



Innovative Surface Protection Systems

COMPANY PROFILE



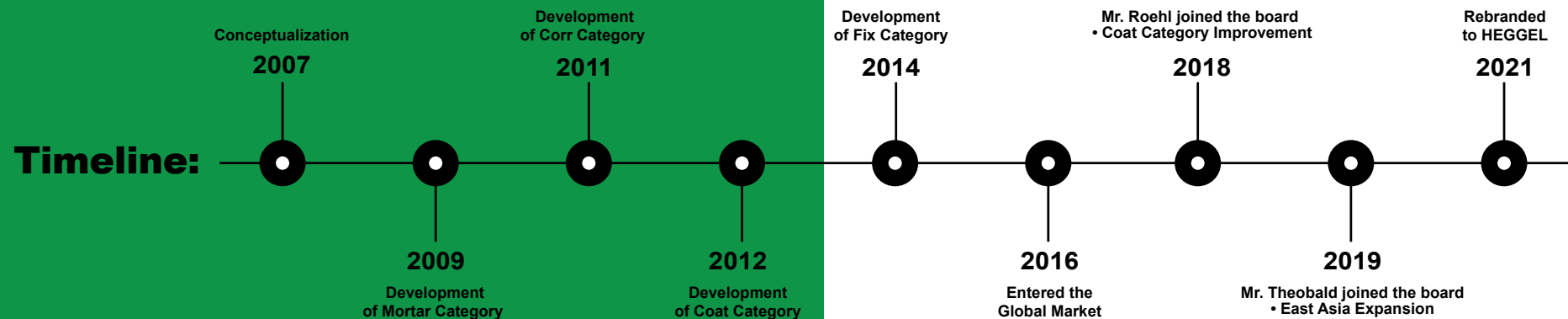


HEGSEL GmbH

is a leading German manufacturer of high-performance polymer coatings, linings and floorings, that protects industries against the most severe conditions through effective surface protection systems and anti-corrosion solutions.

We generate a broad-spectrum of polymer coating, lining and flooring products, highlighted by extraordinary chemical resistance, abrasion resistance and weatherability, ranging amongst the highest performance properties within today's global industry and meet our customers' demands by offering highly efficient and cost-effective world-class solutions.

**Registered under the law of Germany HQ
in Essen, North Rhine-Westphalia**





OUR PHILOSOPHY

Our business operates as a GmbH according to German standards, focusing on high quality products and continuous innovative ideas. We succeeded to become one of the most outstanding global producers of anti-corrosion coatings, floor coatings and composites. HEGGE GmbH works hard to improve customer satisfaction through excellent service and outstanding technical solutions.

No matter what the challenge is, we help our clients to the best of our ability. Either through advising managers and engineers, or by supporting frontline workers, our responsibility is to partner with clients to convert proposals into solutions. "Customers First" is our aspiration!



Mission:

Reliably protecting surfaces by high-quality systems that are convenient and cost-effective for customers.

Vision:

To provide industries with the most effective solutions globally for even toughest environments.

Values:

Empowered by Expertise

We proudly utilize the expertise of our professional engineering and technical advisement team to provide customers with highest quality products and services.

Commitment to Quality

Our strict adherence to quality standards through extensive laboratory tests ensures the superiority of the HEGGEL coatings.

Innovation & Improvement

We adopt an innovative approach in development and improvement of product technologies with enhanced performance through research.

Integrity & Trust

We stand by highest ethical standards of integrity, honesty and respect to establish a trust-based relationship with all our partners.

Customer Satisfaction

We are committed to prioritizing the customer, have a customer-oriented approach and aim for complete customer satisfaction.

Environmental Responsibility

We are mindful of our environmental impact, so we commit ourselves to produce eco-friendly products, and supply our raw materials from liable producers.





COMPETITIVE ADVANTAGES

Cost Effectiveness:

Not only HEGSEL products are competitive in price, but they also significantly reduce projects' cost in surface preparation and application.

Superior Chemical Resistance:

Designed for the harshest environments, HEGSEL products with extraordinary chemical and physical properties guarantee the long-term protection of structures.

Durability:

Through their unique structure, HEGSEL systems offer better adhesion to the substrate, impermeability to fluids and abrasion resistance than any alternative.

