

PPG SIGMASHIELD™ 1200 / PPG SIGMAGUARD™ 720

After three years in service with minimal repairs for ice-going oil tanker carrying a wide range of cargoes.

Case study



The Customer

Dynacom Tankers Management Ltd.

The Vessel

The Boris Sokolov is the world's first icebreaking LNG tanker and is used primarily to transport gas condensate from Sabetta LNG terminal in north Russia to customers in Europe and Asia.

The Challenge

The Boris Sokolov tanker operates in ice-going areas and needed a robust protective coating with excellent abrasion- and impact resistance on the hull area. The vessel also required a tank coating system with optimal resistance for a wide range of bulk liquid cargoes.

The Solution

The PPG SIGMASHIELD™ 1200 solvent-free, amine-cured phenolic epoxy coating for the hull. The PPG SIGMAGUARD™ 720 reinforced high-solids tank coating.

The Benefits

The PPG SIGMASHIELD 1200 coating is ideally suited for tough, ice-going environments. The robust coating can also be applied by cold, single-feed airless spray equipment. The PPG SIGMAGUARD 720 tank coating has good resistance against a wide range of chemicals.

The Result

After three years in service carrying gas condensate in icy conditions, PPG SIGMASHIELD 1200 was still in very good condition and required minimal spot repairs (an average of 1.5%). PPG SIGMAGUARD 720 needed no repairs.

The Customer

Dynacom Tankers Management Ltd. was founded in 1991 to manage oil tankers and has significantly expanded and modernized its fleet. Dynacom has a strong presence in the oil industry, with vessels calling at more than 1,000 ports serving customers worldwide. The existing fleet, for which Dynacom acts as an agent, stands at over 8.5 million tons.

The Challenge

The Boris Sokolov tanker was built in the Guangzhou shipyard, China in December 2018. The vessel is based on the proven Double Acting Ship (DAS™) principle that allows tankers and cargo ships to operate independently without icebreaker assistance in challenging ice conditions.

Dynacom needed a robust, heavy-duty system to provide protection for two distinct conditions. As the vessel frequently used the Northern Sea Route, the hull coating had to be resilient enough to withstand tough, icy conditions. The tanker frequently carries chemical cargoes, so the tank lining had to be a trusted and reliable pure epoxy tank coating with good chemical resistance.



PPG SIGMASHIELD™ 1200 and PPG SIGMAGUARD™ 720

After three years in service with minimal repairs for ice-going oil tanker carrying a wide range of cargoes.



The Solution

After analyzing the customer's requirements, we recommended the PPG SIGMASHIELD 1200 coating for optimal hull protection and the PPG SIGMAGUARD 720 pure epoxy tank coating for good resistance against a wide range of chemicals.

The Benefits

The PPG SIGMASHIELD 1200 hull coating is the ideal solution for ice-going vessels. It provides damage propagation control with outstanding anti-abrasion properties built on a highly cross-linked phenolic epoxy technology. This feature extends the service life of the coating by greatly increasing the creep resistance. The coating offers excellent single-coat application using standard equipment and benefits applicators due to its solvent-free technology with no VOC emissions.

PPG SIGMASHIELD 1200 benefits:

- Outstanding impact- and abrasion resistance
- Excellent cathodic protection and creep resistance
- Good application properties; also possible in winter conditions
- Single-coat application using standard equipment
- Easy maintenance and repair
- Recognized by Lloyd's Register as an abrasion resistant ice coating
- Recognized by Aker as a low-friction surface coating for ice-breaking ship

The PPG SIGMAGUARD 720 tank coating has an established track record of over 30 years in the maritime industry. It provides good chemical- and solvent resistance for crude- and refined products and chemicals. The coating's high-solids composition makes it an economical system, while its high-gloss finish ensures ease of cleaning, which reduces cleaning and turnaround time.

PPG SIGMAGUARD 720 benefits:

- Good chemical resistance against a wide range of chemicals
- Short curing periods
- Excellent low-temperature curing
- Easy to clean
- Meets the requirements of EI 1541, section 2.2 (coating systems for aviation fuel storage tanks and pipes)

The Result

The vessel was dry-docked in October 2021 at the Fayard shipyard, Denmark after its three-year operation in harsh environments and ice-going routes. Following inspection, Dynacom was very satisfied by the PPG SIGMASHIELD 1200 coating's performance on the hull. Its single-layer application and fast curing time also saved a great deal of time and money during the dry dock stage.

The vessel's cargo tanks, applied with the PPG SIGMAGUARD 720 coating, were surveyed and found to be in excellent condition without any visible breakdown in the coating. The vessel will continue to benefit from the coating's maximum chemical protection and resistance, resulting in long-term benefits and cost reduction, and operational efficiency within the market.



Visit ppgpmc.com or contact:

Asia Pacific ☎ +86-21-6025-2688 ✉ ppgpmc.ap@ppg.com | Europe, Middle East and Africa ☎ +32-3-3606-311 ✉ customers@ppg.com
Latin America ☎ +57-1-8764242 ext. 201 ✉ ppgpmcandean-ca@ppg.com | North America (US & Canada) ☎ +1-888-9PPGPMC ✉ PMCMarketing@ppg.com



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