



Certificate No:
TAE00004HR

TYPE APPROVAL CERTIFICATE

This is to certify:

That the **Low Voltage Cable**

with type designation(s)

MARINE BICC - Halogen free EPR insulated Braid LSZH SHF1 or SHF2 or SHF2 MUD 250V

Issued to

Ducab

Dubai, United Arab Emirates

is found to comply with

DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

Control and Instrumentation.

Flame retardant in bunch Cat. A. Halogen free. Low smoke.

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Rated voltage (V) 150/250

Temp. class (°C) 90

Issued at **Høvik** on **2023-01-14**

This Certificate is valid until **2028-01-13**.

DNV local station: **Dubai**

for **DNV**

Approval Engineer: **Ivar Bull**

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Frederik Tore Elter
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 251

Revision: 2021-03

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Page 1 of 3

Manufacturing place

Ducab M1 or M2, Mussafah
Abu Dhabi
UAE

Product description

Type: MARINE BICC - Halogen free EPR insulated Braid LSZH SHF1 or SHF2 or SHF2 MUD 250V

Construction:

Conductor: Plain or tinned copper Class 2 or Class 5
Insulation: EPR
Inner covering: Lapped or extruded
Individual screen (if any)*: Aluminium/polyester tape with tinned copper drain wire (IS type)
Collective screen (if any)*: Aluminium/polyester tape with tinned copper drain wire (OS type)
Metal covering: Plain/tinned copper wire braid or copper alloy wire braid or galvanized steel wire braid
Outer sheath: SHF1 (LSZH) or SHF2 or SHF2 MUD

*Either individual or collective screen (or both) shall be provided. If copper braid metal armour, it provides the function of collective screen.

No of cores:	Cross sectional area [mm ²]
8, 16, 20, 24 pairs	0,75
1, 2, 4, 7, 10, 14, 19, 27, 37 pairs	0,50 0,75 1 1,5 2,5
1, 2, 4, 7 Triples	0,50 0,75 1 1,5 2,5
1, 3, 7 Quads	0,50 0,75 1 1,5 2,5

Application/Limitation

The requirements of SOLAS Amendments Chapter II-1, Part D, Reg. 45, 5.2 (provision to be taken to limit Fire Propagation along Bundles of Cables or Wires) are fulfilled without any additional measures.

Type Approval documentation

Tests carried out

	Release	General description	Limitation
DNV-CP-0399	2021-08	Class Programme Electric cables	
IEC 60092-350	2020-01	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-360	2021-01	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables.	I
IEC 60092-376	2017-05	Electrical installations in ships - Part 376: Cables for control and instrumentation circuits 150/250 V (300 V)	
IEC 60331-1/2	2018-03	Fire resistance / Circuit integrity – Test for method for fire with shock at temperature of at least 830°C for cables rated up to and including 0,6/1 kV	120 min
IEC 60332-3-22	2018-07	Tests on electric and optical fibre cables under fire conditions – Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A	Charred portion of sample does not exceed 2,5m above bottom edge of burner.

	Release	General description	Limitation
IEC 60754-1	2019-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Low Halogen: <0,5% Halogen
IEC 60754-2	2019-11	Test on gases evolved during combustion of materials from cables - Part 2: Determination of acidity (by pH measurement) and conductivity	Halogen free: pH > 4,3 Conductivity < 10µS/mm
IEC 61034-1/2	2019-11	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance ≥60%
NEK TS606 Ed6	2022-03	Cables for offshore installations - halogen-free low smoke flame-retardant / fire-resistant (HFFR-LS). Technical specification.	Mud resistance test: IRM903 100°C 7d. Calcium Bromide 70°C 56d. EDC 95/11 70°C 56d

Marking of product

DUCAB (B or C) – MARINE BICC – EPR/Braid/SHF1 or SHF2 or SHF2 MUD - No of conductors x size - 250 V – IEC 60332-3-22 – Year of manufacture

A = Ducab Jebel Ali, Dubai

B = Ducab M1, Abu Dhabi

C = Ducab M2, Abu Dhabi

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine tests (RT) and selected type tests (ref. to applicable class programs) checked (if not available these tests shall be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years.

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE