

UNDERWATER CLEANING GUIDELINE
SIGMA*Glide*



PPG PMC
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Disclaimer:

*Whilst this document has been prepared to the best of our knowledge to ensure optimal performance of our SIGMA*Glide* system, it should be viewed as guidance only. The presence and / or the technical advice of the PPG Technical Service Representative attending the underwater cleaning (UWC) operations shall not relieve the diving companies and ship-owners / operators of their responsibilities for correct execution and quality assurance of the UWC work. PPG Industries and its affiliated companies shall at all times be hold harmless and indemnified against any third party claim (including any damage to the coating system caused by the UWC operations).*

1. INTRODUCTION

SIGMA*Gl*ide is a two component silicone-based fouling release coating system that unlike other conventional antifouling systems is completely biocide-free.

Instead SIGMA*Gl*ide delivers effective fouling control performance by exploiting the low surface energy and inherent smoothness of the coating surface. In other words the low surface energy and extremely smooth surface of the applied SIGMA*Gl*ide system makes it very difficult for the fouling organisms to adhere to it.

Correctly applied SIGMA*Gl*ide will provide an environmentally-friendly and effective solution to any fouling problem. (For details regarding the application properties and requirements please refer to the latest Product Data Sheets and the relevant SIGMA*Gl*ide Working Procedure)



Besides the superb fouling control properties of the system, its performance will depend very much on the quality of application and the operational rate and speed of the vessel in service. Although under certain conditions (i.e. long stationary periods) the system may allow some macro fouling to loosely adhere, it will be removed ('released') by the movement of the water once the vessel sails.

2. REQUIREMENTS / CONDITIONS FOR UNDERWATER CLEANING

SIGMA*Gl*ide system has excellent fouling release properties that have been proven through thorough laboratory and field testing, as well as by the long track record of over 200 full scale applications.

However, under certain conditions some fouling (i.e. barnacles, tubeworms, sea-grass etc.) may settle when the vessel is stationary, has very low operational rate (i.e. short voyages with frequent idle periods) or 'steaming' at very low speed. Depending on the length of the stationary periods and the specific / actual conditions, some fouling may loosely adhere and therefore be easily 'released' by the water movement / friction when the vessel sails.

Although it has been proven that when correctly applied the SIGMA*Gl*ide system does not require underwater cleaning however in certain exceptional cases the fouling release properties of the applied system may have been affected. In such case if the ship-owner / operator may wish to clean the underwater hull the following steps should be followed:

-  The responsible PPG PMC Account Manager should receive and acknowledge the enquiry for underwater cleaning (UWC) with all relevant / information (i.e. video or pictorial information from underwater survey including the condition of the propeller etc.).
-  The relevant coating application / inspection reports and other historical data should be checked for possible events / conditions of concern that may have affected the fouling release (FR) properties of the applied system.

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- ✚ The vessel movements and possible stationary period should be checked through ship's log and Lloyds ships' movement data base.
- ✚ The vessel's movements, operational rate and speed should be confirmed with Ship-Owners / Operators.
- ✚ Hull performance should be checked after (possible) long voyage with nominal speed to verify whether the hull has self-cleaned and a follow up underwater hull survey should be organised.
- ✚ Based on the outcome of this survey decision should be taken whether an underwater cleaning is required and justified.
- ✚ Only PPG approved UWC Company with suitable equipment * should be used (please refer to the enclosed list with approved diving companies).
- ✚ The local conditions and approve local diving company should be checked and confirmed (i.e. visibility, current, environmental legislation, weather condition etc.).
- ✚ Before any further commitments are made, the conditions of the UWC operation should be confirmed with the requesting party (Ship-owner / Operator) in writing.
- ✚ The approved diving company should be contacted and the ship's agent details should be communicated (let the diving company communicate with ship's agent about ETA and all relevant details, keeping PPG and the Ships-Owners / Operators informed).
- ✚ Before cleaning a 'pre-cleaning' inspection with photos and / or video (underwater survey) should be carried out to confirm the actual condition of the outside hull (VS & FB and propeller). Ruler or other similar instrument should be used to indicate the size of eventual defects, fouling etc., and if relevant samples should be taken.
- ✚ The specially designed checklist for UWC of SIGMA*Gl*ide system should be completed.
- ✚ After the UWC operation a post cleaning inspection with photos and / or video (underwater survey) of the treated areas should be carried out.
- ✚ A brief report, confirming the general condition before and after cleaning should be provided by e-mail.
- ✚ A complete UWC report including photos / videos on DVD/CD should be prepared and distributed to all concerned parties.

** - PPG Industries has tested specially designed soft brushes that provide effective cleaning of SIGMA*Gl*ide system without affecting the fouling release properties of the coating. PPG Industries does not recommend the use of any non-approved diving companies to perform underwater cleaning of SIGMA*Gl*ide system as most of the commercially available and widely used UWC equipment that use mechanical brushes will affect the low surface energy features of the system, thus adversely affect the fouling release properties of the system.*

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Note: *The above approved diving companies have affiliates operating in different parts of the world (please refer to the relevant website for further details), covering the most active shipping areas (Asia Pacific, Middle East, Europe and the Gulf of Mexico). As some of the above listed diving companies have mobile equipment, this allows them to cover even wider areas operating from one of their main hubs.*