Easy Single Layer Application:

Most coating/lining failures happen due to the inability of applicators to follow every step of complicated application procedure. HEGSEL self-priming, single layer solutions with ambient curing ensure maximum performance at reduced costs.

Easy Repair:

Long-shelf life that enables stocking for future repairs, convenience in terms of repair and maintenance, that significantly facilitates implementation and operation.

Solvent-Free & Eco-Friendly:

Adhering to environmental and sustainability standards has led HEGSEL to produce solvent-free products and source materials from responsible producers.



INDUSTRIES

- ▶ Chemical
- ▶ Oil & Gas
- ▶ Refineries
- ▶ Power
- ▶ Water
- ▶ Automotive
- ▶ Electronics
- ▶ Steel
- ▶ Marine
- ▶ Pulp & Paper
- ▶ Pharmaceutical
- ▶ Food
- ▶ Shipbuilding
- ▶ Aviation
- ▶ Utilities



APPLICATION SCOPE

HEGSEL® Corr: High-Tech Advanced Polymer Coatings



- ▶ Sour gas treating-amine units (DGA / MDEA / MEA)
- ▶ Amine Molten Sulphur recovery tank
- ▶ Hydrocarbon pressure vessels
- ▶ Internal pipe lining
- ▶ Chemical tanks
- ▶ Road / sea chemical tankers
- ▶ Concrete walls / floors
- ▶ Secondary containment areas
- ▶ Process vessels
- ▶ Condensers
- ▶ LP gas separators and compressors
- ▶ Caustic services
- ▶ Sulphuric acid tanks
- ▶ Amine regenerators
- ▶ External coating for insulated pipes
- ▶ Evaporators
- ▶ Scrubber units
- ▶ Heat exchangers
- ▶ Neutralization sumps
- ▶ Distillation units
- ▶ Autoclaves
- ▶ Sulphur recovery units
- ▶ Equipment operating at sub-ambient temperatures
- ▶ Hydrazine storage tanks
- ▶ Reboilers
- ▶ Pipe spools carrying H₂S rich gases
- ▶ Injection gas compressors

HEGSEL® Coat: High-Performance Corrosion Protection Coatings

- ▶ Storage tanks for chemicals, oils and hydrocarbons
- ▶ Vessels and tanks for drinking water and food
- ▶ Marine structures / offshore and onshore
- ▶ Waste water ponds
- ▶ Potable water tanks
- ▶ Tubes and pipelines
- ▶ Steel constructions
- ▶ Splash zones areas
- ▶ Subsea surfaces
- ▶ All kinds of production vessels and tanks





APPLICATION SCOPE



HEGSEL® Mortars: Acid & Alkali Resistant Mortars

HEGSEL® Tile & Brick: Durable Acid-Resistant Ceramic Tiles & Bricks

- ▶ Floors
- ▶ Sumps
- ▶ Canals
- ▶ Pits
- ▶ Reservoirs
- ▶ Chimneys
- ▶ Secondary containment areas
- ▶ Chemical equipment
- ▶ Waste water and process water treatment units
- ▶ Chemical storage warehouses and workshops
- ▶ Neutralization tanks
- ▶ Pickling lines
- ▶ Ion exchange units

HEGSEL® Fix: Rapid Repair Mortars

- ▶ Repair of damaged steel apparatuses, e.g. pipes, valves and tanks, etc
- ▶ Repair of hard / soft rubber lining
- ▶ Repair of glass or lined vessels or tanks
- ▶ Repair of HEGSEL Corr coated equipment
- ▶ Eliminating pittings, holes and defected areas





HEGGEL® EL

Engineered Rubber Lining Solutions for Harsh Industrial Environments

- ▶ Internal lining of storage tanks and chemical reactors
- ▶ Acid-resistant lining for scrubbers, absorbers, and gas cleaning equipment
- ▶ Chemical protection in pickling plants and acid regeneration units
- ▶ Lining for pipelines and ducting in corrosive media
- ▶ Protective lining for desalination plants and water treatment facilities
- ▶ Rubber lining of concrete and steel in wastewater and effluent treatment systems
- ▶ Rubber protection for flue gas desulfurization (FGD) systems
- ▶ Lining for process vessels in chemical processing
- ▶ Mining and mineral processing equipment
- ▶ Any asset requiring reliable protection from corrosion, wear, or thermal extremes

