

Greater Productivity

with our fast-drying systems



World-leading coatings supplier

Tailor-made solutions

As part of Hempel's ongoing Research & Development, we have been looking at ways of optimising the application process to improve productivity for applicators and increase the quality of the end result. We have brought together our most advanced key products in specific combinations to give an optimised application and long lasting finish in any corrosive environment. These systems have been developed to work in a variety of worldwide environments, taking into account local conditions, performance requirements and other factors.

Feature and Benefits

- A comprehensive range of protective coating systems are available, tailored to suit specific environments
- Faster drying to reduce application time and short overcoating intervals for increased productivity
- The fast drying finish is strong, allowing for smooth handling and transportation after application
- Easy to apply, using standard methods and equipment
- Proven advanced protection from trusted products, with strengthened anti-corrosive properties
- Our systems are backed by reliable, on-site support from our global team of experts



ISO 12944:2018

Part 5: Protective paint systems

Summary of the minimum number of coats and minimum NDFT of the paint system depending on durability and corrosivity category on abrasive blasted steel substrates (ref. ISO 12944-5:2018).

Carbon steel - atmospheric

Durability		Low (I)		Medium (m)		High (h)		Very High (vh)					
Type of prir	mer	Zn (R)	Mi	sc.	Zn (R)	Mi	SC.	Zn (R)	Mi	sc.	Zn (R)	Mi	SC.
3inder bas	se of primer	ESI EP PUR	EP PUR ESI	AK AY	ESI EP PUR	EP PUR ESI	AK AY	ESI EP PUR	EP PUR ESI	AK AY	ESI EP PUR	EP PUR ESI	AK AY
Binder bas of subsequ	se uent coats	EP PUR AY	EP PUR AY	AK AY	EP PUR AY	EP PUR AY	AK AY	EP PUR AY	EP PUR AY	AK AY	EP PUR AY	EP PUR, AY	AK AY
C2	MNOC		_		-	-	1	1	1	1	2	2	2
	NDFT		а		-	-	100	60	120	160	160	180	200
СЗ	MNOC	-	-	1	1	1	1	2	2	2	2	2	2
	NDFT	-	-	100	60	120	160	160	180	200	200	240	260
C4	MNOC	1	1	1	2	2	2	2	2	2	3	2	-
	NDFT	60	120	160	160	180	200	200	240	260	260	300	-
C5	MNOC	2	2	-	2	2	-	3	2	-	3	3	-
	NDFT	160	180	-	200	240	-	260	300	-	320	360	-

AK: Alkyd

EP: Epoxy

ESI: Ethyl silicate

PUR: Polyurethane

Zn(R): Zinc rich primer

Misc.: Primers with miscellaneous types of anti-corrosive pigments

NDFT: Normal Dry Film Thickness / MNOC: Minimum Number Of Coats

NFW

Fast throughput

with optimal anti-corrosive properties

Hempadur Speed-dry ZP 500 Hempathane Speed-dry Topcoat 250

The system based on both high-build and fast drying products will help you to achieve fast throughput with optimal anti-corrosive properties.

The system is tested up to C3 – very high, thus helping to reduce maintenance costs through long maintenance periods.

Physical constants and drying times					
	Hempadur Speed-dry ZP 500 Epoxy	Hempathane Speed-dry Topcoat 250 Polyurethane			
Shade	17330 / Grey	Multitint			
Finish	Flat	Glossy			
Volume solid	75%	62%			
VOC	235 g/l	366 g/I			
Theoretical spreading rate	6 m²/l, 125 μm	12.4 m²/l, 50 μm			
DFT range	70 – 200¹ µm	50 – 125 µm			
Min. overcoating interval 20°C	2 hours	4 hours			
Surface-dry 20°C	1 hour	1 hour			

¹ Check PDS for the requirements on the surface.





Ероху	3,5h	Thickness
Hempadur Speed-dry ZP 500		120 µm
Total DFT		120 µm

Epoxy / Polyurethane	Thickness
Hempadur Speed-dry ZP 500	100 µm
Hempathane Speed-dry Topcoat 250 ²	80 µm
Total DFT	180 µm

Epoxy / Polyurethane	Thickness
Hempadur Speed-dry ZP 500	180¹ µm
Hempathane Speed-dry Topcoat 250 ²	60 µm
Total DFT	240 µm

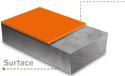


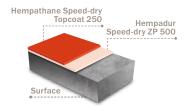
² Hempathane Speed-dry Topcoat 250 can be replaced with Hempathane Fast Dry 55750 when a semi gloss finish requested. The drying times will remain unchanged, for more details see page 22 – 23.

