



MARINE COATINGS TESTING

QUALIFICATION TESTING TO MAXIMISE PRODUCT PERFORMANCE

SGS

SAFEGUARDING YOUR MARINE COATINGS PERFORMANCE FROM QUALIFICATION TO OPERATION

SGS can support you from qualifying the most appropriate product to ensuring correct application and testing to ensure continuous performance of your coatings system.

Our testing services provide an accurate insight into the protection properties of coatings in relation to adhesion, corrosion, electrochemical resistance, permeability, heat, abrasion and chemicals resistance, ensuring they meet both client and regulatory requirements. Our extensive experience in paints, polymers and metallic coatings, coupled with the latest technology, enables our laboratory experts to provide clients with the highest level of service.

SGS deliver driven cost-effective coating solutions which enable customers to reduce risk, shorten time to market and test the quality and performance of products against relevant standards and project specifications. Our laboratory experts provide a fast turnaround time for tests whilst ensuring the health and safety of its staff and visitors.

TESTING TO IMO STANDARDS

IMO "Performance Standard for Protective Coatings for dedicated seawater ballast tanks"

According to the IMO specification the results from prequalification tests of a coating system shall be documented and a Statement of Compliance or Type Approval Certificate shall be issued if found satisfactory by a third party, independent of the coating manufacturer. SGS are accredited by the major class societies to perform all relevant tests.

ASSESSMENTS & REPORTING

- Assess the surface
- Measure corrosion creep and cathodic disbondment
- Compare the adhesion to unexposed references
- Identify products (FT-IR finger, Density and weight solids)

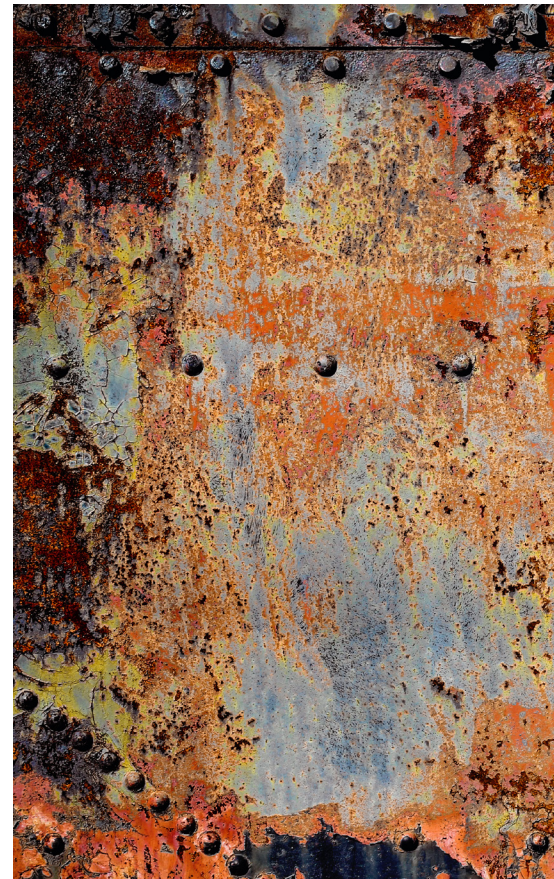
Following exposure, assessments are conducted and bespoke reports are produced to meet the requirements of resolution.

NEW CHALLENGES FOR THE SHIPPING INDUSTRY

Shipping moves over 80 percent of the world's commodities. Today, as concerns about the environment increase, shipping is often preferred over air transport, especially when heavy goods, such as automobiles are being moved. This is due not only to shipping's lower environmental impact, but also to its lower cost.

With ship repair and maintenance activities increasing, the cost of ship ownership is becoming more relevant. By protecting ships from abrasion, corrosion and impact, coatings are essential for minimising costs and enhancing efficiency. Consequently, the marine coatings market is growing, with an expected worth of USD 10.4 billion by 2019 and USD 15 billion by 2024.

Today, marine coatings must protect critical assets in the most demanding markets and environments. Driven by International Convention for the Safety of Life at Sea (SOLAS), 1974 Marine Ballast coatings and equipment is being developed to ensure the safety of both the crew and the natural environment.



WAVE MOTION (METHOD A) PSPC WBT

This test simulates the wave conditions with a ballast tank and can be carried out by SGS' purpose built equipment.

HEAT STABILITY

This test simulates boundary plating between a heated bunker tank and a ballast tank with a double bottom and is performed by exposing a single panel to dry heat in an oven for 180 days at 700°C.

CONDENSATION CHAMBER TEST ISO 6270

This test is performed using duplicate testing and is designed to simulate the high humidity found within ballast tanks.

CROSSOVER TESTING

Shipbuilders reserve the right to use different manufacturers' primers with approved topcoats to provide cost savings. This "Crossover Test" can be performed by SGS' purpose built equipment.

ARE YOU PROPERLY PREPARED?

As part of your testing needs, SGS can witness the application of coatings to ensure surface preparation and spray applications are correct. Witnessing requires highly qualified NACE & FROSIO inspectors and the testing should be carried out using accredited independent test facilities.

IMO BALLAST WATER MANAGEMENT CONVENTION (BWM)

The introduction of harmful aquatic organisms and pathogens to new environments had been identified as one of the four greatest threats to the world's oceans. The BWM Convention (which entered into force in September 2017), defines the requirements of equipment which should be on every new built ship to avoid any transfer of organisms from one part of the world to another. There are various type of ballast water treatment equipment which have now been accredited to be used. As part of the accreditation procedure, the manufacture needs to prove the process does not affect the already approved coating system within the ballast tanks.

One of the SGS technical experts led the NACE committee which developed test method TM0112.

SGS has designed specialist equipment to test to this specification, it takes into consideration that reporting is based on the differences between the chemical active and reference cells to ensure there is no crossover. The level of

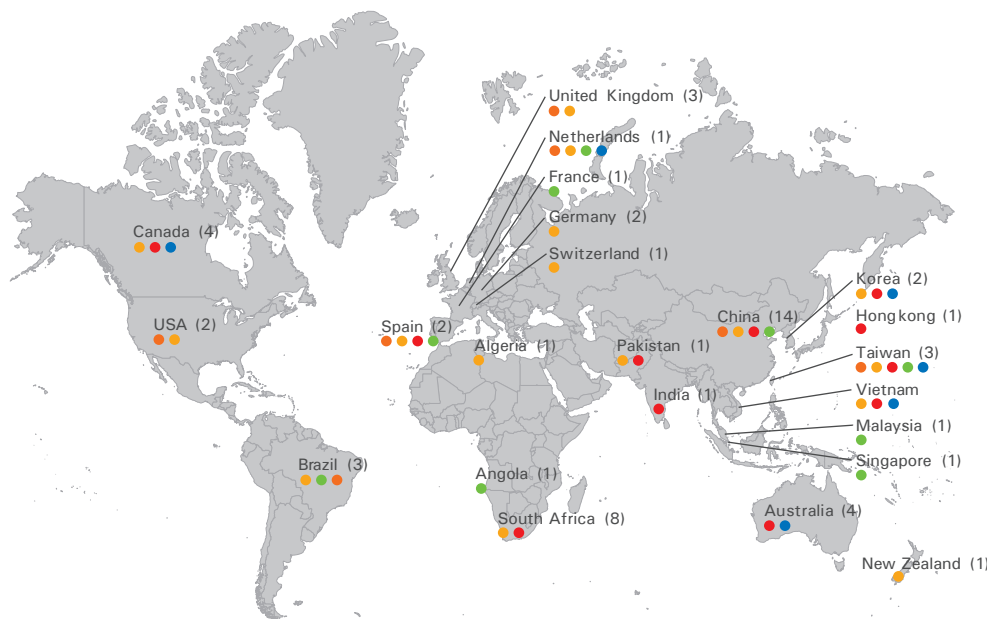
active chemicals are measured in parts per million and the test solutions are changed twice a week for a period of 25 weeks, following which a comparison of the following are carried out;

- Adhesion
- Corrosion Creep
- Cathodic Disbondment
- Visual appearance

If there are major difference the system will be rejected.

PREVENTION THROUGH FAILURE AND DAMAGE ANALYSIS

If you experience a failure it is essential to identify the mechanism of failure and establish the root cause with the aim of preventing the problem from arising in the future. SGS can collect and analyse data on your products in order to determine the cause of failure. We are able to draw on leading talent across many disciplines, including polymer and materials scientists, metallurgical engineers, corrosion engineers and chemists. Our team of experts are on hand to ensure you get the answers you need.



89 TESTING LABORATORIES IN 57 FACILITIES IN 21 COUNTRIES WORLDWIDE

GEOGRAPHICAL FOOTPRINT OF INDUSTRIAL TESTING SERVICES

- Coatings/Polymer Laboratory (13)
- Metal Laboratory (35)
- Construction Laboratory (24)
- Calibration Laboratory (10)
- Geotechnical Services (8)

WHY SGS?

SGS's centre of excellence for coatings and polymer testing is based in Manchester, UK with complementary laboratory capability in The Netherlands, China and USA.

Our laboratories are accredited to ISO 17025, ISO 18001 and ISO 9001 and perform testing in accordance with all major international standards, including ISO, ASTM, DIN and NACE.

Our highly qualified personnel, including NACE & FROSIO qualified

coating inspectors, have extensive knowledge of all relevant aspects of material protection; including materials science, application methods and failure mechanism.

ABOUT SGS

SGS is the world's leading inspection, verification, testing and certification company. SGS is recognised as the global benchmark for quality and integrity. With more than 95,000 employees, SGS operates a network

of over 2,400 offices and laboratories around the world.

We provide competitive advantage, drive sustainability and deliver trust. At SGS, we are continually pushing ourselves to deliver innovative services and solutions that help our customers move their businesses forward.

CONTACT US

To learn how SGS can help you exceed customer expectations, visit www.sgs.co.uk or contact gb.coatings@sgs.com.

WWW.SGS.COM

WHEN YOU NEED TO BE SURE

SGS