HEGGEL® Therm

Advanced Thermal Insulation Coating Systems

- ▶ Exterior application on storage tanks, process vessels, and pipelines
- ▶ Structural steelwork, industrial metal, and concrete surfaces
- ▶ HVAC systems, utility rooms, corridors, and stairways
- ▶ Energy-saving insulation for building interiors and exteriors (walls, ceilings, roofs)
- ▶ Cold storage and refrigeration units (walls, ceilings, containers)
- ▶ Fire-safe coating for indoor and industrial use
- ▶ Thermal insulation for hot and cold services





APPLICATION SCOPE

HEGSEL® FRP:
High-Strength Fiber
Reinforced Laminates

HEGSEL® Flake:
Glass Flake Reinforced
Systems



- ▶ Chemical storage tanks
- ▶ Sumps
- ▶ Piping systems
- ▶ Aircraft hangar paint booths
- ▶ Heat exchangers
- ▶ Flue gas desulphurization
- ▶ Buried flow lines
- ▶ Chemical plants and storage facilities
- ▶ Substrates exposed to wastewater and fast flowing seawater
- ▶ Galvanizing plants pickling tanks
- ▶ Secondary chemical containment areas
- ▶ All types of industrial process equipment



- ▶ Residential: Garages, basements, pool decks, patios
- ▶ Institutional: Hospitals, schools
- ▶ Industrial / Manufacturing: Electronics, metal fabricating, printing, heavy equipment, chemical
- ▶ Pharmaceutical / Laboratories: Soap / Cosmetics, medical - FDA, testing facilities, containment areas
- ▶ Warehouse / Distribution: Packaging / Shipping, public storage, food / grocery

HEGSEL® Pox:
Epoxy-Based Floor
Coating Systems

HEGSEL® Flex:
Polyurethane-Based
Floor Coating Systems

Key Project Records

	Region	Product Category	Application Purpose	Service Conditions	Project Year
1	West Africa	HEGSEL Coat	Wellhead and Boat Landing Jacket	Seawater	2024
2	Middle East	HEGSEL Furanic Mortar	Facility Floor	Polyaluminum Chloride 18% - 50%, @80 - 90°C	2024
3	Southeast Asia	HEGSEL UltraTile	Facility Floor	Water Treatment Plant in Power Industry	2024
4	Southeast Asia	HEGSEL EL	Internal Rubber Lining	Sulfuric Acid 10% up to 30% @100°C	2024
5	Middle East	HEGSEL Corr	Internal Coating	Amine Regenerators @100 - 135°C, P: atm. Fluid: mix. of amine and acid gas containing Hydrogen Sulfide and Carbon Dioxide	2017-2024
				Amine Regenerator Reboilers Lean amine mix containing Methyl Diethanolamine, Oxalic Acid, Acetic Acid, Sulfuric Acid, Hydrogen Sulfide, Carbon Dioxide, and Oxygen @~140°C, 3 barg	
				Disulphide Separators Fluid: Hydrogen Sulfide, Caustic wash solution, Sodium Hydrosulfide, hydrocarbon disulphides (RSSR)	
				Sump Drums Fluid: Sour Hydrocarbons, Sludge, and Saline Water @140°C, P: 1.5 barg	
				Condensate Desalters Sour Hydrocarbons, Monoethylene Glycol, Saline Water (containing Na ⁺ , Ca ²⁺ , Mg ²⁺ , etc.) @85°C, P: 46 barg	
				Stabilizer Reboilers Stabilizer Side Reboilers	
6	Middle East	HEGSEL Coat	Coating for Oil Pipelines	Crude Oil	2024
7	Middle East	HEGSEL Furanic FRP	Underground Floor Lining in a Copper Refinery	Spillage of Sulfuric Acid 20%	2021-2024
8	Middle East	HEGSEL Furanic Mortar	Bedding and Jointing Mortar	CIP system cleaning in a dairy plant Sodium Hydroxide, Nitric Acid	2023
9	Southeast Asia	HEGSEL UltraTile	Facility Floor	Water Treatment Plant in Power Industry	2023
10	Europe	HEGSEL EL	Internal Rubber Lining of Storage Tank	Hydrochloric Acid 32% @ambient temperature	2023
11	Middle East	HEGSEL Vinyl Ester FRP	Lining For the Rail Area and Wagon Loading Zone	Spillage of Sulfuric Acid	2023

