

Waterborne Coating Systems

Safeguarding containers
and the world they
traverse



Caring for the environment, brilliantly

Pioneers in waterborne coatings

Towards the end of the last century, the container industry was emitting over 100,000 tons of volatile organic compounds (VOCs) every year, equivalent to 332,000 tons CO₂ after incineration. In the late eighties and early nineties, Hempel was among the first to introduce more environmentally-friendly waterborne coatings, helping redress these figures.

The second generation arrived in 2010, with application features matching the solvent-borne three-coat system, commonly used at the time in fast-line factories. In 2016, the Chinese container newbuilding industry adopted the full use of waterborne coatings for dry cargo container production – a massive step forward for our industry, and the planet.

Our flawless record

Hempel's waterborne track record is unique and impressive: container systems applied according to specification have not received one single performance complaint*. It's a testament to our 100+ years' experience in protective coatings.

*Correct at time of going to print.

Comprehensive range

Long experience from solvent-borne products has been translated into a successful range of waterborne products, starting with one of two zinc epoxy shopprimers with a zinc content of 65 per cent or 80 per cent by weight in the dry film.

The 80 per cent zinc epoxy shopprimer is the most common for dry cargo containers. A full three-coat system is then applied, consisting of a zinc epoxy primer, again with 80 per cent zinc in the dry film. This is followed by a modified epoxy mid-coat and the acrylic topcoat. This system has proven to be the preferred option from both the manufacturers and container owners.

For containers, life is tough So our coatings are too

No two containers are the same

Today, the majority of dry cargo containers are built in China, where production lines are very fast and efficient, in many cases below three minutes per station. The minute they leave the factory, the containers start a unique journey, protecting many different kinds of cargo, in all sorts of different conditions. No two containers will ever have the same exposure.

Made for a harsh existence

As well as having less impact on the environment, our products exist to protect the container – whatever their journey. We know that the handling of containers from ship to shore to rail to road and back again takes its toll. There's just 100-110 microns (µm) separating the steel from these environments, so it is imperative this ultra-thin paint film performs.

It's not just stopping the steel from corroding, it's also displaying the proud logo of the container's owner, often for many years. It's why our coatings are so rigorously researched and tested.

With inevitable bumps and grinds along the way, they occasionally need a little maintenance. But with more than 150 stock points around the world, Hempel is always ready to assist.

Standing proud in the market

There are few segments as fiercely competitive as containers. We see shipping lines fighting for better rates all the time and we see container manufacturers doing the same. It is no different for a coating supplier in the same industry.

Hempel survives and thrives thanks to innovation. R&D is part of our DNA, and we take great pride in bringing new solutions to the market. This comes at a cost. But while the initial investment may be more, the results speak for themselves. At Hempel, trust is earned.

2.5
minutes
track time

15+
years life
expectancy

100+
years experience
in coatings



The world is primed for waterborne systems. Are you?

The right choice isn't always the easy one

Most factories worldwide have now invested in extra ventilation and oven capacity to cater for the various opportunities presented by waterborne technology. While it brings huge benefits, it is now recognised as more demanding to apply than the solvent-borne coatings previously used. Here's what you need to know.

Preparation

There is a direct correlation between a good blasting profile and the longevity of any paint system applied to a perfect surface. So it cannot be stressed enough that, especially for zinc containing products, surface profile, roughness and density are key parameters to longer life performance. The strong adhesive primers supplied by us do, to some extent, compensate for a lower surface profile. But it does not mean that factories and owners should neglect the preparation.

Shopprimers

For a corten or mild steel container to be protected by a truly waterborne system, the shopprimer also needs to be waterborne – or in the case of zinc epoxy shopprimer, be water-soluble, as zinc and water cannot be mixed too long in advance before being applied to the substrate. This is because a chemical reaction between water and zinc forms hydrogen; however, this is not a problem when application takes place directly after mixing.

