

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Protective Coating Systems - Seawater Ballast Tanks**

with type designation(s)

EPOMARINE EX21 and EPOMARINE EX21QD

Issued to

**NKM Coatings Co., Ltd.
Amagasaki Hyogo Pref., Japan**

is found to comply with

Det Norske Veritas' Type Approval Programme 1-602.1, 2011, Protective Coating Systems - 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 recommendations, 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 **2019-06-30**.Issued at **Høvik** on **2015-06-24**DNV GL local station: **Kobe**Approval Engineer: **Mats Gustafsson**for **DNV GL**

**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.

Job Id: **262.1-010963-4**
Certificate No: **TAK000000F**

Product description

EPOMARINE EX21 and **EPOMARINE EX21QD**, 2-component epoxy based, light coloured, coating for corrosion protection of steel surfaces.

Manufactured by

Kansai Paint Ako Co., Ltd., Amagasaki Plant, 980-1 Nishihama-cho, Ako-city, Hyogo, 678-0208, Japan

DNV GL local office: Kobe.

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.

Kansai Paint Ako Co., Ltd. has a written toll manufacturing agreement with **Kansai Paint Co., Ltd.** that is an authorized licensee of the **NKM Coatings Co., Ltd.** (the Company).

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.

EPOMARINE EX21 and **EPOMARINE EX21QD** are approved for application on blast cleaned surfaces and on shop primed surfaces. The following shop primers are prequalified:

SD Zinc 1000 HA(S)	[Kansai Paint Co., Ltd. / NKM Coatings Co., Ltd.]
CERABOND 2000	[Chugoku Marine Paints, Ltd.]
CERAZINC	[Kobe Paints, Ltd.]
NIPPE CERAMO	[Nippon Paint Co., Ltd.]

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 **EPOMARINE EX21** and **EPOMARINE EX21QD** 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 carried out at RIME are in accordance with procedures in IMO Resolution MSC.215(82) Performance Standard for Protective Coatings (PSPC), ref. IACS UI SC 223;

- RIME Test Report No. 01-518(E) "Shop Primed Epoxy Based Systems. Epoxy Based System: EPOMARINE EX21. Shop Primer: SD ZINC 1000HA(S)" of 2009-08-21.
- RIME Test Report No. 01-519(E) "Shop Primed Epoxy Based Systems. Epoxy Based System: EPOMARINE EX21QD. Shop Primer: SD ZINC 1000HA(S)" of 2009-08-24.
- RIME Test Report No. 09-242(E) "Shop Primed Epoxy Based Systems. Epoxy Based System: EPOMARINE EX21. Shop Primer: CERABOND 2000" of 2009-10-01.

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- RIME Test Report No. 09-243(E) "Shop Primed Epoxy Based Systems. Epoxy Based System: EPOMARINE EX21QD. Shop Primer: CERABOND 2000" of 2009-10-01
- RIME Test Report No. 09-246(E) "Shop Primed Epoxy Based Systems. Epoxy Based System: EPOMARINE EX21. Shop Primer: NIPPE CERAMO" of 2009-10-15.
- RIME Test Report No. 09-247(E) "Shop Primed Epoxy Based Systems. Epoxy Based System: EPOMARINE EX21QD. Shop Primer: NIPPE CERAMO" of 2009-10-22.

Marking of product

Product/package shall be marked with *manufacturer's name and address*; **NKM Coatings Co., Ltd., Amagasaki, Japan**, *place of manufacture and type designation*; **EPOMARINE EX21 / EPOMARINE EX21QD**, 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 two (2) years (Certificate Retention) and at renewal after four (4) 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 the DNV GL Type Approval Certificate.

END OF CERTIFICATE