DNV·GL

Certificate No:
TAK00001B1

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Abrasion resistant coatings

with type designation(s)
SIGMASHIELD™ 1200

Issued to
PPG Coatings Europe B.V.
Amsterdam, Netherlands

is found to comply with
DNV GL class programme DNVGL-CP-0293 – Type approval – Abrasion resistant coatings

Application :

Abrasion resistant coating.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2023-08-23**.

Issued at **Høvik** on **2018-08-24**
DNV GL local station: **Rotterdam** for **DNV GL**

Approval Engineer: **Gisle Hersvik**

Rikard Törnqvist
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Job Id: **262.1-029249-1**
Certificate No: **TAK00001B1**

Product description

SIGMASHIELD™ 1200, a two-component, abrasion-resistant, solvent free, amine-cured phenolic epoxy coating.

Colors:	Light Gray, Dark Gray, Redbrown, Black (other colors available on request)
Dry Film Thickness:	400 – 500 µm (in one coat)
Surface cleanliness:	Min. Sa 2½ (ISO 8501-1)
Surface profile:	50 - 100 µm

Manufactured by

PPG Coatings SPRL/BVBA, Tweemontstraat 104, B-2100 Deurne, Belgium

DNV GL local station: Antwerp

Responsibility

The Company (stated on the front page of this Certificate) takes the responsibility that both design and production are in compliance with Rules, Standards and/or Regulations listed on page 1 of this certificate.

Application/Limitation

Coating system for under water hull of ice going and ice breaking vessels.

With reference to DNVGL-RU-SHIP Pt.6 Ch.6 Sec.2 the thickness of steel plates in the ice belt may be reduced if an abrasion resistant coating is applied and maintained.

This approval is solely connected to the corrosion prevention and abrasion resistant properties of the coating material. The approval does not include any evaluation of toxicity, contamination, pollution, or fire technical properties.

Surface preparation and coating application as per manufacturer's recommendations.

The durability of the applied coating system will depend on the steel surface preparation, coating application and the environmental conditions.

The Type Approval Certificate is invalid if the formulation of product is changed to a degree deemed significant by DNV GL.

Type Approval documentation

Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**.

Marking of product

Product/package shall be marked with *manufacturer's name and address*; **PPG**, *place of production*, *type designation*; **SIGMASHIELD™ 1200**, and *date of production/batch number*.

The marking is to be carried out in such a way that it is visible, legible and indelible. The marking of product is to enable traceability to the DNV GL Type Approval Certificate.

Periodical assessment

The scope of the Periodical Assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

Periodical Assessment to be performed after 2 and 3.5 years (Certificate Retention) and at renewal after 5 years (Certificate Renewal).

The main elements of the Periodical Assessment are to:

- Ensure that **Type Approval documentation** is available.
- Review design, materials, production process, and performance with respect to possible changes, in order to ensure compliance with **Type Approval documentation** and/or referenced material specifications.
- Ensure traceability between manufacturer's product marking and DNV GL Type Approval Certificate.

END OF CERTIFICATE