

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Low Voltage Cable

with type designation(s)

AFITOX EVBC, AFITOX EVS, AFITOX EV BMIBC, AFITOX EV BMCBC, AFITOX EV BMIS, AFITOX EV BMCS, AFITOX EV BMMBC, AFITOX EV BMMS, AFITOX EVBC-F, AFITOX EVS-F, AFITOX EV BMIBC-F, AFITOX EV BMCBC-F, AFITOX EV BMIS-F, AFITOX EV BMCS-F, AFITOX EV BMMBC-F, AFITOX EV BMMS-F

Issued to

NEXANS BRASIL S/A.
Rio de Janeiro, Brazil

is found to comply with

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

Application :

Instrumentation and communication

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

Type	Rated voltage (V)	Temp. class (°C)	AFITOX	150/250	90
AFITOX EVBC	150/250	90	EVBC-F		
AFITOX EVS	150/250	90	AFITOX EVS-	150/250	90
AFITOX EV	150/250	90	F		
BMIBC			AFITOX EV	150/250	90
AFITOX EV	150/250	90	BMIBC-F		
BMCBC			AFITOX EV	150/250	90
AFITOX EV	150/250	90	BMCBC-F		
BMIS			AFITOX EV	150/250	90
AFITOX EV	150/250	90	BMIS-F		
BMCS			AFITOX EV	150/250	90
AFITOX EV	150/250	90	BMCS-F		
BMMBC			AFITOX EV	150/250	90
AFITOX EV	150/250	90	BMMBC-F		
BMMS			AFITOX EV	150/250	90
			BMMS-F		

Issued at **Høvik** on **2018-09-21**

This Certificate is valid until **2021-12-31**.

for **DNV GL**

DNV GL local station: **Station Rio de Janeiro, Ship**

Approval Engineer: **Georgy Abramenko**

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Marta Alonso Pontes
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.



Product description

AFITOX – EV BC & EVS & EV BMCBC & EV BMIBC & EV BMCS & EV BMIS & EV BMMBC & EV BMMS & EV BC-F & EVS-F & EV BMCBC-F & EV BMIBC-F & EV BMCS-F & EV BMIS-F & EV BMMBC-F & EV BMMS-F
 150/250 V

Construction:
 Conductors: Tinned or Plain, stranded copper class 2 or class 5(-F)
 Core insulation: HEPR
 Screen: Al/polyester tape with drain wire. For type BM
 Inner covering: Lapped or extruded
 Metal covering: Galv. Steel or Plain (or Tinned) copper wire braid
 Outer sheath: SHF2

Number of pairs	Conductor cross section [mm ²]
1, 2, 3, 4, 6, 7, 8, 10, 12, 14, 16, 18, 19, 20, 24, 30	0.75, 1.0, 1.5, 2.5

Number of triads	Conductor cross section [mm ²]
1, 4, 7, 10, 14, 19	1.0, 1.5

Number of cores x conductor cross-section [mm ²]
12x3x1,5+1x2x1,5

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

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
IEC 60092-350	2014-08	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-360	2014-04	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables.	
IEC 60092-376	2017-05	Cables for control and instrumentation circuits 150/250 V (300 V)	
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 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

Job Id: **262.1-026380-1**
Certificate No: **TAE00002S9**

Standard	Release	General description	Limitation
IEC 61034-1/2	2013-07 2013-09	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance $\geq 60\%$

Marking of product

NEXANS - AFITOX - EV or EVBC / EVS / EV BMCBC / EV BMIBC / EV BMCS / EV BMIS / EV BMMBC / EV BMMS / EV BC-F / EVS-F / EV BMCBC-F / EV BMIBC-F / EV BMCS-F / EV BMIS-F / EV BMMBC-F / EV BMMS-F – size – 150/250 V - IEC 60332-3-22

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