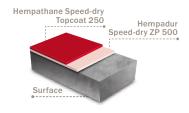


For drying time calculation please see page 25.









Direct to metal solution

the process, with maximised simplicity

Hempathane Speed-dry Topcoat 250

Direct to metal solution up to C3 – very high, with very good adhesion to steel, significantly contributes to increased productivity for in-shop applications and ensures long lasting aesthetic appearance with a single product applied.

Physical constants and drying times				
	Hempathane Speed-dry Topcoat 250 Polyurethane			
Shade	Multitint			
Finish	Glossy			
Volume solid	62%			
VOC	366 g/l			
Theoretical spreading rate	12.4 m²/l, 50 µm			
DFT range	50 - 125 µm			
Min. overcoating interval 20°C	4 hours			
Surface-dry 20°C	1 hour			



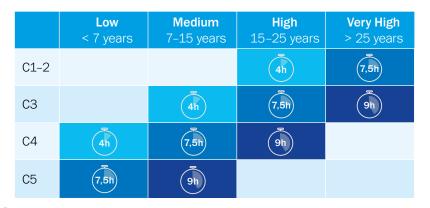


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Polyurethane	4 h	Thickness
Hempathane Speed-dry Topc	120 µm	
Total DFT	120 µm	

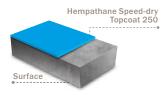
Polyurethane (7,5h)	Thickness
Hempathane Speed-dry Topcoat 250 ²	90 µm
Hempathane Speed-dry Topcoat 250 ²	90 µm
Total DFT	180 µm

Polyurethane 9h	Thickness
Hempathane Speed-dry Topcoat 250 ²	120 µm
Hempathane Speed-dry Topcoat 250 ²	120 µm
Total DFT	240 µm

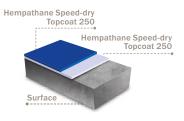
² Hempathane Speed-dry Topcoat 250 can be replaced with Hempathane Fast Dry 55750 when a semi gloss finish requested. The drying times will remain unchanged, for more details see page 22 – 23.



For drying time calculation please see page 25.



Hempathane Speed-dry Topcoat 250 Hempathane Speed-dry Topcoat 250 Surface



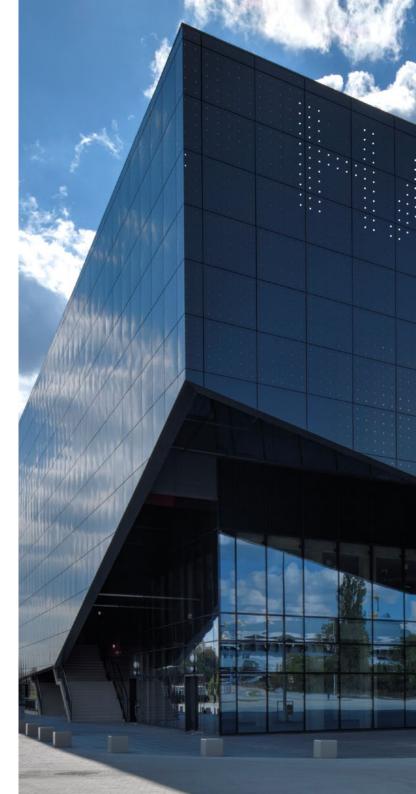
Easy application

one-component acrylic for exterior exposure

Hempatex Hi-build 46410

It is a one-component solution, with high durability and good anti-corrosive properties in medium corrosive environments, which is easy to apply. It is suitable for fast and economic repair and offers long lasting aesthetic appearance.

