Certificate no.:
TAK00002N4

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Buoyancy Materials

with type designation(s)
Gurit® Corecell™ S-Foam - series

issued to
Gurit Americas Inc.
Magog, QC, Canada

is found to comply with
DNV class programme DNV-CP-0084 – Type approval – Sandwich core materials
DNV rules for classification – Underwater technology Pt.2 Sec.5 Materials and welding for UWT systems

Application:

Buoyancy material for subsea applications (unmanned).

Issued at **Hamburg** on **2026-03-13**
This Certificate is valid until **2031-03-12**.
DNV local unit: **Montreal**

for **DNV**

Approval Engineer: **Joachim Rehbein**

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 USD 300 000.

Product description

Gurit® Corecell™ S-Foam: Coss-linked, closed-cell SAN (styrene-acrylonitrile) foam material

Approved variants

- Gurit® Corecell™ S210
- Gurit® Corecell™ S250
- Gurit® Corecell™ S270
- Gurit® Corecell™ S315
- Gurit® Corecell™ S350
- Gurit® Corecell™ S400
- Gurit® Corecell™ S450

Material properties according to DNV-CP-0084

Variant	Nominal Density (1)	Density Range (1)	Compr. Strength (2)	Compr. Modulus (2)	Shear Strength (3)	Shear Modulus (3)	Shear Elongation (4)	Tensile Strength (4)	Tensile Modulus (4)	HRT (5)
S210	210	200-220	4.95 (4.35)	298 (218)	3.35 (3.11)	98 (88)	19 (-)	4.29 (3.78)	306 (268)	--
S250	245	235-259	6.76 (5.95)	377 (298)	4.14 (3.69)	119 (110)	18 (-)	5.39 (4.61)	396 (327)	--
S270	270	260-280	8.17 (7.54)	424 (363)	4.48 (3.77)	134 (119)	12 (-)	5.76 (4.71)	476 (377)	--
S315	315	300-330	10.55 (9.21)	542 (452)	5.57 (4.53)	162 (145)	11 (-)	7.09 (5.53)	574 (451)	--
S350	350	335-365	13.72 (11.78)	672 (595)	6.11 (4.81)	186 (166)	9 (-)	7.69 (5.63)	723 (540)	--
S400	400	385-415	16.39 (15.09)	778 (648)	6.48 (4.84)	219 (194)	8 (-)	8.78 (6.71)	786 (627)	--
S450	450	435-465	19.88 (17.98)	961 (774)	7.62 (5.85)	242 (205)	8 (-)	9.70 (7.53)	946 (752)	45

Notes:
(1) Density according to ISO 845 in kg/m³
(2) Compressive properties according to ISO 844:2014, procedure B in MPa.
(3) Shear properties according to ISO 1922 in MPa.
(4) Shear elongation at break according to ISO 1922 in %.
(4) Tensile properties according to ASTM D1623 in MPa.
(5) Heat resistance temperature (HRT) in °C where the shear strength is > 80% of the shear at RT.
All values are average values and verified by testing. The values within brackets are minimum values.

Material properties according to DNV-RU-UWT Pt.2 Ch.5

Variant	Nominal Density (1)	Density Range (1)	Compr. Strength (2)	Tensile Strength (3)	HCP (4)	Bulk Modulus (5)
S210	210	200-220	4.95 (4.35)	4.29 (3.78)	7.062 (6.225)	185 (140)
S250	245	235-259	6.76 (5.95)	5.39 (4.61)	9.283 (7.690)	272 (219)
S270	270	260-280	8.17 (7.54)	5.76 (4.71)	11.400 (10.300)	326 (259)
S315	315	300-330	10.55 (9.21)	7.09 (5.53)	14.526 (12.660)	378 (264)
S350	350	335-365	13.72 (11.78)	7.69 (5.63)	18.126 (15.400)	474 (399)
S400	400	385-415	16.39 (15.09)	8.78 (6.71)	21.704 (19.180)	552 (489)
S450	450	435-465	19.88 (17.98)	9.70 (7.53)	27.160 (24.241)	721 (630)

Notes:
(1) Density according to ISO 845 in kg/m³.
(2) Compressive properties according to ISO 844:2014, procedure B in MPa.
(3) Tensile strength according to ASTM D1623 in MPa.
(4) Hydrostatic crush pressure HCP according to ASTM D2736 in MPa.
(5) Bulk modulus according to ASTM D2926 in MPa.
All values are average values and verified by testing. The values within brackets are minimum values.

Application/Limitation

Application of syntactic foam for buoyancy material in unmanned underwater systems.

For manned applications additional testing may be required.

Area of application will be evaluated during approval of classified objects.

The foam complies with the applicable requirements of DNV and is compatible to the coating and/or adhesive.

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

Type Approval documentation

Tests carried out

Type Testing carried out in accordance with Type Approval documentation.

Marking of product

Product shall be marked with manufacturer's name, type designation, density, dimension, HCP, as applicable.

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.

Assessed production sites

Gurit Americas Inc.,
555 Blv Poirier, Magog, Quebec J1X7L1,
Canada

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.

A production site with a valid approval of manufacturer (AoM) certificate for material in question is exempted from the obligation concerning periodical and renewal assessments.

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