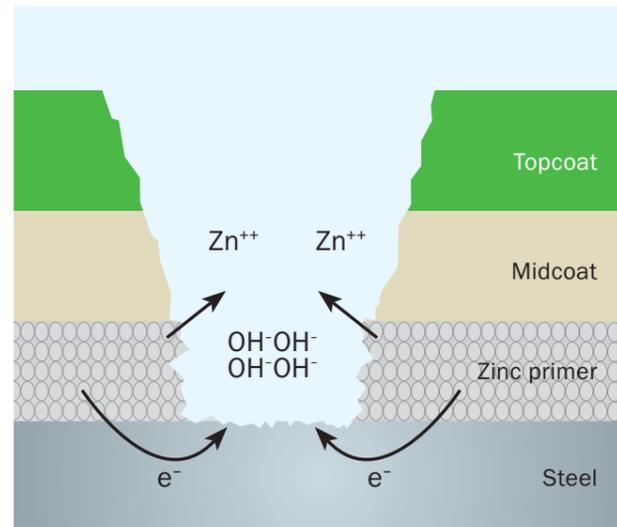
For other substrates or surfaces that are exposed to chemicals later, like a coal-mining container, a non-zinc shopprimer (which we can supply) should be considered to avoid sweep-blasting or completely removing a zinc shopprimer.

Oven temperature

High oven temperature requirements slow down production, as it takes time to heat up the container. Hempel has one of the lowest oven temperature requirements of only 50°C for our on-line zinc epoxy primer. This also means that the middle coat and interior topcoat can be applied shortly after coming out of the first oven. Likewise, for the middle coat and topcoat, our requirements are only around 80°C, to prevent boiling off the water in the coatings.

Maintenance

Maintaining a waterborne protected container later in life is simple, and you can use either our water or solvent-borne acrylic repair coatings. Repair coatings do not naturally adhere to dirt, oil or corrosion, so surface preparations are important for longevity. It is probably not an understatement to say that in this part of the industry, correct surface preparation is responsible for more than 50 per cent of the performance lifetime.



Further reference to positive zinc performance can be found in the following global standards: NACE SP 0108:2008, ISO 12944 and ISO 20340.

Supervision



How we add value

Unlimited scope

New uses for containers arise all the time. So we do much more than protect dry cargo containers; we cover the entire range of specialist coatings, including reefer, tank, mining, storage and offshore containers. No one coating specification suits all types – even from series to series. Therefore, it is always advisable to talk to one of our experts before commencing your project.

Our customers testify that Hempel coatings successfully differentiate them from their competitors – your project could be the next success story.

Committed to compliance

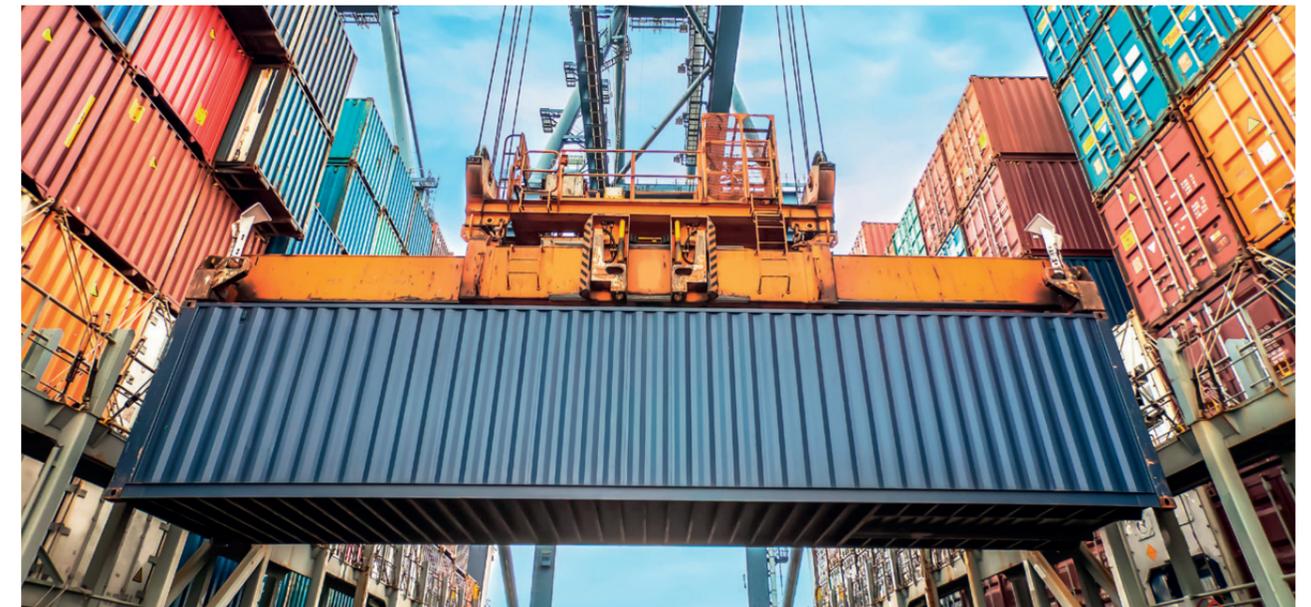
Global rules and regulations are constantly changing and we are ready to answer any questions, whether it's compliance in China or any other part the world. But we don't just answer questions, we also provide global solutions which are ready for tomorrow's world.

