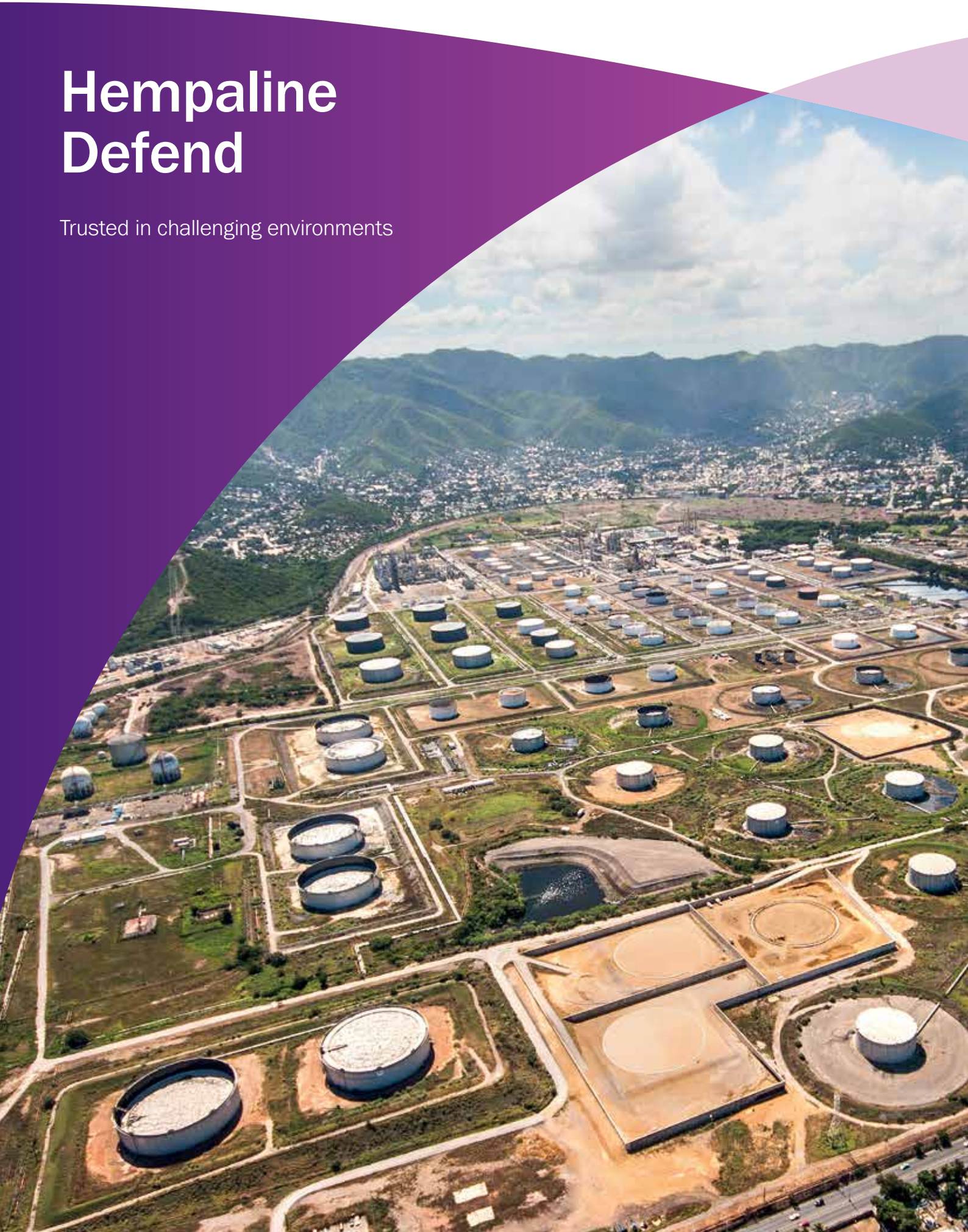


Hempaline Defend

Trusted in challenging environments



Trusted in challenging environments

Hempel was founded in 1915 and is today one of the world's leading manufacturers and suppliers of high-performance, protective linings. Hempaline Defend is Hempel's dedicated speciality lining brand for the most challenging environments.

