PPG SIGMAGLIDE® 1290 fouling release coating

Breakthrough technology that eliminates slime problems for a smooth underwater hull

We create products that save energy, reduce fuel costs and minimize environmental impact.

PPG SIGMAGLIDE® customer feedback:

8% fuel savings
Neptune Lines

7 years' excellence in service
Star Princess

PPG – better performance, greener credentials

Maintaining a smooth, clean underwater hull has an important part to play in optimizing ship performance. Choosing the right fouling protection coating is essential and with PPG this choice could not be simpler.

Vessels around the world have benefitted from PPG's pioneering biocide-free fouling protection technology to prevent the settlement, growth and spread of invasive marine species, our coatings reduce frictional drag. This enables ships to reach optimum speed whilst lowering fuel consumption and minimizing CO_2 emissions.

Ship operators benefit from reduced maintenance and operational costs, whilst meeting environmental demands.

Our commitment to innovation and extensive experience within the marine industry has enabled us to develop a comprehensive range of antifouling and fouling release solutions. With performance characteristics designed to suit all operating conditions and requirements, choosing the right product first time is made easier for every application.

PPG SIGMAGLIDE 1290 – proven performance

PPG SIGMAGLIDE 1290 is part of our established PPG SIGMAGLIDE fouling release range, which has been used on over hundreds of vessels worldwide, including cruise liners, tankers, bulk carriers, container ships, gas carriers, dredgers, FPSO's, fishing vessels and TUGs.

Our customers regularly tell us about the fuel savings our PPG SIGMAGLIDE coatings have helped them to achieve, in values ranging from 3% to 13%. With the introduction of PPG SIGMAGLIDE 1290 we have built on this proven performance and raised the bar once more.

Instant low friction

- 100% pure silicone
- Biocide-free
- Smooth from the start

Based on a unique 100% pure silicone binder system, PPG SIGMAGLIDE 1290 fouling release coating utilizes breakthrough surface regeneration technology to eliminate slime problems. Keeping the hull completely smooth from the outset, it enables the ship to glide seamlessly through the water.

When compared to other traditional fouling release products, PPG SIGMAGLIDE 1290 achieves far greater fuel savings throughout service.

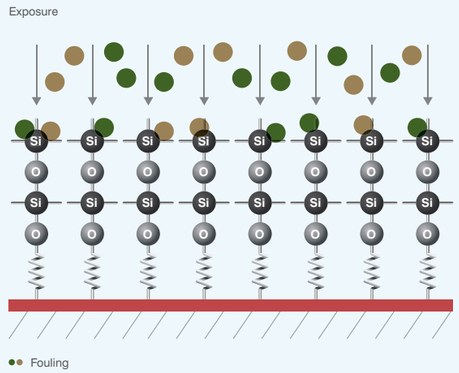
100% silicone binder

Careful chemical engineering has allowed us to develop a 100% pure silicone binder system. This significantly increases the silicone density at the surface (illustration 1) to the extent that slime organisms do not perceive it as a surface substrate at all and are not inclined to settle on it. The clean, smooth hull surface is therefore retained.

Traditional fouling release systems

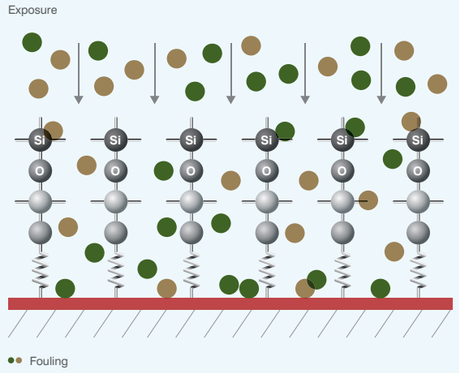
In contrast, many traditional fouling release coatings are created using organo-modified or silicate hardeners and so do not contain a 100% pure silicone binder (illustration 2). As a result, the silicone density at the surface is much lower, thereby allowing fouling to penetrate and settle on the surface.

