



Certificate No:
TAK000029J

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Adhesive Materials for use in Insulation of Gas Carriers

with type designation(s)

Polyurethane Adhesive: UniCore® 8345 RA/HB

Issued to

Uni-Tech Co., Ltd.

Ansan-si, Gyeonggi-do, Republic of Korea

is found to comply with

Gaztransport & Technigaz Specification Nr. M3006, Adhesive for Secondary Barrier, Rev. C, February 2010

Gaztransport & Technigaz Specification Nr. M3024, Adhesive, Rev. B, January 2008

Application :

For use in MARK III type LNG containment systems built under GTT's license.

Issued at **Hamburg** on **2023-08-28**

This Certificate is valid until **2028-08-27** .

for **DNV**

DNV local unit: **Seoul**

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: 2022-12

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Product description

UniCore® 8345 RA/HB a flexible two component polyurethane adhesive which can cure at ambient temperature or with heating. Suitable to bond parts of insulation panels, top bridge pads, flexible secondary barrier to rigid secondary barrier. The product is intended for use at cryogenic conditions.

- UniCore® 8345 RA: Resin
- UniCore® 8345 HB: Hardener

Application/Limitation

UniCore® 8345 RA/HB is intended for:

- use either at prefabrication stage or onboard, to manually bond flexible secondary barrier to rigid secondary barrier. It is approved for use with the secondary barriers HFT-2010, HRT-2001 and TRIPLEX-F.
- use during on board erection to bond secondary barrier (HRT-2001, HFT-2010, TRIPLEX-F) directly to stainless steel (304L) elements.

The products are only approved for use in MARK III type LNG carriers built under licence from GAZTRANSPORT & TECHNIGAZ SA (GTT). Deliveries to actual shipbuilding projects shall be in compliance with:

- "Adhesive" specification, GTT specification Nr. M3006, latest Rev. C, February 2010.
- "Adhesive for Secondary Barrier" specification, GTT specification Nr. M3024, latest Rev. B, January 2008.

The products shall have a valid approval from GTT.

Type Approval documentation

Tests carried out

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

The test results on which this Type Approval is based are found in:

- GTT Approval Report, MAT-RPT-003222
- GTT Approval Report, MAT-RPT-003223
- GTT Approval Report, MAT-RPT-003233
- GTT Approval Report, MAT-RPT-003234

Marking of product

Product shall be marked with the *manufacturer's name*; **Uni-Tech Co., Ltd., Korea** and *type designation*.



Job Id: **262.1-038971-1**
Certificate No: **TAK000029J**

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