Hempaline Defend provides high performance lining solutions for the aggressive environments found in the oil & gas and chemical industries. Our linings offer superior protection against corrosion, high temperature, extreme abrasion and a wide range of chemical and solvent materials.

Here at Hempel we recognise the need to fully understand the process conditions we are looking to protect against. Before making any recommendation we seek to understand the service environment, considering such factors as temperature, pressure, pH swings and cleaning processes, to ensure the best chance of lining success.

Our Hempaline Defend Linings are frequently used for internal protection of storage tank bottoms, process vessels, acid tanks and secondary containment areas.

Hempaline Defend helps you to increase profits from your assets by maximising uptime through longer service and reduced maintenance, whilst minimising disruption with our fast return to service systems.

We combine our extensive knowledge of your particular business with a focus on the linings challenges you face. This allows us to provide you with trusted lining solutions to extend the life cycle of your assets.





Hempel linings are designed for the internal protection of a wide range of industrial assets, during the new construction phase or later on in the asset's life during maintenance.

Areas of use for Hempaline Defend Linings include (but are not limited to):

Hydrocarbon storage tanks

From the crude oil feedstock through to the refined products such as petrol/gasoline, diesel and jet fuel. Our Defend linings can resist sour crude oils mixed with contaminants such as water, H₂S and CO₂ up to a maximum of 120°C. Ideal for static storage tanks including API 650 and 12E/F tanks. Approved to EI1541 for storage of jet fuel.

Biofuel processing and storage

Defend linings have a proven track record and comprehensive testing to show their resistance to the biofuel feedstocks such as vegetable oils and animal fats which contain aggressive free fatty acids (FFA). Our testing shows performance up to 90°C with 100% FFA with water contamination. They are also suitable for the refined biofuels such as biodiesel (FAME), renewable Diesel (HVO) and Sustainable Aviation (SAF).

Process vessels

Tested and proven in service up to temperatures of 120°C and pressure of 70 bar our novolac epoxies can protect process vessels in the harshest of conditions.

Water tanks

With an excellent long-term to immersion in water many of the Defend Linings are approved to WRAS for potable water use, with Defend 630 being rated up to 80°C.

Pipelines

High durability, ease of application and high productivity make Defend Linings suitable for the internals and externals of buried and above ground pipelines, in both new construction and maintenance projects.

Ask for our comprehensive Chemical Protection Guide.

Vinyl Ester Linings

Resistant to the most aggressive service conditions

Hempaline Defend 740

A high performance Novolac glass flake filled vinyl ester lining

Vinyl Esters

- Resistance to acidic chemicals
- Outstanding resistance to Free Fatty Acids (FFA) in biofuel feedstocks
- Suitable for storage tanks, process vessels and secondary containment areas
- Produced to a global quality standard
- Specified by Oil & Gas owners and approved to International Standards
- Defend Range covers all your operational needs

Hempaline Defend 400

Epoxy Lining Technology suitable for non-internally heated storage tanks and resists crude oil / water mixtures up to 60°C [140°F]

Epoxy Linings

Chemical and Temperature Resistance

- High Durability
- Ease of application
- Single Coat / Thick Film
- Low VOC emissions

Hempaline Defend 630 LT

Cold apply and cure version of Defend 630. Can be applied and cures down to -5°C (23°F) saving energy and offering scheduling flexibility into colder months of the year

Hempaline Defend 430

Epoxy Phenolic Lining Technology offering higher performance. Suitable for most hydrocarbon storage tanks. Resists crude oil up to 90°C

Hempaline Defend 630

Epoxy Novaloc Lining Technology offering the highest levels of performance. Suitable for storage tanks and process vessels. Resists sour crude oil / water mixture up to 120°C

Defend Epoxies

- Improved sustainability
- Return to service within 72 hours
- Pit fill and line with one product

Optional primers if required:

Hempaline Prepare 110

A high performance epoxy sealer for use on concrete.

Hempaline Prepare 120

A two-component vinyl ester sealer for use on steel and concrete.