Physical constants and drying times					
	Hempatex Hi-build 46410 Acrylic				
Shade	Multitint				
Finish	Flat				
Volume solid	42%				
VOC	508 g/l				
Theoretical spreading rate	4.2 m²/l, 100 μm				
DFT range	50 – 125 µm				
Min. overcoating interval 20°C	4 hours				
Surface-dry 20°C	45 min				

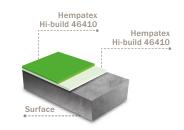


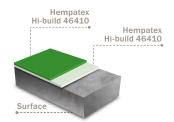


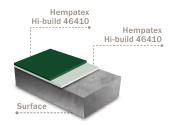
Acrylic	4,5h	Thickness
Hempatex Hi-build 46410		80 µm
Hempatex Hi-build 46410		80 µm
Total DFT		160 µm

Acrylic	5,5h	Thickness
Hempatex Hi-build 46410		100 µm
Hempatex Hi-build 46410		100 µm
Total DFT		200 µm

Acrylic	6,5h	Thickness
Hempatex Hi-build 46410		120 µm
Hempatex Hi-build 46410		120 µm
Total DFT		240 µm









For drying time calculation please see page 25.

Extremely

fast drying and easy application

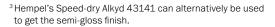
Hempel's Speed-dry Alkyd 43140 or Hempel's Speed-dry Alkyd 43141

Extremely fast drying and easy to apply one-component alkyd solution with good anti-corrosive properties and prolonged durability in mild corrosive environments.

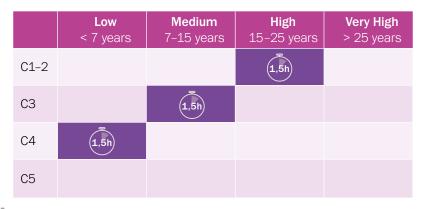
Physical constants and drying times		
	Hempel's Speed-dry Alkyd 43140 Alkyd	Hempel's Speed-dry Alkyd 43141 Alkyd
Shade	Multitint	Multitint
Finish	Flat	Semi-gloss
Volume solid	49%	48%
VOC	444 g/l	463 g/l
Theoretical spreading rate	7 m²/l, 70 μm	6 m²/l, 100 μm
DFT range	60 – 80 µm	60 – 120 µm
Min. overcoating interval 20°C	15 / 30 min	1 hour
Surface-dry 20°C	15 min	20 min



Alkyd (1,5h)	Thickness
Hempel's Speed-dry Alkyd 43140 ³	80 µm
Hempel's Speed-dry Alkyd 43140 ³	80 µm
Total DFT	160 µm



The drying time for the system with Hempel's Speed-dry Alkyd 43141 is 3h.



Hempel's Speed-dry Alkyd 43140

Surface

Hempel´s Speed-dry Alkyd 43140

For drying time calculation please see page 25.

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Two-coat solution

with advanced and proven Avantguard technology

Avantguard 550 Hempathane Speed-dry Topcoat 250

A fast drying solution based on patented Avantguard technology with activated zinc offers excellent anti-corrosion protection and long durability for high corrosive environments up to C3 – very high with 2-coat system only, thus ensuring even faster throughput. It features longer maintenance period against conventional Epoxy / Polyurethane systems.

Physical constants and drying times		
	Avantguard 550 Zinc-rich epoxy	Hempathane Speed-dry Topcoat 250 Polyurethane
Shade	19840 / Dark grey	Multitint
Finish	Flat	Glossy
Volume solid	65%	62%
VOC	325 g/l	366 g/l
Theoretical spreading rate	10.8 m²/l, 60 µm	12.4 m²/l, 50 µm
DFT range	40 - 100 µm	50 – 125 µm
Min. overcoating interval 20°C	1 hour	4 hours
Surface-dry 20°C	10 min	1 hour



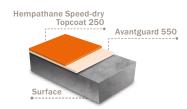


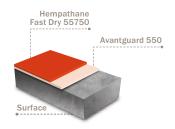
Zinc-rich epoxy / Polyurethane 5h	Thickness
Avantguard 550	60 µm
Hempathane Speed-dry Topcoat 250 ²	100 µm
Total DFT	160 µm

² Hempathane Speed-dry Topcoat 250 can be replaced with Hempathane Fast Dry 55750 when a semi gloss finish requested. The drying times will remain unchanged, for more details see page 22 – 23.

Zinc-rich epoxy / Polyurethane 5h	Thickness
Avantguard 550	60 µm
Hempathane Fast Dry 55750 ⁴	140 µm
Total DFT	200 µm

⁴ Hempathane Fast Dry 55750 should be used when higher DFT in one coat is requested. For more details see page 22 – 23.







For drying time calculation please see page 25.

