



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **E-13172**

This is to certify that the
Electric Power Cable

with type designation(s)
AFUMEX FIRS NAU-XTA 0,6/1 kV, AFUMEX FIRS NAU-XTCUA 0,6/1 kV

Issued to
PRYSMIAN SPAIN, S.A.
Vilanova i la Geltrú Barcelona, Spain

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

IEC 60092-353 (2011-08)
IEC 60331-21 (1999-04)
IEC 60332-3-22 (2009-02)
IEC 60754-1/2 (2011-11)
IEC 61034-2 (2005-04)

Application
General power and lighting. Control.
Fire resistant. Flame retardant Cat. A. Halogen free. Low smoke.

Type	Voltage class (kV)	Temp. class (°C)
AFUMEX FIRS NAU-XTCUA 0,6/1 kV	0,6/1	90
AFUMEX FIRS NAU-XTA 0,6/1 kV	0,6/1	90

This Certificate is valid until **2018-06-30**.

Issued at **Høvik** on **2014-04-29**

for **Det Norske Veritas AS**

DNV local station: **Barcelona**

Approval Engineer: **Ivar Bull**

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Marit Laumann
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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

Product description

Type: AFUMEX FIRS NAU-XTCUA & AFUMEX FIRS NAU-XTA 0,6/1 kV
 Construction:
 Conductors: Plain or tinned, stranded copper. Class 2 or class 5
 Core insulation: Mica-tape + HF XLPE
 Inner covering: Tape or Halogen free compound (for cables > 10 mm²)
 Metal covering: Plain or tinned copper wire braid (TCU) or Galv. steel wire braid (T)
 Outer sheath: SHF1

Number of cores x conductor cross-section	Overall diameter
mm ²	mm
1 x 1	6,3
1 x 1,5	6,7
1 x 2,5	7,0
1 x 4	7,6
1 x 6	7,9
1 x 10	9,2
1 x 16	12,3
1 x 25	14,0
1 x 35	16,0
1 x 50	16,5
1 x 70	18,6
1 x 95	20,6
1 x 120	22,3
1 x 150	24,3
1 x 185	26,7
1 x 240	29,4
1 x 300	32,2
2 x 1	9,8
2 x 1,5	10,7
2 x 2,5	11,2
2 x 4	12,5
2 x 6	13,6
2 x 10	15,7
2 x 16	19,7
2 x 25	23,4
2 x 35	26,4
2 x 50	28,2
2 x 70	32,2

Number of cores x conductor cross-section	Overall diameter
mm ²	mm
2 x 95	36,3
2 x 120	40,4
3 x 1	10,4
3 x 1,5	11,3
3 x 2,5	11,8
3 x 4	13,3
3 x 6	14,4
3 x 10	17,0
3 x 16	21,5
3 x 25	25,4
3 x 35	28,2
3 x 50	29,7
3 x 70	34,9
3 x 95	39,2
3 x 120	43,0
3 x 150	47,8
3 x 185	52,9
4 x 1	11,4
4 x 1,5	12,2
4 x 2,5	13,0
4 x 4	14,4
4 x 6	16,3
4 x 10	18,8
4 x 16	23,5
4 x 25	27,8
4 x 35	31,0
4 x 50	32,7

Number of cores x conductor cross-section	Overall diameter
mm ²	mm
4 x 70	38,6
4 x 95	43,4
4 x 120	47,8
5 x 1,5	13,1
7 x 1,5	14,6
10 x 1,5	18,9
12 x 1,5	19,7
14 x 1,5	20,7
16 x 1,5	21,1
19 x 1,5	23,1
20 x 1,5	23,7
24 x 1,5	25,9
27 x 1,5	26,7
30 x 1,5	27,6
37 x 1,5	29,9
5 x 2,5	14,2
7 x 2,5	15,8
10 x 2,5	20,2
12 x 2,5	20,8
14 x 2,5	21
16 x 2,5	23,2
19 x 2,5	24,4
20 x 2,5	26,1
24 x 2,5	28,8
27 x 2,5	29,3
30 x 2,5	30,3
37 x 2,5	32,9

Application/Limitation

This type of cable is fire resistant in accordance with IEC Publication 60331.

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

Data sheets
 Test reports

Tests carried out

Standard	Issued	General description	Limitation
IEC 60092-350	2008-02	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-351	2004-04	Insulating materials for shipboard and offshore units, power, control, instrumentation, telecommunication and data cables	
<i>IEC 60092-353</i>	<i>2011-08</i>	<i>Single and multicore non-radial field power cables with extruded solid insulation for rated Voltages of 1 kV and 3 kV</i>	
IEC 60092-359	1999-08	Sheathing materials for shipboard power and telecommunication cables	
<i>IEC 60331-21</i>	<i>1999-04</i>	<i>Tests for electric cables under fire conditions – Circuit integrity – Part 21: Procedures and requirements – Cables of rated voltage up to 0,6/1,0 kV</i>	<i>90 min. test</i>
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	
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 – Determination of the amount of halogen acid gas	Low Halogen: <0,5% Halogen
IEC 60754-2	2011-11	Test on gases evolved during combustion of materials from cables – Determination of the degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity	Halogen free: pH > 4,3 Conductivity < 10µS
IEC 61034-1/2	2005-04	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke

Marking of product

PRYSMIAN SAP – AFUMEX FIRS NAU XTCUA or AFUMEX FIRS NAU XTA - size - 0,6/1 kV – IEC 60331-21 – IEC 60332-3-22 - Lot No.

Periodic assessment

The scope of the retention/renewal survey 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.

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routine Tests (RT) checked
- (if RT- and PST-test reports are not available, tests according to PST and RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensure traceability between manufacturer's product type marking and Type Approval Certificate.

Survey shall be performed at least every second year.

END OF CERTIFICATE