At the heart of the industry

Hempel's commitment to the container industry is directly reflected in our production footprint in China. Currently, we own and operate three factories located in Guangzhou (South), Kunshan (Middle) and Yantai (North). We are in the process of relocating our Kunshan and Yantai factories to new and even larger premises, ready to serve all domestic and foreign customers across China in 2020/21.

Made for you

Whether your need relates to climatic conditions, rules and regulations or extreme exposure, we can help. Our range of solutions with the exception of waterborne include high and ultra-high volume solids as well as solvent-free coatings. Speak to your Hempel local representative or visit hempel.com



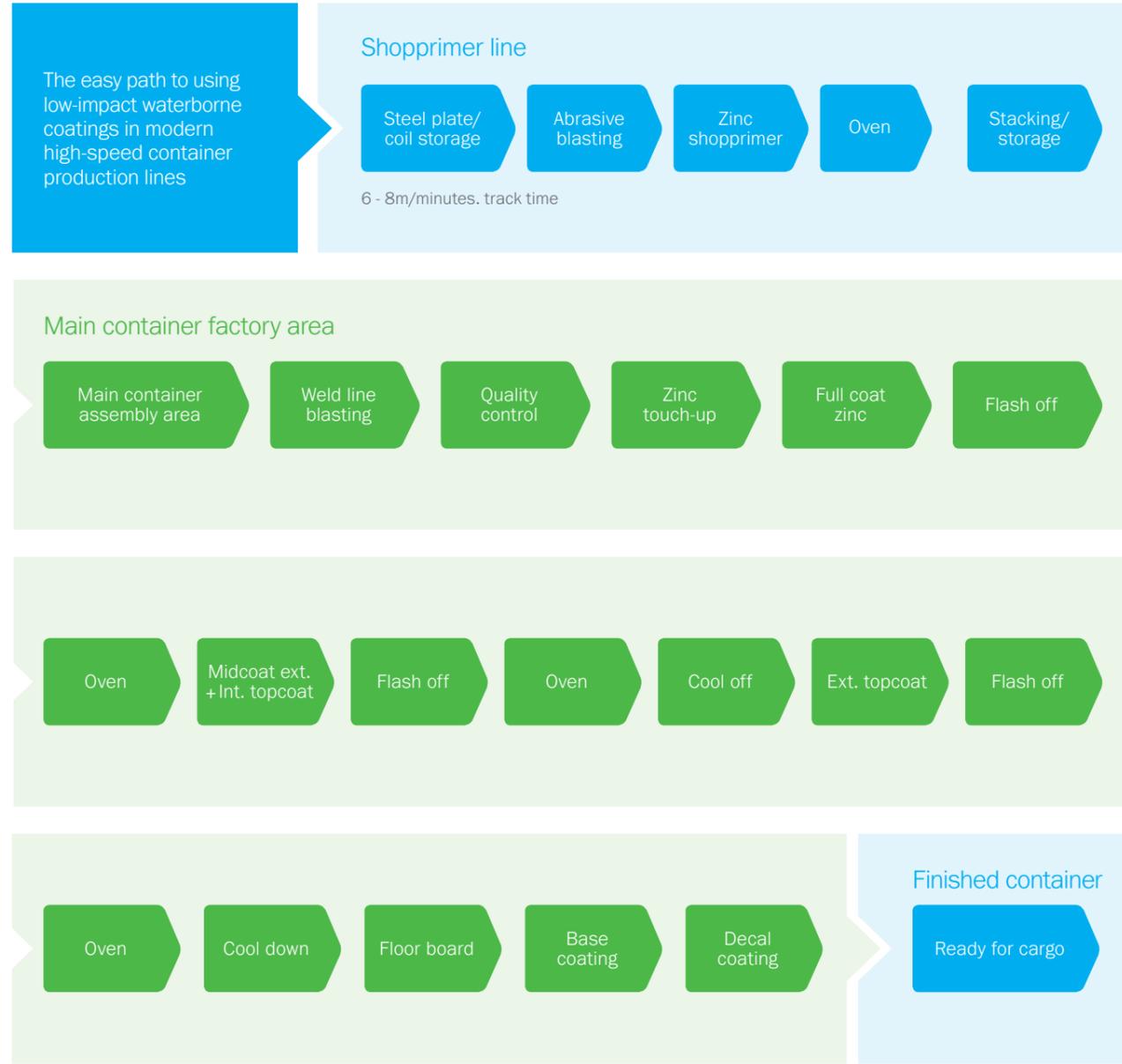
Finished new containers



Transport



Waterborne Coating Systems process



(Simplified line layout, several of the booths shown here often consist of more than one station)

Container production



Maintenance



Get to know the range

Updated portfolio, application properties and names

Since 1915, Hempel has grown from a marine paint company to include container coatings, industrial/protective coatings, yacht paint and decorative coatings.

The section below details Hempel's container newbuilding waterborne assortment and highlights where product names or numbers have changed. All formulations have been updated to suit the latest manufacturing line-layouts.

Hempel's container newbuilding waterborne assortment

Hempaprime Shop 660

(ex. Hempel's EcoBoxcoat ZN Shopprimer 18280)

Two-component zinc rich epoxy shopprimer, containing 80 per cent zinc in the dry film by weight, that can be applied on existing primer lines at the same speed as when applying solvent-based shopprimers. A low zinc content version (65 per cent) is also available for less corrosive environments.