Efficient solution

for high corrosive environments

Avantguard 550 Hempaprime Multi 500 Hempathane Speed-dry Topcoat 250

A fast drying solution with high-build and crack resistant Hempaprime Multi 500 primer / midcoat, which offers long-lasting barrier protection in high corrosive environments. When Hempaprime Multi 500 applied as a primer, the system is surface tolerant and requires less surface preparation, thus helping to optimise your processes. For more severe environments, Avantguard 550 with activated zinc is applied as a primer to achieve even greater anti-corrosion protection and prolonged durability. The solution features longer maintenance periods against conventional EP / PU or Zn (R) / EP / PU systems.

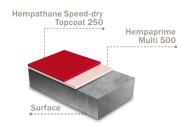
Physical constants and drying times			
	Avantguard 550 Zinc-rich epoxy	Hempaprime Multi 500 Epoxy	Hempathane Speed-dry Topcoat 250 Polyurethane
Shade	19840 / Dark grey	50630 / Red ⁵	Multitint
Finish	Flat	Semi-gloss	Glossy
Volume solid	65%	85%	62%
VOC	325 g/l	196 g/I	366 g/l
Theoretical spreading rate	10.8 m²/l, 60 µm	5.7 m²/l, 150 µm	12.4 m²/l, 50 µm
DFT range	40 - 100 µm	100 - 225 µm	50 - 125 µm
Min. overcoating interval 20°C	1 hour	3 hours	4 hours
Surface-dry 20°C	10 min	3 hours	1 hour

 $^{\rm 5}$ MIO pigmented shade also available – 12430 – reddish grey.



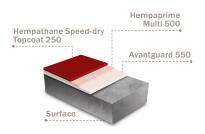


Epoxy / Polyurethane	Thickness
Hempaprime Multi 500	180 µm
Hempathane Speed-dry Topcoat 250 ²	60 µm
Total DFT	240 µm



Zinc-rich epoxy / Epoxy / Polyurethane	Thickness
Avantguard 550	60 µm
Hempaprime Multi 500	120 µm
Hempathane Speed-dry Topcoat 250 ²	80 µm
Total DFT	260 µm

² Hempathane Speed-dry Topcoat 250 can be replaced with Hempathane Fast Dry 55750 when a semi gloss finish requested. The drying times will remain unchanged, for more details see page 22 – 23.





() For drying time calculation please see page 25.

High-build solution

with advanced and proven anti-corrosive Avantguard technology

Avantguard 750 Hempaprime Multi 500

It is a fast drying and high-build solution based on patented Avantguard technology with activated zinc. It offers excellent anti-corrosion protection and long durability for severe corrosive environments up to C4 – very high with 2-coat system only, thus ensuring even faster throughput. It features good crack resistance, which brings less rework and consequently lower labour costs. It is an efficient choice for applications where aesthetic appearance is not requested.

Physical constants and drying times		
	Avantguard 750 Zinc-rich epoxy	Hempaprime Multi 500 Epoxy
Shade	19840 / Dark grey	50630 / Red ⁵
Finish	Flat	Semi-gloss
Volume solid	65%	85%
VOC	330 g/l	196 g/l
Theoretical spreading rate	10.8 m²/l, 60 µm	5.7 m²/l, 150 μm
DFT range	40 - 100 µm	100 - 225 µm
Min. overcoating interval 20°C	1 hour	3 hours
Surface-dry 20°C	10 min	3 hours

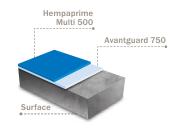
 $^{\rm 5}$ MIO pigmented shade also available – 12430 – reddish grey.

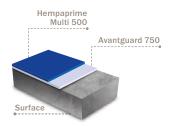




Zinc-rich epoxy / Epoxy	5h	Thickness
Avantguard 750		60 µm
Hempaprime Multi 500		140 µm
Total DFT		200 µm

Zinc-rich epoxy / Epoxy	5h	Thickness
Avantguard 750		60 µm
Hempaprime Multi 500		200 µm
Total DFT		260 µm







For drying time calculation please see page 25.

Excellent productivity

compliant with the most demanding specifications

Avantguard 750 Hempadur Speed-dry ZP 500 Hempathane Speed-dry Topcoat 250

A fast drying solution based on patented Avantguard technology – with activated zinc – offers excellent anti-corrosion protection and long durability for most demanding corrosive environments up to C5 – very high. Thanks to the combination of fast drying and high-build products, it features very high productivity. It is compliant with the requirements in ISO 12944 Part 5, 2018 and Level 2, type II in SSPC Paint 20, 2002. Can utilise ASTM D520, type II zinc dust.

