DNV·GL

Certificate No:
TAE0000147

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Power Cable

with type designation(s)
SABIX BL 412 C FRNC

Issued to
SAB Bröckskes GmbH & Co. KG
Viersen, Germany

is found to comply with
DNV GL rules for classification – Ships and offshore units

Application :

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

Voltage class (kV) **0,6/1**
Temp. class (°C) **90**

This Certificate is valid until **2021-03-17**.

Issued at **Hamburg** on **2016-06-01**

for **DNV GL**

DNV GL local station: **Essen**

Approval Engineer: **Carsten Hunsalz**

Duy Nam Le
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.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Job Id: **262.1-022025-1**
Certificate No: **TAE0000147**

Product description

Halogen free flame retardant energy cable with screen

Rated voltage: 0,6 / 1 kV
Maximum operating conductor temperature: 90° C
Conductor: Bare or tinned copper, fine stranded class 5 or class 6
Insulation. FRNC Thermoplastic insulation acc. EN 50290-2-26
Screen/Armour: Copper or steel wire braiding
Outer sheath: FRNC Thermoplastic jacket acc. EN 50290-2-27

Number of cores: Cross-sectional area:
2 to 61 0,5 mm² to 50 mm²

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 Bunches of Cables or Wires) are fulfilled without any additional measures.

Type Approval documentation

Test reports: SAB 121/11 dated 15.03.2011, SAB 041/11 dated 25.01.2011, VDE 493200-9021-0001/144041 dated 21.01.2011, Currenta 09/1302, 09/1303, 09/1304, 09 /1298, 09/1299, 09/1300, 09 /1310, 09/1311, 09/1312

Tests carried out

Standard	Release	General description	Limitation
IEC 60092-353	2011-08	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	
EN 50290-2-26	2007-6	Common design rules and construction – Halogen free flame retardant insulation compounds	
EN 50290-2-27	2007-6	Communication cables Part 2-27: Common design rules and construction Halogen free flame retardant thermoplastic sheathing compounds	
IEC 60332-1-2	2004-07	Tests on electric and optical fibre cables under fire conditions – Part 1-2:Test for vertical flame propagation for a single insulated wire or cable	Procedure for 1 kW pre-mixed flame
IEC 60332-3-22	2009-02	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	Bunch test Category A
IEC 60332-3-25	2009-02	Tests on electric and optical fibre cables under fire conditions – Part 3-25: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category D	Bunch test Category D

Standard	Release	General description	Limitation
IEC 60754-1	2011-11	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	2011-11	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	2005-04	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance ≥60%

Marking of product

>0000m **SAB** • BRÖCKSKES • D-Viersen • SABIX BL 412 C FRNC n x A mm² - IEC 60332-3-22 - 0,6/1kV DNV GL … CE identno.

Legend:
> 0000m meter marking
n: number of cores/pairs
A: cross section
…: space for type approval marking of other classification societies (ABS, LR, RINA, RS)

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.

Assessment to be performed at least every second year.

END OF CERTIFICATE