Hempaprime Ultimate 530

(New formula of Hempel's EcoBoxcoat Zinc Primer 18360 with improved application properties)

Two-component zinc rich epoxy primer, containing 80 per cent zinc in the dry film by weight, offers the superior anti-corrosion protection required by all container owners.

Hempaprime Alpha 510 and Hempatop Finish 320

(ex. Hempel's EcoBoxcoat Midcoat 18300 and Hempel's EcoBoxcoat Interior Topcoat 48200)

Two-component exterior mid-coat (primer) and the FDA conforming interior topcoat are based on a new fast drying modified epoxy binder technology.

Hempatop Finish 380

(Hempel's EcoBoxcoat Topcoat 58000)

Exterior one-component acrylic topcoat that alone reduces the VOC emissions from a dry cargo container by approximately 40 per cent.

Hempatop Finish 310

(Hempel's EcoBoxcoat Interior Topcoat 48230)

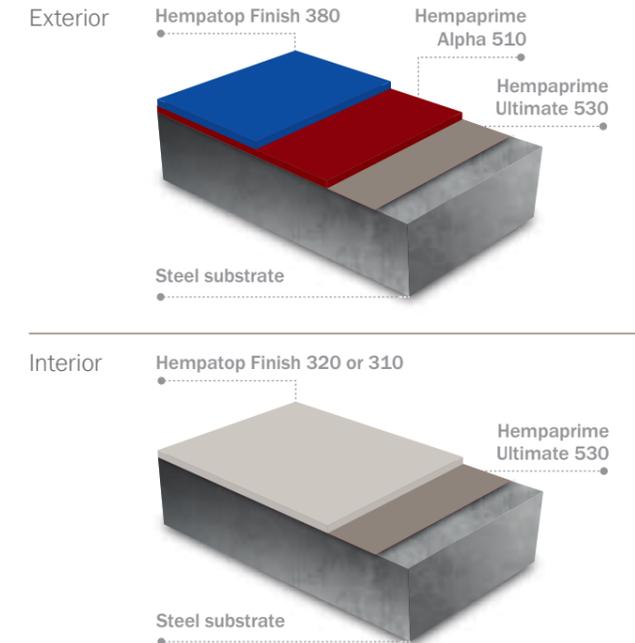
One-component interior topcoat based on a very fast drying flexible FDA conforming acrylic.

Hempel's container maintenance waterborne assortment

Hemucryl 48130

The ultimate one-component container repair coating, as a direct-to-metal this product serves both as a self-priming and topcoat. This product can be applied by airless spray, air-spray or roller and brush.

Several versions of our one-component repair coating currently exist in Hempel's global assortment due to different registration rules from country to country. As a result, your local Hempel representative may offer you a product with a slightly different number.



Supply of Coating



R&D



Waterborne Coating Systems

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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