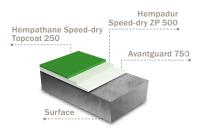
Physical constants and drying times					
	Avantguard 750 Zinc-rich epoxy	Hempadur Speed-dry ZP 500 Epoxy	Hempathane Speed-dry Topcoat 250 Polyurethane		
Shade	19840 / Dark grey	17330 / Grey	Multitint		
Finish	Flat	Flat	Glossy		
Volume solid	65%	75%	62%		
VOC	330 g/l	235 g/l	366 g/l		
Theoretical spreading rate	10.8 m²/l, 60 µm	6 m²/l, 125 μm	12.4 m²/l, 50 µm		
DFT range	40 - 100 µm	70 – 200¹ µm	50 – 125 µm		
Min. overcoating interval 20°C	1 hour	2 hours	4 hours		
Surface-dry 20°C	10 min	1 hour	1 hour		

¹ Check PDS for the requirements on the surface.



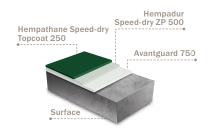


Zinc-rich epoxy / Epoxy / Polyurethane	Thickness
Avantguard 750	60 µm
Hempadur Speed-dry ZP 500	120 µm
Hempathane Speed-dry Topcoat 250 ²	80 µm
Total DFT	260 µm



Zinc-rich epoxy / Epoxy / Polyurethane	Thickness
Avantguard 750	60 µm
Hempadur Speed-dry ZP 500	150 µm
Hempathane Speed-dry Topcoat 250°	110 µm
Total DFT	320 µm

² Hempathane Speed-dry Topcoat 250 can be replaced with Hempathane Fast Dry 55750 when a semi gloss finish requested. The drying times will remain unchanged, for more details see page 22 - 23.





For drying time calculation please see page 25.



Our fast dry polyurethane topcoats

Hempathane Speed-dry Topcoat 250 Hempathane Fast Dry 55750

Hempathane Speed-dry Topcoat 250 is our premium product with a high scratch resistance as well as a very good gloss and colour retention. It is a preferred solution for all the applications where glossy surface is required.

Alternatively Hempathane Fast Dry 55750 can also be used. It is suitable for the applications where a semigloss finish if preferred. It is also a good solution when high DFT in one coat needs to be applied – see DFT range in the table below.

As for the corrosion protection, we have tested both the topcoats Hempathane Fast Dry 55750 and Hempathane Speed-dry Topcoat 250 in the systems according to ISO 12944:2018 and both meet the test requirements. Therefore we can consider them interchangeable in regard to the anti-corrosive properties.

Physical constants and drying times					
	Hempathane Speed-dry Topcoat 250 Polyurethane	Hempathane Fast Dry 55750 Polyurethane			
Shade	Multitint	Multitint			
Finish	Glossy	Semi-gloss			
Volume solid	62%	65%			
VOC	366 g/l	328 g/l			
Theoretical spreading rate	12.4 m²/l, 50 µm	6.5 m²/l, 100 μm			
DFT range	50 - 125 μm	60 - 160 µm			
Min. overcoating interval 20°C	4 hours	4 hours			
Surface-dry 20°C	1 hour	1 hour			







Avantguard technology

Redefining anti-corrosion with superior performance

Avantguard is our innovative, award winning¹ anti-corrosion technology. Avantguard technology uses a new combination of zinc, hollow glass spheres and a proprietary activator. This activates the zinc, increasing its protective capabilities.

Redefines productivity

Avantguard is fast drying with best-in-class² overcoating intervals. The products are easy to apply, even in high temperatures and humidity as shown in exposure tests. There is less rework due to cracking, as the coating is more tolerant, even with high DFTs.

Redefines protection

Avantguard shows superior anti-corrosive performance in salt spray tests (ISO 12944-6), as well as reduced rust creep and better corrosion protection in Cyclic corrosion testing (ISO 12944, Part 9) and NORSOK M501 revision 6.

Redefines durability

Avantguard displays improved mechanical strength in the protective coating with significantly improved crack resistance. The NACE cracking test (Thermal Cycling Resistance test) and Hempel's welding test have proved that Avantguard substantially reduces cracking at both low and high DFT.