Key Project Records

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12	Middle East	HEGSEL Furanic Mortar	Floring In the Acid Tanker Unloading and Loading Areas, Pump House Walls, and the Internal Surfaces of Sumps	Spillage of Sulfuric Acid	2023
13	Middle East	HEGSEL Phenolic Mortar	Coating of Graphite Electrodes	Oxidation of the Electrode Exposed to the Environment	2023
14	Middle East	HEGSEL Corr	Coating Inside the Quencher Tank	Hydrochloric Acid, Carbon Dioxide, Sodium Hydroxide, and Sodium Carbonate	2022
15	Middle East	HEGSEL Pox	Warehouse Flooring	Forklift and Pedestrian Traffic	2022
16	Middle East	HEGSEL EL	Internal Rubber Lining of Ion Exchanger Columns	Demineralized Water, Hydrochloric Acid 7%, Sodium Hydroxide 4% @87°C	2022
17	Middle East	HEGSEL Coat	Pressure Vessels Coating in DAF System	Industrial Wastewater, pH= 5 - 11	2022
18	Southwestern Europe	HEGSEL Flake	Storage Tank	Molten Sulfur	2022
19	Middle East	HEGSEL Phenolic FRP	Secondary Containment	Spillage of Sulfuric Acid 98%	2022
20	Middle East	HEGSEL Corr	Caustic Storage Tank Inside Coating	Sodium Hydroxide 50% @80°C	2022
21	Europe	HEGSEL EL	Internal Rubber Lining	Phosphoric Acid 40 - 44 %, Hydrofluoric Acid 0.3%, Sulfuric Acid 5%, Chlorine 2% @85°C	2022
22	Middle East	HEGSEL Phenolic Mortar	Loading / Unloading Area	Spillage of Concentrated Sulfuric Acid	2022
23	Southeast Asia	HEGSEL Vinyl Ester FRP	Flooring for Dairy Industry Areas	CIP System	2022
24	Southeast Asia	HEGSEL EL	Internal Rubber Lining	Anion Exchange Tank: Water, Anion Exchange Resin, Sodium Hydroxide 12% @65°C Cation Exchange Tank: Water, Cation Exchange Resin, Sulfuric Acid 12% @ 65°C	2022
25	Middle East	HEGSEL Fix	Metal Repairing	Repair of Metal Surface Defects	2022
26	Middle East	HEGSEL Corr	Coating of Absorption Towers	Sour Water Saturated with Hydrogen Sulfide @50 - 60°C	2022
27	Middle East	HEGSEL Pox	Parking Lot Flooring	Pedestrian and vehicle traffic	2022

