

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Protective Coating Systems - Cargo Oil Tanks**with type designation(s)
KCI Edmarine K21 AC

Issued to

Kunsul Chemical Ind. Co., Ltd.
Haman-gun, Gyung-sangnam-do, Republic of Korea

is found to comply with

DNV GL class programme CP-0139 – Type Approval of non-metallic materials – Protective coating systems for Cargo oil tanks**IMO Resolution MSC.288(87) Performance Standard for Protective Coatings (PSPC)****IACS Unified Interpretations SC259. For Application of SOLAS Regulation II-1/3-11****Performance Standard for Protective Coatings for Cargo Oil Tanks of Crude Oil Tankers (PSPC-COT), adopted by Resolution MSC.288(87).****Application :****For use in cargo oil tanks of crude oil tankers. 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 **2021-03-13**.Issued at **Høvik** on **2016-03-14**DNV GL local station: **Gimhae MC & FIS**for **DNV GL**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.

Product description

KCI Edmarine K21 AC; two-pack, high-build anti-corrosive epoxy coating.

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.

KCI Edmarine K21 AC is approved for application on blast cleaned surfaces and on prequalified shop primed surfaces. The following shop primer has been prequalified:

KCI Zinc 1000

[Kunsul Chemical Industrial 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 coating **KCI Edmarine K21 AC** is 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 KTR Technical Report are carried out in accordance with the test procedures in IMO Resolution MSC.288(87) Performance Standard for Protective Coatings (PSPC), ref. IACS UI SC259.

- KTR Technical Report No. KTR-COT-PSPC-141, Rev. 00 "Cargo Oil Tank Protective Coating Test of 2 * 160 µm KCI EDMARINE K21 AC on KCI ZINC 1000" of 2015-10-15.

Marking of product

Product/package shall be marked with *manufacturer's name and address*; **Kunsul Chemical Ind. Co., Ltd., Haman, Korea**, and *type designation*; **KCI Edmarine K21 AC**, 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 2.5 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.



Job Id: **262.1-020784-1**
Certificate No: **TAK0000091**

- 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