

PPG PROTECTIVE & MARINE COATINGS

PPG Protective & Marine Coatings brings unrivaled levels of innovation, experience and expertise in coatings technology, supported through our expanding global supply and distributors' network in over 80 countries.

We have in-depth knowledge of the industry, our customers' day-to-day challenges and the environmental, health and safety standards in the marketplace. By working in close partnership with customers, our technical service representatives are able to offer an unsurpassed level of market knowledge. This enables us to respond quickly with efficient, economic solutions in all environments and industries.

The result – performance-enhancing coating systems that can be applied more easily, resist the elements more effectively, and deliver maximum performance with minimum downtime.

PPG Protective & Marine Coatings

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SIGMAGLIDE® 990

BIOCIDES-FREE FOULING RELEASE - GUARANTEED FUEL SAVINGS

SIGMAGLIDE® 990



EXCELLENT SMOOTHNESS

PPG PROTECTIVE AND MARINE COATINGS Unrivalled performance and protection

PPG Protective & Marine Coatings (PPG) is a world leader in protective and marine coatings. We develop products that protect customers' assets in some of the world's most demanding markets and environments including:

- **Civil infrastructure**
- **Marine new-build**
- **Marine dry dock**
- **Marine sea stock**
- **Rail**
- **Offshore**
- **Petrochemical**
- **Power**

Our coatings provide unrivalled performance for asset owners, contractors, fabricators and applicators across the globe, helping our customers meet the challenges they face today and tomorrow.

Experience, innovation and integrity –
that is what makes PPG the ideal coatings partner.

THE ULTIMATE FOULING RELEASE COATING

Building on the success of *SIGMAGLIDE* 890 and with an extensive track record of 200 full-scale applications, PPG develops the pure silicone technology even further and introduces *SIGMAGLIDE* 990.

Quite simply, *SIGMAGLIDE* 990 is the biocide-free, fouling release coating of the future.

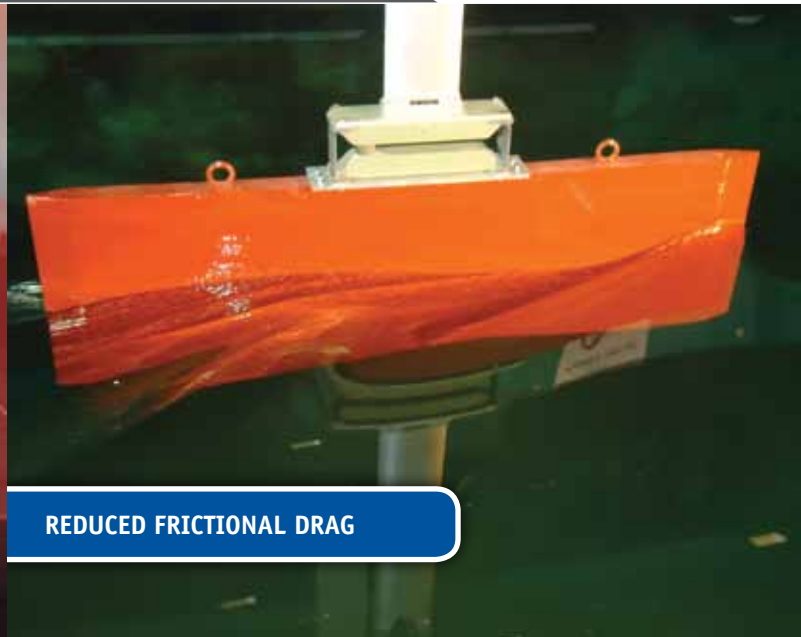
This highly-engineered, pure silicone finish brings unrivalled advantages to shipyards and operators worldwide. Together with *SIGMAGLIDE* 790 tiecoat, this revolutionary two-pack fouling release system offers highly enhanced technical features in comparison to competitors' products, and is the most effective solution against fouling on the market today.

Due to the increased solids content, both the VOC emissions and the environmental impact are significantly reduced.

SIGMAGLIDE 990 has been widely embraced by shipyards worldwide as a result of its enhanced technical features. Its wide application window and improved curing, makes it easy to apply in demanding weather conditions. Moreover, the increased sag resistance of 100%, from 250 μm (9.8 mils) WFT to 500 μm (19.7 mils) WFT, drastically improves the application in the critical overlap areas.



SUPERB SAG RESISTANCE



REDUCED FRICTIONAL DRAG

FROM LAB WORK TO FULL SHIP APPLICATIONS...

The ambition of PPG's R&D department is to develop state-of-the-art products that support our customers' operations worldwide. Creating responsive and robust products requires a fundamental understanding of chemistry and physics, and also the commercial needs of the market.

Our R&D department works in close partnership with customers and suppliers, using surface analysis, contact angle measurements and electron microscopes, to assess and understand the interaction between seawater and the coating.

To assess performance, raft testing at various locations around the world is one of our core activities, in combination with exhaustive trial applications on commercial vessels.

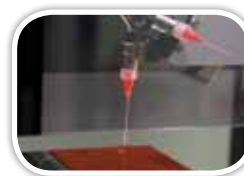
We are totally committed to create products that deliver technical excellence and commercial value. To achieve this, we continuously strive to improve the performance and application features of SIGMA COATINGS® products and ensure their market-leading quality.



Surface profile



Raft testing



Surface tension



Surface roughness



Test patch



Full-scale application

SIGMAGLIDE® 990



WE PROTECT THE ENVIRONMENT

BENEFITS TO SHIPYARD

TWO PACK FINISH COAT

WIDER APPLICATION WINDOW

IMPROVED CURING

EASY APPLICATION

INCREASED SAG RESISTANCE BY 100%

The *SIGMAGLIDE* range, including *SIGMAGLIDE* 990, is completely biocide-free and is therefore unaffected by such legislation as the BPD (Biocidal Products Directive). It meets all current environmental legislation and is tailored to comply with future environmental restrictions in order to accommodate all ship operators' compliance programs. With a very high solids content (80%), *SIGMAGLIDE* 990 easily meets the SED (Solvent Emissions Directive). Even after extended service life, only one refresher coat is needed for a new 5-year sailing period.

BENEFITS TO OWNER

FUEL SAVINGS

TOP-OF-THE-LINE PROTECTION AGAINST FOULING

LONG-LASTING FOULING PROTECTION

OPERATIONAL FLEXIBILITY

MINIMIZED ENVIRONMENTAL FOOTPRINT





WE HELP OPERATORS TO INCREASE THEIR REVENUES

Careful screening of fouling release technologies is of vital importance in the modern shipping industry. Reduced hull roughness, by providing a smooth, fouling-free coating, results in immediate, improved performance and lower fuel consumption. *SIGMAGLIDE 990*'s new formulation keeps the hull free from macro fouling, drastically reduces the slime growth even in the critical boot top area and helps to decrease the average hull roughness.

At outdockings, vessels coated with *SIGMAGLIDE 990* have recorded values down to 70 μm (2.8 mils) AHR. The reduced indocking period for hull cleaning and coating, the decreased volume and weight of paint required, and the reduced wastage from this high-solids, two pack system deliver significantly lower application costs and reduced waste costs.

SIGMAGLIDE 790 (TIECOAT)

- Two pack, silicone-based tiecoat for fouling release
- Essential for adhesion of *SIGMAGLIDE* system on epoxy anticorrosive
- Tough
- Quick drying and fast to overcoat
- Wide application window

SIGMAGLIDE 890

- Biocide-free pure silicone finish - marine life friendly
- Very smooth and easy to clean
- High volume solids - reduced VOC emission
- Shortest refloating time on the market
- Two-component - more practical for dry dock application
- DFT up to 150 μm (5.9 mils)

SIGMAGLIDE 990

- Advanced biocide-free pure silicone finish - marine life friendly
- Improved slime resistance
- Fuel savings possible up to 5% - guaranteed
- Highest volume solids in the market - reduced VOC emissions
- Shortest refloating time on the market
- Two-component - more practical for dry dock application
- Wider DFT up to 180 μm (7.1 mils) - enhanced performance

SIGMAGLIDE® 990



TIME TO SAVE - FUEL SAVINGS GUARANTEED

SIGMAGLIDE 990 offers the best protection against fouling, with its easy application, improved glossiness, excellent cosmetic features, extended vessel service periods, and reduced carbon dioxide emissions. But that is not all...

**WE GUARANTEE THAT SIGMAGLIDE 990
WILL GIVE YOU 5% FUEL SAVINGS!**

VESSEL TYPE	DAILY BUNKER CONSUMPTION (T)	BUNKER COST (USD/T)			
		YEARLY FUEL SAVINGS (K USD)			
OIL TANKER	40	400	500	600	700
		234	292	350	409
BULK CARRIER	33	400	500	600	700
		193	241	289	337
CONTAINER	90	400	500	600	700
		526	657	788	920

NOTE: THE FINAL SAVING PERCENTAGE ACHIEVED IS SUBJECT TO THE AVERAGE SPEED AND OPERATIONAL ACTIVITY OF THE VESSEL. FOR TAILORED COST SAVINGS SPECIFICATIONS PLEASE CONTACT YOUR LOCAL SALES REPRESENTATIVE.



SIGMAGLIDE 990

- **Advanced biocide-free pure silicone finish – marine life friendly**
- **Improved slime resistance**
- **Fuel savings possible up to 5% – guaranteed**
- **Highest volume solids in the market – reduced VOC emissions**
- **Shortest refloating time on the market**
- **Two-component – more practical for dry dock application**
- **Wider DFT up to 180 μm (7.1 mils) - enhanced performance**
- **Suitable for a broad range of vessels**
- **Building on an extensive track record**