Key Project Records

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28	Southwestern Europe	HEGSEL EL	Internal Rubber Lining of Storage Tank	Hydrochloric Acid 32% @ambient temperature	2022
29	Southeast Asia	HEGSEL Vinyl Ester FRP	Neutralization Pond	Diluted Acids and Alkalis	2022
30	Middle East	HEGSEL Corr	Internal Lining of an Amine Regenerator Boiler / Tank	Methyl Diethanolamine, Hydrogen Sulfide, Carbon Dioxide @100 - 140°C	2021
31	Southeast Asia	HEGSEL EL	Internal Rubber Lining of Storage Tank	Sodium Hydroxide 48% @ambient temperature	2021
32	Middle East	HEGSEL Corr	External Coating	Carbon Steel Underground Carrier Pipes @ambient up to 170°C	2021
33	Middle East	HEGSEL Vinyl Ester FRP	Wastewater Pond Coating	Sodium Hydroxide, Acetic Acid, and Formic Acid @5 - 52°C	2021
34	Middle East	HEGSEL Corr	Rebuilding and Lining of Chemical Wastewater Manholes	Sulfuric Acid, Nitric Acid	2021
35	Middle East	HEGSEL Vinyl Ester FRP	Flooring for Concrete Areas Around Tanks and Pumps and Truck Loading /Unloading Areas	Vehicle and pedestrian traffic , Maleic Acid @70 - 100°C	2021
36	Middle East	HEGSEL Phenolic Mortar	Facility Floor	Spillage of Sulfuric Acid 98%	2021
37	Europe	HEGSEL EL	Internal Rubber Lining of Storage Tank	Hydrochloric Acid 30% @85°C	2020
38	Middle East	HEGSEL Corr	Buried Pipes Coating of Emergency Surge Unit	External coating of UG pipeline @190°C	2020
39	Europe	HEGSEL EL	Internal Rubber Lining	Sodium Hypochlorite 10% @ambient temperature	2020
40	Middle East	HEGSEL Phenolic FRP HEGSEL Furanic FRP	Secondary Dikes Around Chemical Storage Tanks	Leakage of Hydrochloric Acid 33%, Sulfuric Acid 98%, and Sodium Hydroxide 49% @5 - 55°C	2020
41	Middle East	HEGSEL Vinyl Ester FRP	Concrete Neutralization Tank	Temporary contact with Sulfuric Acid 98% and Sodium Hydroxide 50%	2020
42	Europe	HEGSEL EL	Internal Rubber Lining of Storage Tank	Saturated Brine 305 g/lit @55°C	2020
43	Middle East	HEGSEL Furanic Mortar	Bedding and Jointing Mortar	Leakage of diluted Sulfuric Acid and Sodium Hydroxide	2020

Key Project Records

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44	Middle East	HEGSEL Vinyl Ester FRP	Refinery Area Floor	Spillage of Sulfuric Acid	2020
45	Middle East	HEGSEL Corr	Coating of a Filter Tank	Abrasive Catalyst Particles, Titanium Tetrachloride	2020
46	Middle East	HEGSEL Furanic Mortar HEGSEL Vinyl Ester Mortar	Bedding and Jointing Mortar	First section: Cleaning Solution CIP unit @Max 40°C, Sodium Hydroxide 0.1%, pH= 12 Hydrochloric Acid 0.2%, pH= 1~2, Tetrasodium EDTA 1%, pH= 12	2020
				Second section: RO Building -Chemical Package, Sodium Bicarbonate 7%, Calcium Chloride 10%, Sodium Bisulfite 20%, Sodium Hydroxide 46%, Sulfuric Acid 80%, Sodium Hypochlorite 10%	
				Third section: Chemical Storage Building Ferric Chloride 40%	
47	Europe	HEGSEL Corr	Tank Coating	Sulfuric Acid 98% @60°C	2019
48	Middle East	HEGSEL Corr	External Repairing System	Hydrocarbon condensate containing Hydrogen Sulfide, Pressure: 70 bar reinforcing damaged areas (due to a 10 mm wall loss at the bottom of the pipe)	2019
49	Middle East	HEGSEL Vinyl Ester FRP	Coating of Pedestal Floors and Unloading Platforms for Wagons in the Sulfuric Acid Transfer Project	Spillage of Sulfuric Acid	2019
50	Middle East	HEGSEL Coat	Internal Coating of Water Treatment Unit	Diluted Sulfuric Acid, Hydrochloric Acid and Sodium Hydroxide	2019
51	Europe	HEGSEL EL	Internal Rubber Lining	Vapor phase: Water, Hydrofluoric Acid 1% Liquid phase: Water, Phosphoric Acid @87 - 90°C	2019
52	Middle East	HEGSEL EL	Internal Rubber Lining	Brine, Hydrochloric Acid, Sodium Hypochlorite, Bleach, wastewater @elevated temperatures	2019
53	Middle East	HEGSEL Corr	Coating for Amine Treating Unit	Methyl Diethanolamine 40% rich in Hydrogen Sulfide @55 - 70°C	2019
54	Middle East	HEGSEL Corr	External Surface of Elbows and Nipples in Gas Condensate Transfer Pipelines	Hydrogen Sulfide and Gas Condensates, pH= 4 - 5, Pressure 75 barG @30-55°C.	2019
55	Middle East	HEGSEL Coat	External Coating	Flanges in CPF closed drain piping	2019
56	Middle East	HEGSEL Corr	Internal Coating	Sulfuric Acid 98% @ambient temperature Phosphoric Acid 26 - 48% @80°C	2018
57	Middle East	HEGSEL Furanic Mortar	Bedding and Jointing Mortar	Leakage of Sulfuric Acid 80%	2018

