	·	○	·	●	·
StrongEdge™ Corner reinforcement	●	·	·	·	·
ACfiber™ Asphalt fiber pellets	·	○	·	·	●

Custom formulation Fiber content, length and formulation can be customized — contact our technical team.

CARBON FIBER FOR CONCRETE

ExCfiber™

Modified carbon fiber for concrete reinforcement

Crack resistance, built into the concrete itself.

+43.6%	+45.7%	483 impacts	7 billion
Flexural strength	Splitting tensile strength	50 J drop-weight (plain concrete: 13)	fibers per m^3, evenly dispersed (X-ray CT)

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MAT.CODE RCF-EXC-01

TECHNICAL SHEET

CARBON FIBER FOR CONCRETE

ExCfiber™

Modified carbon fiber (additive) for concrete reinforcement



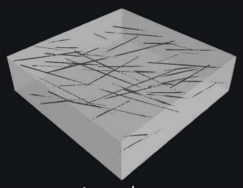
SOLVES

Restrains concrete cracking · higher impact resistance
Vibration-resistant machine floors

+43.6 %
Flexural strength
About 40% more flexural capacity than plain concrete.

483 impacts
50 J drop-weight impact test
5 kg weight dropped from 1 m: plain concrete fails after 13 impacts; impact resistance ~37× higher.

7 billion
fibers per m³
~7,000 fibers/cm³ grip cement and aggregate, leaving cracks nowhere to run.



PROBLEM → SOLUTION Field Problems & Test Data

Field problem → ExCfiber solution	Plain concrete (avg.)	With ExCfiber 1.0%
Shrinkage & thermal cracks in residential builds → **Residential: recommended 0.5%**	Flexural strength 4.42 MPa	Flexural strength **≈ 6.35 MPa** +43.6%
Factory vibration, low-energy impact → **Industrial floors (mid–high load): dosage 0.75%**	Compressive strength 20.93 MPa	Compressive strength **23.02 MPa** +10%
Rockfall, severe impact → **Extreme impact: dosage 1.0%**	Splitting tensile strength 2.52 MPa	Splitting tensile strength **≈ 3.67 MPa** +45.7%
Repeated heavy impact → **Dosage 1.0%: ~30× more impacts to failure**	75 J drop-weight impact 7 impacts	75 J drop-weight impact **213 impacts** ≈ 30×

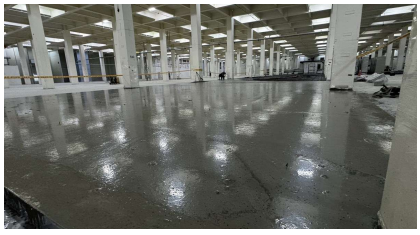
PROJECTS Project References



Central Cross-Island Hwy
Rock shed impact protection



Fuhe Bridge, Taipei
Seismic retrofit



Semiconductor fab
Micro-vibration-resistant floors

Application — Add directly to the mixer and pour as usual — no change in method, no extra equipment.

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CARBON FIBER WATERPROOF MORTAR

TitanForce™

High-strength carbon fiber waterproof mortar

Old building still leaking after repairs? Stop seepage at the structural level.

56.8 MPa	0.12	0.98 MPa	SGS
Compressive strength	Permeability ratio (control = 1)	14-day tensile bond strength	Third-party lab tested

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MAT.CODE TF-CFM-02

TECHNICAL SHEET

CARBON FIBER WATERPROOF MORTAR

TitanForce™

High-strength carbon fiber waterproof mortar

SOLVES

Cracked walls, efflorescence & leaks
Fewer repeat repairs



0.12
Permeability ratio (control = 1)
Water beads up and rolls off instead of soaking in.

56.8 MPa
Compressive strength
≈ 580 kgf/cm² — about 2× typical mortar (20–30 MPa).

0.98 MPa
14-day tensile bond strength
7× the national standard requirement; resists debonding from old walls.

PROBLEM → SOLUTION Field Problems & Test Data

Field problem → TitanForce solution	Supporting data (SGS vs. market)
Ordinary mortar isn't waterproof; cracks become leak paths →**Hydrophobic formula blocks water ingress**	**Water absorption ratio 0.17** 1 h · control mortar = 1
Brittle waterproof layers crack with slight movement →**Carbon fiber toughens and restrains structural cracks**	**Flexural 9–10 MPa** Market: 3–5 MPa
Chips and breaks under impact →**Fibers absorb impact energy**	**50 J drop-weight: 400 impacts** Market: 13 impacts
Repair layers delaminate from the old substrate →**High-adhesion formula grips the old surface**	**Tensile bond 0.98 MPa** SGS Certification

PROJECTS Project References



Heritage restoration
Historic building roof repair



Waterproof roof screed
Roof crack repair



Exterior wall repair
Wall repair, crack-resistant waterproofing

Application — Just add water and mix — masons trowel it on as usual, no new tools needed.

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CARBON FIBER FOR ASPHALT CONCRETE

ACfiber™

Carbon fiber concentrate pellets for asphalt

More durable pavement, same mixing process.

8.5×	10.31 mm	0.5%	No retrofit
Wheel passes to 9 mm rut depth	Rut depth at 20,000 passes	Test dosage	Works with existing plants

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THERMOLYSIS

MAT.CODE AS-PAV-05

TECHNICAL SHEET

CARBON FIBER FOR ASPHALT CONCRETE

ACfiber™

Carbon fiber concentrate pellets for asphalt

SOLVES

Rutting · shoving
Re-milling · closures



8.5 ×
Rutting resistance
To 9 mm rut depth: conventional AC 1,082 passes, ACfiber 9,138.

10.31 mm
Rut depth at 20,000 passes
Conventional AC: 12.50 mm at 5,340 passes; ACfiber stays below that at 20,000.

0.5 %
Test dosage
A small dose forms a 3D fiber network that holds aggregate in place under heavy traffic.

PROBLEM → SOLUTION Field Problems & Test Data

In-house wheel-tracking tests, same conditions

Field problem → ACfiber solution	Basis / process
Hot weather and heavy loads cause rutting →**Fibers bridge aggregate, limiting permanent deformation**	**Wheel-tracking verified** In-house, same conditions
Cracks widen and let rainwater in →**Fiber network distributes stress, delays cracking**	**3D fiber network** Aggregate + binder + fiber
Loose fibers blow away and clump →**Concentrate pellets dose easily and consistently**	**Pellets · metered dosing**
Frequent milling means costly closures →**More durable, fewer repairs**	**150 °C mix · 190 °C binder** Uses existing plants

PROJECTS Project References

For: heavy-traffic roads · ports · intersections · airports



Kaohsiung steel plant yard
Standard paving process



Before: heavy-traffic rutting
Original condition of the yard



Industrial-scale production
Works with existing plants

Application — Feed pellets with aggregate at the existing plant, dry-mix at 150 °C, add binder at 190 °C, then pave as usual.

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RECOGNITION

Awards & Recognition

2025	**MATERIALICA Design + Technology Award**
[Year]	**Green World Awards (UK)**
[Year]	**JEC World Startup Booster Finalist**
20th	**National Innovation Award · Enterprise**
31st	**SME Innovation Research Award**
2023	**Outstanding Innovative R&D Company**

SGS
HB-25-07049 / 07050

M674809
StrongEdge utility patent

UL 2809
UL Environmental Claim Validation

ISO 14067
Product carbon footprint

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