Illustration 1:
PPG SIGMAGLIDE 1290 – 100% pure silicone binder system



▲ The principle of a 100% pure silicone binder ensures a higher silicone density at the surface; therefore, it is not possible for organisms to settle at the surface.

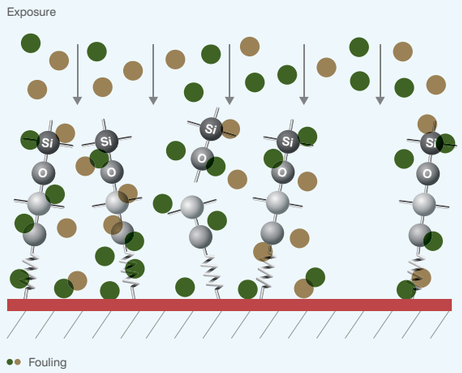
Illustration 2:
Traditional fouling release products



▲ Traditional fouling release systems have a lower density of silicones thereby allowing fouling to adhere to the surface.

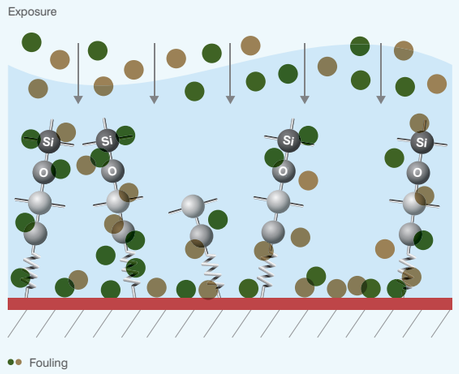
A further drawback of traditional fouling release coatings is that their effectiveness diminishes over time. This is often seen at the waterline where the impact of sunlight, dirt and UV radiation has a negative effect and leads to the gathering of slime (illustrations 3 and 4).

Illustration 3:
Traditional fouling release products, without surface regeneration



▲ The environmental conditions to which the coating is exposed will change the configuration at the surface. However, these changes cannot be reversed with traditional fouling release products.

Illustration 4:
Traditional fouling release products without surface regeneration (immersed)

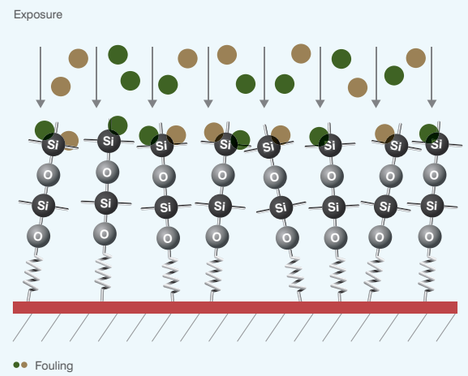


▲ Once the substrate is immersed in water, fouling buildup will progress.

Dynamic surface regeneration

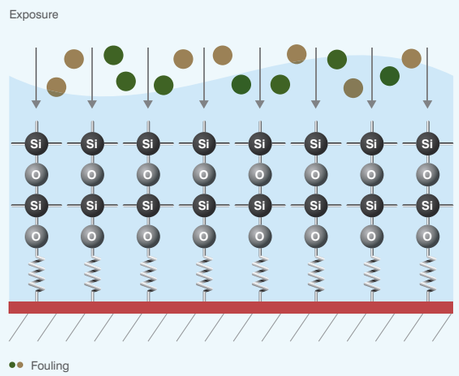
Our research and development team has been able to overcome this problem by engineering PPG SIGMAGLIDE 1290 fouling release coating to include very specific dynamic surface regeneration properties. The 100% pure silicone binder system allows like-for-like molecules to reconnect and rearrange to regenerate the smooth surface of the ship's hull. Water can then act as a catalyst to return the surface energy of the coating back to its original state, thus enabling the beneficial configuration properties to be regenerated (illustrations 5 and 6). As a result, customers will experience no loss in performance of the product throughout its lifetime.

Illustration 5:
PPG SIGMAGLIDE 1290 – dynamic surface regeneration



▲ The environmental conditions to which the coating is exposed will change the configuration of the surface.

