



TYPE APPROVAL CERTIFICATE

Certificate No:
TAK000009M
Revision No:
1

This is to certify:

That the Insulation Materials for Gas Carriers

with type designation(s)

ASEplas 2010 SWA, ASEplas 2010 SWB, ASEplas 2010 SWC, ASEplas 2010 SWC1 & ASEplas 2010 SWD

Issued to

Torgy Mek. Industri AS
TØNSBERG, Norway

is found to comply with

DNV GL class programme DNVGL-CP-0099 – Type approval – Hardwood for tank supports
DNV GL rules for classification – Ships

Application :

For us as Thermal Isolator Blocks for Petrochemical and LNG Tanker applications.

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

Issued at **Høvik** on **2021-04-08**

for **DNV**

This Certificate is valid until **2026-04-07**.

DNV local station: **Sandefjord**

Approval Engineer: **Gisle Hersvik**

Gustav Heiberg
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.



Product description

ASEplas 2010SWA, 2010SWB, 2010SWC, 2010SWC1 and 2010SWD

- Organic glass-reinforced polyester composites for use as Thermal Isolator Blocks for Petrochemical and LNG Tanker applications.

The following properties have been verified by Type Testing:

Properties	ASEplas 2010				
	SWA	SWB	SWC	SWD	SWC1
Density [g/cm ³]	1,92	1,74	1,22	1,38	1,49
Compressive strength, +150°C [MPa]	69	126	21	65	3
Compressive strength, 20°C [MPa]	131	230	64	124	88
Compressive strength, -196°C [MPa]	184	223	111	179	127
Shear strength, 20°C [MPa]	64	93	25	52	34
Water resistance (Compressive strength, 20°C) [% of original strength]	92	97	86	88	78
Service temperature [°C]	from +160 to -196				
Thermal conductivity, 20°C [W/mK]	0,56	0,37	0,32	0,32	0,38

Remark:

Note that retention of compressive strength is less than the minimum 98% given by the original DNV Type Approval Programme No. 1-503.2 (now DNVGL-CP-0099), but the samples are tested without sealing of the cut edges.

Other properties may be requested from the Manufacturer.

Manufactured by

Torgy Atlantic Ltd., Llandough Industrial Estate Penarth Road, CF11 8RR Cardiff, United Kingdom

DNV local station: Southampton

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

Area of application will be evaluated during approval of classified objects. Additional properties may be requested.

Any significant changes in design and / or quality of the material will render the approval invalid.

Type Approval documentation

1. Periodical Assessment Report from DNV Southampton of 2021-03-08.
2. Application for Type Approval of 2021-02-14.
3. Periodical Assessment Report from DNV GL Southampton of 2016-04-05, incl. email from Torgy of 2016-03-24.
4. Application for Type Approval of 2016-02-11.
5. Emails from DNV Bristol of 2011-06-27, incl. information on name change to ASEplas 2010.
6. Email from DNV Bristol of 2011-02-09, incl. test reports from Swansea University and Exova.
7. Survey Report from DNV Bristol of 2011-03-02.
8. Email from Torgy of 2009-09-02, incl. Application for Type Approval of 2009-09-14 and test programme (proposal).
9. Email from Torgy of 2009-09-02, incl. ASEplas 1010 properties & characteristics.

Tests carried out

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

The following test report has been reviewed and used as basis for the approval:

- Testing of Moulding Compounds, Swansea University, dated December 2010.

The following test reports have been taken for information:

- BS 476: Part 5:1979 (Withdrawn Test Standard), Method of Test for Ignitability;
 - Exova Report 198016 of 2011-01-07.
- BS 476: Part 6:1989+A1:2009, Method of Test for Fire Propagation for Products;
 - Exova Report 198022 of 2010-12-16.
- BS 476: Part 7:1997, Method for Classification of the Surface Spread of Flame of Products;
 - Exova Report 198030 of 2010-12-16.
- UL-94, Vertical Burning Test for Classifying Materials V-0, V-1 or V-2;
 - Exova Report 198031 of 2010-12-16.
 - Exova Report 198032 of 2010-12-16.
 - Exova Report 198033 of 2010-12-16.
 - Exova Report 198034 of 2010-12-16.
 - Exova Report 198035 of 2010-12-16.

Marking of product

Product shall be marked with *manufacturer's name*; **Torgy Atlantic Ltd., Cardiff, UK** and *type designation*.

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 and Certificate Renewal) shall be performed according to DNVGL-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://approvafinder.dnvgl.com>

END OF CERTIFICATE