DNV·GL

Certificate No:
TAK00000J9

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Protective Coating Systems - Seawater Ballast Tanks

with type designation(s)
SIGMACOVER™ 380 and SIGMACOVER™ 380 LT

Issued to
PPG Protective and Marine Coatings B.V.
Amsterdam, Noord-Holland, Netherlands

is found to comply with
DNV GL class programme DNVGL-CP-0108 – Type approval – Protective coating systems for seawater ballast tanks and double-side skin spaces
IMO Resolution MSC.215(82) Performance Standard for Protective Coatings (PSPC)
IACS Unified Interpretations SC223. For Application of SOLAS Regulation II-1/3-2 Performance Standard for Protective Coatings (PSPC) for Dedicated Seawater Ballast Tanks in All Types of Ships and Double-side Skin Spaces of Bulk Carriers.

Application :

For use in ballast tanks, double-skin spaces, cofferdams and similar areas. Surface preparation and coating application as per PSPC or manufacturer's recommmendations, whichever is stricter.

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

This Certificate is valid until **2021-11-20**.

Issued at **Høvik** on **2016-11-21**

for **DNV GL**

DNV GL local station: **Rotterdam**

Approval Engineer: **Gisle Hersvik**

Martin Strande
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.

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Job Id:
Certificate No: **TAK00000J9**

Product description

SIGMACOVER™ 380 and **SIGMACOVER™380 LT**, 2-component epoxy based coatings for corrosion protection of steel surfaces.

Manufactured by

PPG Coatings SPRL/BVBA, Tweemonstraat 104, BE-2100 Deurne, Belgium.

DNV GL local office: 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

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

SIGMACOVER™380 and **SIGMACOVER™380 LT** are approved for application on blast cleaned surfaces and on prequalified shop primed surfaces. The following shop primers have been prequalified:

SigmaWeld 165	[PPG Protective & Marine Coatings]
W53-02	[Taicang Lanyan Paint Co. Ltd.]
TH-2	[Jiangsu Yejian Anticorrosion Material Co., Ltd.]
CD-SG906	[Ningbo Haidun Coating Co., Ltd.]
WS-01	[Jingjiang Hengyu Chemical Machinery Co., Ltd.]
725-E47	[Xiamen Sunrui Ship Coatings Co., Ltd.]
Muki Z 2001	[Jotun A/S]

Surface preparation and coating application as per PSPC or manufacturer's recommendations, whichever is stricter.

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 the epoxy coatings **SIGMACOVER™380** and **SIGMACOVER™380 LT** are changed to a degree deemed significant by DNV GL. If the formulation of any of the listed pre-qualified shop primers is changed to a degree deemed significant by DNV GL that shop primer cannot be used as part of the Protective Coating System.

Type Approval documentation
Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**.
The tests reported in the COT, CCS-DNV Technology Institute, Test and Verifying Center for Ship Materials on Coatings and Paintings and Exova Reports are carried out according to the procedures in IMO Resolution MSC.215(82) Performance Standard for Protective Coatings (PSPC), ref. IACS UI SC 223;

- COT bv Test Report No. LAB08-1309-REP, "Ballast Tank Coating Test of 2 x 160 µm SigmaCover 380 on W53-02 Inorganic Zinc Rich Shop Paint" of 2008-12-19.
- COT bv Test Report No. LAB08-1315-REP, "Ballast Tank Coating Test of 2 x 160 µm SigmaCover 380 LT on W53-02 Inorganic Zinc Rich Shop Paint" of 2008-12-19.
- COT bv Test Report No. LAB08-1310-REP, "Ballast Tank Coating Test of 2 x 160 µm SigmaCover 380 on TH-2 Zinc Silicate Shop Primer" of 2008-12-19.

- COT bv Test Report No. LAB08-1316-REP, "Ballast Tank Coating Test of 2 x 160 µm SigmaCover 380 LT on TH-2 Zinc Silicate Shop Primer" of 2008-12-19.
- Test and Verifying Center for Ship Materials on Coatings and Paintings Test Report No. JX10341, "Sigmacover 380(2*160µm) on SigmaWeld 165 Inorganic zinc silicate shop primer", of 2010-11-10.
- CCS-DNV Technology Institute Technical Report No. CDTI-CL-11B027, "Ballast Tank Coating Test of 2 * 160 µm Epoxy-based SigmaCover 380 on CD-SG906 Inorganic Zinc Shop Primer" of 2011-02-18.
- CCS-DNV Technology Institute Technical Report No. CDTI-CL-11B028, "Ballast Tank Coating Test of 2 * 160 µm Epoxy-based SigmaCover 380LT on CD-SG906 Inorganic Zinc Shop Primer" of 2011-02-18.
- CCS-DNV Technology Institute Technical Report No. CDTI-CL-11B058, Rev. 03 "Ballast Tank Coating Test of 2 * 160 µm Epoxy-based SigmaCover 380 on WS-01 Inorganic Zinc Shop Primer" of 2011-05-11.
- CCS-DNV Technology Institute Technical Report No. CDTI-CL-11B059, Rev. 03 "Ballast Tank Coating Test of 2 * 160 µm Epoxy-based SigmaCover 380LT on WS-01 Inorganic Zinc Shop Primer" of 2011-05-11.
- Test and Verifying Center for Ship Materials on Coatings and Paintings Test Report No. JX11073, "Sigmacover 380LT(2*160µm) on 725-E47 inorganic zinc silicate shop primer", of 2011-04-18.
- Test and Verifying Center for Ship Materials on Coatings and Paintings Test Report No. JX11072, "Sigmacover 380(2*160µm) on 725-E47 inorganic zinc silicate shop primer", of 2011-04-18.
- Exova Test Report No. N960356-11, "Test Report for Evaluation of Coatings to IMO Resolution MSC.215(82) Annex 1 – Test procedures for Coating Qualification Section 1.7 – Crossover test" of 2013-08-01.

Marking of product

Product/package shall be marked with manufacturer's name and *type designation*; **SIGMACOVER™380** and **SIGMACOVER™380 LT**, 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.

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:

- 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