Illustration 6:
PPG SIGMAGLIDE 1290 – dynamic surface regeneration (immersed)



▲ Once the substrate is immersed, the 100% pure silicone binder system regenerates itself and returns to its optimal configuration.

Ferries, tankers, bulkers, gas carriers, container ships, dredgers and cruise ships are all currently benefiting from PPG SIGMAGLIDE 1290 fouling release coating. The fact that fouling will not adhere to the surface, even at lower speed, also makes this product an ideal solution for the offshore industry where assets are static yet still require a high level of fouling protection, such as slow steaming or static vessels like FPSOs.

PPG SIGMAGLIDE 1290 – proven technology

The benefits of the 100% pure silicone binder system and the subsequent regeneration properties provided by PPG SIGMAGLIDE 1290 have been proven by rigorous tests carried out both in-house and by third parties.

Static raft testing

Below are the results of static raft testing (illustration 7) undertaken by a world leading university in California. You can clearly see that after 9 months of raft exposure, PPG SIGMAGLIDE 1290 coating still has a very clean surface. This supports the effectiveness of the 100% pure silicone binder when compared to the traditional fouling release systems that were exposed to exactly the same conditions. These tests also show that the panels coated with the traditional release began to pick up fouling after 9 months of static raft exposure.

Illustration 7:
9 months' static raft panel performance in California

PPG SIGMAGLIDE 1290 fouling release – static performance

1 month | 3 months | 9 months

No cleaning costs

Traditional fouling release – static performance

1 month | 3 months | 9 months

PPG SIGMAGLIDE® 1290 fouling release coating

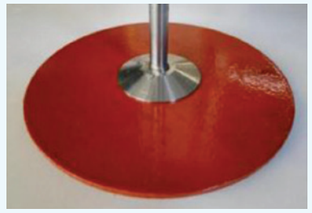
Save energy, reduce fuel costs and minimize environmental impact

Self-cleaning dynamic simulation test

A self-cleaning dynamic simulation test (illustration 8) has been performed at a Dutch research institute, Endures B.V. (a TNO company), to illustrate how the high silicone density at the surface translates into effectiveness of slime resistance and release. This test shows that the 100% pure silicone binder ensures that the product returns to its clean initial state at low speeds, while the traditional fouling release continues to collect slime fouling.

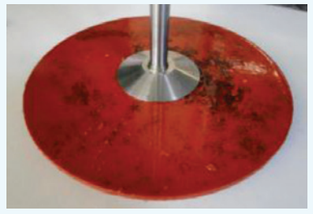
Illustration 8:
Proof of performance – self-cleaning dynamic simulation

PPG SIGMAGLIDE 1290 fouling release:
Best-in-class performance

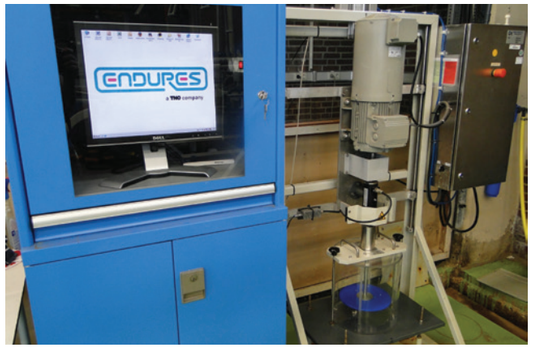


✔ Eliminates slime problems

Traditional fouling release:
Slime fouling remains after dynamic simulation



✖



Regeneration test

In-house testing (illustration 9) also confirmed that the surface of the product did regenerate and was returned to its original state. In contrast, traditional fouling release products were irreversibly affected, which resulted in a loss of performance.

Illustration 9:
Regeneration test

PPG SIGMAGLIDE 1290 fouling release – surface regeneration: Return to original low surface energy properties

✔ Durable performance

Traditional fouling release – without surface regeneration: surface irreversibly affected

✖

In summary

PPG SIGMAGLIDE 1290 fouling release

Breakthrough technology boosts ship efficiency
100% pure silicone binder system that:

- Eliminates slime
- Regenerates the surface
- Delivers immediate fuel savings consistently throughout service

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