Certificate no.:
TAK00002DH

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Syntactic Foam

with type designation(s)
SUBTEC®11500 SUBSEA SYNTACTIC MATERIAL

issued to
Base Materials Ltd
Whetstone, Leicestershire, United Kingdom

is found to comply with
DNV rules for classification – Underwater technology Pt.2 Sec.5 Materials and welding for UWT systems
DNV rules for classification – Naval vessels

Application:

Buoyancy material for subsea application.

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

Issued at **Hamburg** on **2024-07-22**
This Certificate is valid until **2029-07-21**.
DNV local unit: **UK & Ireland CMC & VMC**

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 300,000 USD.

Product description

SUBTEC®11500 SUBSEA SYNTACTIC MATERIAL: hollow glass microspheres embedded in an epoxy matrix.

The following manufacturer's specified values are confirmed by type testing:

Properties	Test Method	SUBTEC®11500	Unit	value
Density (nominal)	ASTM D1622	650	kg/m^3	msv[1]
Density (range)	ASTM D1622	617 - 683	kg/m^3	-
Hydrostatic crush pressure (HCP)[3]	ASTM D2736	1379	bar	msmv[2]
Water absorption[4]	ASTM D570	≤2	%	-

Notes:
1: manufacturers specified value
2: manufacturers specified minimum value
3: aged with 300 hydrostatic pressure cycles to 1167 bar
4: immersed static at 1167 bar for 24 hours at 4°C and cyclic, 300 cycles within 7 days at 10°C)

Application/Limitation

Production of syntactic foam as buoyancy material for application in underwater technology and naval submarines.

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* and *WA*.

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.

Approved production site

Base Materials Ltd
Unit 18 - 20, Ashville Way
Ashville Trading Estate
Whetstone,
Leicestershire
United Kingdom

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