Increasing productivity with solvent-free tank linings

How fast-curing solvent-free Hempaline Defend linings can increase productivity on maintenance and construction of storage tanks, process vessels, mobile tanks and containment areas.

Storage and containment areas can be complex to construct and require regular maintenance to ensure reliable long-term performance. In these scenarios, high productivity lining systems can significantly lower project completion times and costs. They reduce application time and labour requirements and, in the case of maintenance or refurbishment, minimise asset downtime by enabling a faster return to service.

To take advantage of these benefits, we recommend solvent-free linings, such as Hempaline Defend 400 and Hempaline Defend 630, which offer significant application benefits in both new construction and maintenance scenarios.

- Hempaline Defend 630 is a solvent-free Novolac epoxy that provides outstanding resistance to a wide range of chemicals at high temperatures up to 120°C (248 ℉), including crude oil, hydrocarbons, alcohols, fatty acids, alkalis and water.
- Hempaline Defend 400 is a solvent-free epoxy with excellent resistance to crude oil, hydrocarbons and mild chemicals at temperatures up to 60°C (140 ℉).

Increasing productivity with high DFT one-coat systems

In solvent-free coatings, such as Hempaline Defend 630 and Hempaline Defend 400, there is no solvent retention. Therefore, there is no build-up of the residual stress that can lead to cracks and loss of adhesion, even if the coatings are applied in high dry film thicknesses (DFTs) or high wet film thicknesses in pits and surrounding areas (including corners).

As a result, these coatings can be used as high DFT one-coat systems on new steel or moderately pitted steel. They can also be used for pit filling in light, moderately and severely pitted bottoms that are structurally sound. As the coatings have a high tolerance to over application, they are quick to apply, reducing project time and costs.

Reduced complexity in two-coat and reinforced systems

The condition of the steel will dictate if a second coat is needed. If pitting is severe, a glass fibre reinforced laminate system may be necessary. Hempaline Defend 400 and Hempaline Defend 630 can be used to build these reinforced systems.

Regardless of the system, (one or two coats or laminate) both products can be used for caulking of chimes, steel overlaps, seams and welds if mixed with silica sand. In all application scenarios, the above stated benefit of high tolerance to over application remains. This enables applicators to work with a single, fast-to-apply lining product, reducing project complexity.

Fast-curing for a quicker return to service

Many maintenance scenarios require assets to be taken out of service, leading to a disruption of service and loss of revenue. In these situations, fast-curing linings that are quick to apply can significantly reduce down-time.

Hempaline Defend 400 and Hempaline Defend 630 are available in two versions: a standard curing system that enables a return to service in just 72 hours at 20ºC; and a fast return to service system (FRTS) that enables a return to service in just 24 hours at 20ºC. These versions have the same base, but the hardener is different. FRTS requires plural component equipment for application.

The graph below shows the time savings when using the different systems (one-coat, two-coat and FRTS) on a full tank lining project, from surface preparation to filling with the lining.

System	Activity	Duration
Hempaline Defend 400 or 630 Cure 72 hours – 1-coat system	Clean and gas free	3 days
	Surface preparation	5 days
	Stripe coat	1 day
	Application of one coat	1 day
	Inspection and touch up	1 day
	Curing (20ºC)	3 day
	Fill with product	1 day
	Total	15 days
Hempaline Defend 400 or 630 Cure 72 hours – 2-coat system	Clean and gas free	3 days
	Surface preparation	5 days
	Stripe coat	1 day
	Application 1st coat	1 day
	Stripe coat	1 day
	Application 2nd coat	1 day
	Inspection and touch up	1 day
	Curing (20ºC)	3 day
	Fill with product	1 day
	Total	17 days

Hempaline Defend 400 or 630 Cure 24 hours – 1-coat system	Clean and gas free	3 days													
	Surface preparation	5 days													
	Stripe coat and application of one coat	1 day													
	Inspection and touch up	1 day													
	Curing (20ºC)	1 day													
	Fill with product	1 day													
	Total	12 days													

- A one-coat system based on a 72-hour curing Hempaline Defend 400 or Hempaline Defend 630 lining, results in a time reduction of around 2 days compared to a two-coat system.
- A one-coat system based on a FRTS Hempaline Defend 400 or Hempaline Defend 630 version (24-hour curing) results in a time reduction of 3 days compared to a standard curing version.

Choosing the correct system for your project

As well as productivity and project completion times, your choice of lining depends on a number of factors, including the asset's operating conditions and the state of the substrate. Other factors, such as the application equipment available and product storage and application conditions, should also be considered.

If you would like any advice or assistance selecting the best solution for your project, contact your local Hempel Sales representative.

Find out more

- Explore our Hempaline Defend solvent-free epoxy coatings site.

The values presented in this document are for general information purposes only. For specific values and specifications, please contact your local Hempel representative.