Key Project Records

	Region	Product Category	Application Purpose	Service Conditions	Project Year
58	Southeast Asia	HEGSEL EL	Internal Rubber Lining	Ferric chloride 40%, Sodium Hypochlorite 14% @45°C	2018
59	Middle East	HEGSEL Fix	Rubber Lining Repairing Mortar	Ferric Chloride 40% @ambient temperature	2018
60	Middle East	HEGSEL Fix	Rubber Lining Repairing Mortar	Hydrochloric Acid 33% storage tank @ambient temperature	2018
61	Middle East	HEGSEL Furanic Mortar	Bedding and Jointing Mortar	CIP system cleaning in a dairy plant Sodium Hydroxide, Nitric Acid	2018
62	Europe	HEGSEL Coat	Coating for Seawater Services	Seawater @ambient temperature	2018
63	Middle East	HEGSEL Fix	Rubber Lining Repairing Mortar	Repairing a Rubber Lined Tank	2018
64	Middle East	HEGSEL Furanic Mortar HEGSEL Vinyl Ester Mortar	Lining of Tanks, Channels, CIP Equipment, and RO (Reverse Osmosis) Systems	Sodium Hydroxide 46%, Sulfuric Acid 98%, and Sodium Hypochlorite	2018
65	Middle East	HEGSEL Fix	Rebuilding and Lining of Chemical Wastewater Manholes	Chlorophoric Acid, Hypochlorite, Water Vapor, and Dissolved Salts	2018
66	Middle East	HEGSEL Pox	Flooring for Hall of Office	Pedestrian Traffic	2018
67	Middle East	HEGSEL Corr	Underlayer Membrane of Tile Lining	Leakage of Sulfuric Acid 98%	2017
68	Middle East	HEGSEL Furanic Mortar	Bedding and Jointing Mortar	CIP system cleaning in a dairy plant Sodium Hydroxide, Nitric Acid	2017
69	Australia	HEGSEL Coat	Coating for Seawater Services	Seawater @ambient temperature	2017
70	Middle East	HEGSEL Corr	Concrete Tanks and Pits Coating	Molten Sulfur @140°C	2017
71	Middle East	HEGSEL Corr	LP Gas Separator Coating	Hydrogen Sulfide and Carbon Dioxide @54°C	2017
72	Middle East	HEGSEL Corr	Reflux Accumulator Gas Vessel Coating	Hydrogen Sulfide, Carbon Dioxide, Water, and Amine @63°C	2017
73	Middle East	HEGSEL Corr	Internal Coating for Sour Gas Service	Sour gas service in combination with Diglycolamine, Methyl Diethanolamine, or Monoethanolamine under elevated temperatures	2017

Key Project Records

	Region	Product Category	Application Purpose	Service Conditions	Project Year
74	Middle East	HEGSEL Phenolic Mortar	Bedding and Jointing Mortar	Leakage of Sulfuric Acid 98%	2017
75	Middle East	HEGSEL Furanic Mortar	Bedding and Jointing Mortar	Water treatment plant unit in a combined cycle power plant Permanent contact with: Sulfuric Acid 4 - 80%, Sodium Hydroxide 4 - 46%, Demine water inorganic salts	2016
76	Middle East	HEGSEL Furanic Mortar	Bedding and Jointing Mortar	CIP system cleaning in a dairy plant Sodium Hydroxide, Nitric Acid	2016
77	Middle East	HEGSEL Furanic Mortar	Facility Floor	Water Treatment Plant in Power Industry	2016
78	Middle East	HEGSEL Phenolic Mortar	Bedding And Jointing Mortar	Sulfuric Acid 98%	2016
79	Europe	HEGSEL Corr	Subsea flowlines and Spool pieces Coating	Seawater @130°C	2015



You Build, We Protect!



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