TYPE APPROVAL CERTIFICATE

Certificate no.:
TAE00002B0
Revision No:
4

This is to certify:

that the Low Voltage Cable

with type designation(s)
AFUMEX FIRS NAU XA,
AFUMEX FIRS NAU XHA,
AFUMEX FIRS NAU XOA

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

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

Control and instrumentation. Fire resistant.
Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Type	Rated voltage (V)	Temp. class (°C)
AFUMEX FIRS NAU XA	150/250	90
AFUMEX FIRS NAU XHA	150/250	90
AFUMEX FIRS NAU XOA	150/250	90

Issued at **Høvik** on **2024-12-19**

This Certificate is valid until **2029-12-21**.
DNV local unit: **Area NB/CMC Iberia**

Approval Engineer: **Ivar Bull**

for **DNV**
Digitally Signed By: Sneen, Ståle
Location: DNV Høvik, Norway

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

Type:
AFUMEX FIRS NAU XA 150/250
AFUMEX FIRS NAU XHA 150/250

Construction: (Type designation letters in brackets)
Conductors: Plain or tinned, stranded copper. Class 2 or class 5
Core insulation: Mica-tape + HF XLPE (X and FIRS)
Screen(if any): Individual screen of AL/PE tape with tinned copper drain wire
H=Individual screen
Outer sheath: SHF1 (A)

AFUMEX FIRS NAU XA, AFUMEX FIRS NAU XHA

No of Elements:	Cross sectional area [mm^2]
2 to 27 Single cores	1, 1,5 2,5
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 pairs	0,75 1,0 1,5
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 triples	0,75 1,0 1,5

AFUMEX FIRS NAU XOA

No of Elements:	Cross sectional area [mm^2]
1, 2, 3, 4, 5, 7, 8, 10, 12, 16, 19, 24 pairs	0,75

Application/Limitation

This type of cable is fire resistant in accordance with IEC Publication 60331-1/2.

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

Data sheets: HOM11-A dated 09/12
Test reports.

Tests carried out

Standard	Release	General description	Limitation
DNV CP-0399	2021-08	Electric cables.	
IEC 60092-350	2020-01	Electrical installations in ships - Part 350: 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	
IEC 60092-376	2017-05	Cables for control and instrumentation circuits 150/250 V (300 V)	
IEC 60331-21	1999-04	Tests for electric cables under fire conditions – Circuit integrity – Part 21: Procedures and requirements – Cables of rated voltage up to and including 0,6/1,0 kV	120 min + 15 min cooling down time
IEC 60331-1/2	2018-03	Tests for electric cables under fire conditions - Circuit integrity - Part 1/2: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV and with an overall diameter exceeding / not exceeding 20 mm	120 minutes.

Standard	Release	General description	Limitation
IEC 60332-1-2(2004) AMD1(2015)	2015-07	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.	Flame retardant small scale. Distance between the lower edge of the top support and the onset of charring > 50 mm and charring not to extend downwards > 540 mm from the lower edge of the top support.
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.
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 – Part 1: Test apparatus Part 2: Test procedure and requirements	Low smoke Light transmittance >60%

Marking of product

PRYSMIAN SAP AFUMEX FIRS NAU XA or AFUMEX FIRS NAU XHA or AFUMEX FIRS NAU XOA - size – 150/250 V – IEC 60331-1/2 - IEC 60332-3/A - Lot No.

SAP = Santa Perpetua Plant.

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