



MARINE DIVISION

Certificate number: 22554/B0 BV

File number: ACE 01/755/02

Product code: 25011

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

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## TYPE APPROVAL CERTIFICATE

*This certificate is issued to*

**NEXANS BRASIL S A**

Rio de Janeiro. - BRAZIL

*for the type of product*

**CABLES (LOW VOLTAGE)**

0.6/1 kV - Power, Lighting and Control Cables.  
Type: AFITOX SM, SM BC/SM AS, XP, XP BC/XP S

**Requirements:**

- Bureau Veritas Rules for the Classification of Steel Ships.
- IEC 60092-350/351/353/359, IEC 60228, IEC 60331-21,
- IEC 60332-1, IEC 60332-3-22 (Cat. A), IEC 60754-1/2, IEC 61034-1/2.

*This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

**This certificate will expire on: 15 Oct 2017**

**For BUREAU VERITAS,**

At BV RIO DE JANEIRO, on 15 Oct 2012,

Francisco Assis



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION:

Flame retardant, fire resistant (SM family only), low smoke and halogen free Marine and Offshore power, lighting and control cables.

#### **Common specifications:**

Rated voltage:	0.6/1 kV
Temperature class:	90°C
Flame retardant:	IEC 60332-1 & IEC 60332-3-22 (Cat. A)
Fire resistant:	IEC 60331-21 (SM family only)
Low smoke:	IEC 61034-1/2
Halogen free:	IEC 60754-1/2

#### **Construction:**

Conductor:	Stranded plain or tinned annealed copper conductor class 2 flexible or not and class 5
Fire protection:	Mica tape (SM family only)
Insulation:	Thermoset compound (HF XLPE)
Inner covering:	Extruded or lapped inner covering (BC, AS and S type)
Armour:	Metal protective covering with copper or galvanized steel braid (BC, AS and S type)
Sheath:	Halogen Free thermoplastic compound (SHF1)

#### **Product Range:**

Type	Number of cores	Cross-Section. area (mm <sup>2</sup> )	Remarks
<b>AFITOX SM</b>	1	4 to 240	Flame retardant according to: IEC 60332-1 & IEC 60332-3-22 (Cat.A) Fire resistant according to IEC 60331-21 Without metal covering
	2	1,5 to 120	
	3	1,5 to 240	
	4	1,5 to 120	
	4 to 37	1,0	
	5 to 37	1,5	
<b>AFITOX SM BC/SM AS</b>	1	4 to 240	Flame retardant according to: IEC 60332-1 & IEC 60332-3-22 (Cat.A) Fire resistant according to IEC 60331-21 With metal covering
	2	1,5 to 25	
	3	1,5 to 240	
	4	1,5 to 120	
	4 to 37	1,5	
<b>AFITOX XP</b>	1	4 to 240	Flame retardant according to: IEC 60332-1 & IEC 60332-3-22 (Cat.A) Without metal covering
	2	1,5 to 120	
	3	1,5 to 240	
	4	1,5 to 120	
	4 to 37	1,0	
	5 to 37	1,5	
<b>AFITOX XP BC/XP S</b>	1	4 to 240	Flame retardant according to: IEC 60332-1 & IEC 60332-3-22 (Cat.A) With metal covering
	2	1,5 to 150	
	3	1,5 to 240	
	4	1,5 to 120	
	4 to 37	1,0	
	5 to 37	1,5	
	5 to 37	2,5	

### 2. DOCUMENTS AND DRAWINGS:

**FICAP:** General Data Sheet for Halogen-Free Electric Cables, Ref. EPF-9721 Rev.05 dated May 2005.

**3. TEST REPORTS:****FICAP:**

Type Testing Report (AFITOX XP): N° HPE-0103 dated 26/03/03 (witnessed by BV's Surveyor)  
Type Testing Report (AFITOX XP BC): N° HPE-0203 dated 26/03/03 (witnessed by BV's Surveyor)  
Type Testing Report (AFITOX SM BC / SM AS): N° HPE-0403 dated 26/03/03 (witnessed by BV's Surveyor)  
Type Testing Report (AFITOX SM): N° HPE-0903 dated 03/04/03 (witnessed by BV's Surveyor)  
Type Testing Report (AFITOX SM): N° HPE-1003 dated 03/04/03 (witnessed by BV's Surveyor)  
Type Testing Report N° RE 0895 dated 28/08/08 (witnessed by BV's Surveyor).

**Nexans:**

Test Report N°RE0305, dated 07/07/2012 (witnessed by BV's Surveyor).

**4. APPLICATION / LIMITATION:**

4.1 - BUREAU VERITAS Rules for the Classification of Steel Ships and IEC 60092 series.

4.2 - Approval valid for units having to comply with IMO Resolution A649 (The "MODU Code").

**5. PRODUCTION SURVEY REQUIREMENTS:**

5.1 - The **AFITOX** cables are to be manufactured, examined and tested by **NEXANS BRASIL S. A.** in accordance with the type described in this certificate and Bureau Veritas Rules for the Classification of Steel Ships.

5.2 - Arrangements shall be made for a Society's Surveyor to attend the relevant tests and examinations at manufacturer's works or to perform the relevant audits when an alternative survey scheme (BV Mode I) has been agreed. Relevant Bureau Veritas certificate will be issued after satisfactory completion of the procedure.

**6. MARKING OF PRODUCT:**

The cable shall be marked on the surface outer sheath, in a durable legible and visible manner, with the following information through the length of cable:

- 1) - Voltage grade
- 2) - Cable symbol and temperature class
- 3) - Number of conductors and conductor size
- 4) - Applicable standard(s) to flame retardant and fire resistance if any
- 5) - Manufacturer's name or trade mark
- 6) - Year of manufacture

**7. OTHERS:**

7.1 - This approval is given on the understanding that the Society reserves the right to require check tests to be carried out on the cables at any time and that:

**NEXANS BRASIL S. A.**  
**Av. Coronel Phidias Tavora 100**  
**Km 2 Da Via Dultra**  
**21535-510 Pavuna**  
**BRAZIL**

will accept full responsibility for informing shipbuilders, shipowners or their sub-contractors of the proper methods of use and general maintenance of the cables and the conditions of this approval.

7.2 - This Certificate supersedes the Type Approval Certificate N°22554/A0 BV issued on 03 Dec. 2009 by the Society to **FICAP S.A.**

\*\*\* END OF CERTIFICATE \*\*\*