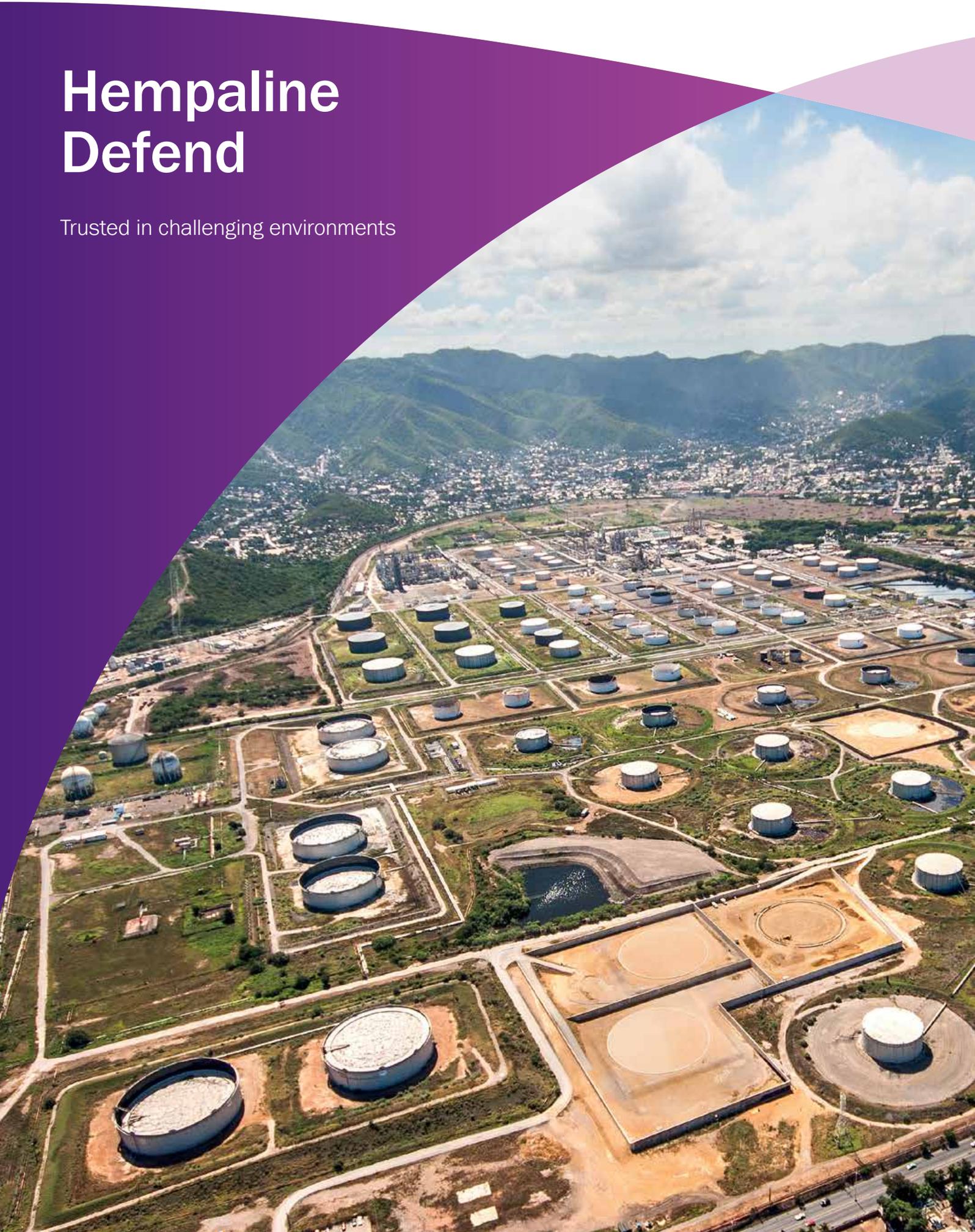


Hempaline Defend

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.





Areas of use for Vinyl Esters

Hempaline Defend 740

Used as an internal lining for chemical storage or exposure where acidic environments at elevated temperatures and pressures might be experienced in oil & gas and chemical processes.

Areas of use for Epoxies

Hempaline Defend 400

Excellent resistance to crude oil up to 60°C/140°F, aromatic and aliphatic solvents, aviation fuels and gasoline.

Hempaline Defend 630

High performance tank lining for the storage of a wide range of petrochemicals including (but not limited to) crude oil up to 120°C/248°F, MTBE, produced water, alcohols, aromatic and aliphatic solvents, aviation fuels, gasoline blends, select acidic and caustic chemicals.

Ask for our comprehensive Chemical Resistance Guide.

Airless spray application

Hempaline Defend 740

A high performance Novolac glass flake filled vinyl ester lining

Vinyl Esters

- Excellent resistance to acidic media
- Suitable for neutralisation areas and sumps
- Reinforced Novolac product available for increased chemical and heat resistance

Hempaline Defend 400

A solvent free, high performance epoxy lining

Airless spray application

Wide chemical resistance

Hempaline Defend 630

A solvent free, high performance Novolac epoxy lining

Epoxies

- Produced to a global quality standard
- High performance schemes for both steel and concrete
- Complete product line to meet all project needs
- Improved environmental considerations
- Available as fast return to service 24hr grade
- Reinforced Novolac product available for increased chemical resistance

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

A chemical resistant epoxy Novolac, for use as a holding primer for internal tank linings.

*Traditional tank lining primers may be used for epoxy linings before the application of Hempaline Defend coatings as part of a detailed specification.

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 - often in as little as 24 hours.

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.

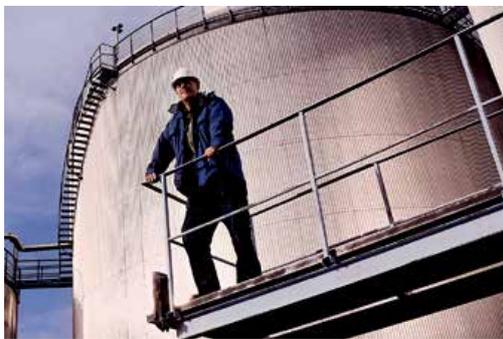


| At a glance | |
|----------------|---|
| Customer | Major US Refinery |
| Coating system | Hempaline Defend 630 Novolac Epoxy Lining |
| Total litres | 2,000 |
| Application | Airless spray |

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 |





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

Across the globe, Hempel's coatings protect surfaces, structures and equipment. They extend asset lifetimes, reduce maintenance costs and make homes and workplaces safer and more colourful. Hempel was founded in Copenhagen, Denmark in 1915. It is proudly 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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