Unlike standard zinc epoxies, Avantguard is effective using all three methods of anti-corrosive protection.



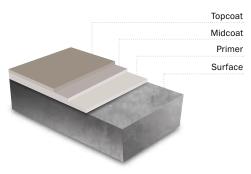
¹ Avantguard won the prestigious 2014 European Frost & Sullivan Award for New Product Innovation and NACE's MP Corrosion Innovation of the Year Award 2015.

² Avantguard's overcoating interval is a minimum of 33 percent faster than competitor zinc-rich epoxies when comparing product data sheets.



Drying time information

The drying time information includes time (in hours) for the drying of paint layers only. The time for paint preparation and application is excluded.



Indicated drying times are calculated as follows: For primer and midcoat – minimum overcoating at 20°C is calculated.

For topcoat a dry to handle at 20°C is calculated.

Disclaimer

The data, specifications and recommendations provided in this overview of Hempel's European Protective coatings assortment are obtained from individual product data sheets. This is a summary only, not complete information and is subject to change. Therefore, it is exclusively the responsibility of the user to obtain accurate, complete and appropriate information in relation to any particular intended use of these and other Hempel products. Unless expressly agreed otherwise in writing, the products are supplied and all technical assistance is provided subject to Hempel's general terms and conditions of sale, delivery and service. Except, as expressed in said general terms and conditions, the manufacturer and seller waive all claims involving any liability, including but not limited to negligence, for all results, injury, or direct or indirect losses or damages arising from the use of the products as recommended above or otherwise. Product data are subject to change without notice and in any case should no longer be regarded as authoritative three years from the date of this information's issue.

For up-to-date Product Data Sheets please visit our website: hempel.com



Protective Services

Your business, our expertise – a performance partnership

Efficiency, powered by Hempel Services

In an increasingly competitive world, it's more important than ever to maximise the effectiveness and durability of every protective coating – while also reducing the costs associated with coating processes. That's what you get with Hempel Services.

From initial planning and specification through to application and final curing, our expert coating advisors work with your team to ensure all coatings are applied according to specification – with minimum time, costs, waste and downtime – so you enjoy extended asset uptime and optimised maintenance intervals. And, if you operate line production, we work with you to optimise your process flows and increase your production speed.

Why use Hempel Services?

Increase return on investment

- Reduce asset downtime
- Reduce maintenance costs and frequency
- Extend asset lifetime

Ensure excellent coating application

- Reduce application time and costs
- · Avoid delays and penalty payments
- Increase coating lifetime

Save time and resources

- Ensure projects stay on time and within budget
- Increase application speed and efficiency
- Free up resources to focus on your core business

For more information, visit services.hempel.com

Hempel Services - Global reach - Local presence

More than 600 highly qualified technicians at your service, certified to the highest technical standard within:

- NACE
- FROSIO

Coating advisory services

Standard Coating Advisory

We support you during the main project phases to ensure correct application and long-term coating performance.

Premium Coating Advisory

We advise on all aspects of your coating project to cut application costs, improve application quality and reduce asset downtime.

Coating Management

We manage the entire coating application side of your project for the ultimate in application savings, coating quality and asset downtime.

Specialised services

Production Line Survey

We assess the application side of your production line to increase production speeds and reduce costs and waste.

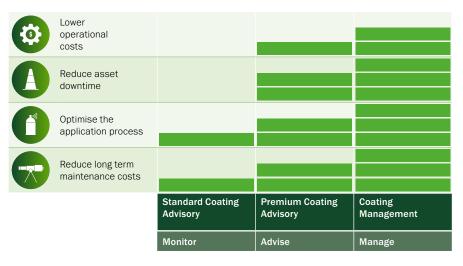
Condition Survey

We evaluate your asset's structure and coating system and help plan future maintenance work to extend asset lifetime and reduce maintenance requirements.

Technical Training

We provide a number of training courses for applicators, supervisors, technical staff and quality assurance personnel to ensure improved efficiency and quality.

Service value chart



Service value chart

	Increase revenue			
	Lower operational costs			
	Reduce asset downtime			
0	Optimise the application process			
	Reduce long term maintenance costs			
		Production Line Survey	Condition Survey	Technical training services

As a world-leading supplier of trusted coating solutions, Hempel is a global company with strong values, working with customers in the protective, industrial, 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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