Hempaline Prepare 130

Where a blast holding primer is required, Hempaline Prepare 130, is a high performance, epoxy novolac primer that has proven immersion resistance up to 130°C (266°F). Many blast holding primers in the market are not designed for immersion use and can become a weak link in a tank lining system at the critical lining/substrate interface. Hempaline Prepare 130 has a long overcoating window (up to 120 days at 20°C (68°F)) and can be applied to fully cover the blast profile and stop any flash rusting. Hempaline Prepare 130 is also available in an Optically Active Pigmented (OAP) shade that allows inspection during application through quick identification of pin holes and defects using a UV torch over the wet lining. Finding and making good these defects during application can save unplanned remedial work once the lining is hard dry.

The Hempaline Defend advantage

We understand aggressive environments suffer from extreme pH swings, high abrasion and elevated temperatures.

Acids, caustics, strong solvents and oil and water mixtures are highly corrosive to steel and concrete.

If undetected this can ultimately lead to loss of containment, safety and environmental concerns.

Our linings have been designed to resist such hostile elements, and more. Hempaline Defend materials are sufficiently flexible for even the largest diameter storage tanks and are also resistant to steam cleaning and other processes.

With rapid curing, our high performance linings will get your asset back in service quicker.

For a lining you can trust, look no further than our range of proven Hempaline Defend Linings.



Local linings manufacturing and technical support



Fast delivery and experienced on-site support when needed

Simple application, single coat schemes



Reduced project durations leading to lower costs

High performance linings based on rigorous testing and real life applications



Long service life of assets as well as reduced maintenance

Formulated with globally registered and available raw materials



Same quality supplied globally and specifications always met

Rapid cure systems



Reduced downtime costs through faster return to service

Health, safety and environmental benefits



Reductions in emissions, extended tank inspection and cleaning intervals and improved waste management



Fast return to service

A major Middle Eastern gas production facility needed to reline an internal tank bottom. The tank was taken out of service ready for it to be prepared and a new lining installed.

Due to Hempel's local manufacturing and stock availability, the project was successfully completed on time and the unit quickly returned to full production.

“This has helped our projects department and contractor to complete the internal painting and handover of the tank to operations without much delay. Thank you for your prompt solution to our issues.”

Operation projects department

Hempel makes the grade with refinery crude storage tank lining

A major United States oil refinery chose our Hempaline Defend 630 Solvent Free Novolac Epoxy Lining as an interior tank lining for a 200 foot / 61 metre diameter sour crude oil storage tank.

With rapid curing, Hempaline Defend 630 returned the customer's tank back to revenue producing service fast, with a lining that can be trusted for lasting corrosion protection.



At a glance

Customer	Major US Refinery
Coating system	Hempaline Defend 630 Novolac Epoxy Lining
Total litres	2,000
Application	Airless spray

Advanced oil tank corrosion protection for a major US oil company

A major US oil company was experiencing corrosion in its sour crude oil tanks. Chemicals and water in the oil were causing severe pitting and corrosion at the bottom of the storage tanks. To combat this, we recommended Hempaline Defend 740 Vinyl Ester Mat Reinforced Lining. The addition of the reinforcement mat not only affords greater barrier properties but contributes to the materials ability to withstand flexure and impact.

Our products have provided proven long term performance for the customer who now specifies Hempaline Defend Linings for all its crude oil tanks.



At a glance

Customer	Major US oil company
Lining system	Hempaline Defend 740 Vinyl Ester with mat reinforcement
Total litres	2,300





Notes

As a world-leading supplier of trusted coating solutions, Hempel is a global company with strong values, working with customers in the decorative, marine, infrastructure and energy industries. Hempel factories, R&D centres and stock points are established in every region.

Across the globe, Hempel's paints and coatings can be found in almost every country of the world. They protect and beautify buildings, infrastructure and other assets, and play an essential role in our customers' businesses. They help minimise maintenance costs, improve aesthetics and increase energy efficiency.

At Hempel, our purpose is to shape a brighter future with sustainable coating solutions. We firmly believe that we will succeed as a business only if we place sustainability at our heart. Not only is it the right thing to do, it will strengthen our competitive position, make ourselves more resilient and reduce our risk.

Hempel was founded in Copenhagen, Denmark in 1915. It is majority owned by the Hempel Foundation, which ensures a solid economic base for the Hempel Group and supports cultural, social, humanitarian and scientific purposes around the world.

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