



Certificate No:
TAK000029E

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Adhesive Materials for use in Insulation of Gas Carriers

with type designation(s)

D-ACE 680R1 / D-ACE 370C1: Polyurethane Adhesive System

Issued to

Dongsung Chemical Co., Ltd.
Busan, Republic of Korea

is found to comply with

Gaztransport & Technigaz Specification Nr. M3005, Insulating Panel Adhesive, Rev. 02, November 2015

Application :

For use in GTT Liquefied Gas Cargo Containment System of LNG carriers.

Issued at **Hamburg** on **2023-08-29**

This Certificate is valid until **2028-08-28** .

DNV local unit: **Gimhae Station**

for **DNV**

Approval Engineer: **Gisle Hersvik**

.....
Thorsten Lohmann
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 281

Revision: 2021-10

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Product description

D-ACE 680R1 / D-ACE 370C1; A solvent-free two-component Polyurethane Adhesive System.

Polyol component: D-ACE 680R1

Isocyanate component: D-ACE 370C1

Application/Limitation

The material is only approved for use in liquified gas carriers built under licence from GAZTRANSPORT & TECHNIGAZ SAs (GTT).

Deliveries to actual shipbuilding projects shall be in compliance with the "Insulating Panel Adhesive" Specification, GTT Specification Nr. M3005, latest revision 02 dated November 2015.

The product shall have a valid approval from GTT.

Type Approval documentation

Tests carried out

Type Testing carried out according to **Type Approval documentation**.

Marking of product

Product/package shall be marked with the *manufacturer's name*; **Dongsung Chemical Co., Ltd., Busan, Korea** and *type designations*; **D-ACE 680R1 / D-ACE 370C1**.

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 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 assessments (for Certificate Retention / Certificate Renewal) shall be performed according to DNV-CP-0338.

This certificate is only valid if required Periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>

END OF CERTIFICATE