

TYPE APPROVAL CERTIFICATE

This is to certify:**That the High Voltage Cable**

with type designation(s)

HFX-A/Cu, HFX-A/Cu-VFD 3,6/6 kV, HFX-A/Cu, HFX-A/Cu-VFD 6/10 kV, HFX-A/Cu, HFX-A/Cu-VFD 8,7/15 kV, HFX-A/Cu, HFX-A/Cu-VFD 12/20 kV, HFX-A/Cu 18/30 kV

Issued to

**Prysmian Tianjin Cables Co., Ltd.
Tianjin, China**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Type	Rated voltage (kV)	Temp. class (°C)
HFX-A/Cu, HFX-A/Cu-VFD 3,6/6 kV	3,6/6	90
HFX-A/Cu, HFX-A/Cu-VFD 6/10 kV	6/10	90
HFX-A/Cu, HFX-A/Cu-VFD 8,7/15 kV	8,7/15	90
HFX-A/Cu, HFX-A/Cu-VFD 12/20 kV	12/20	90
HFX-A/Cu 18/30 kV	18/30	90

Issued at **Hamburg** on **2019-11-13**This Certificate is valid until **2024-11-12**.for **DNV GL**DNV GL local station: **Tianjin**Approval Engineer: **Carsten Hunsalz****Arne Schaarmann**
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

Construction:
Conductors: Plain or tinned, stranded copper class 2 or class 5
Core insulation: HF-XLPE
Filler (if any): Halogen-free compound
Inner covering: Halogen-free compound
Metal covering: Plain or tinned copper wire braid
Outer sheath: SHF1

Type HFX-A/Cu 1 core, 3 cores and VFD – 3,6/6 kV.

Number of cores x conductor cross-section mm ²
1x35
1x50
1x70
1x95
1x120
1x150
1x185
1x240
1x300
1x400
1x500
1x630

Number of cores x conductor cross-section mm ²
3x35
3x50
3x70
3x95
3x120
3x150
3x185
3x240
3x300

Number of cores x conductor cross-section mm ²
3x35+3x6
3x50+3x10
3x70+3x16
3x95+3x16
3x120+3x25
3x150+3x25
3x185+3x35
3x240+3x50

Type HFX-A/Cu 1 core, 3 cores and VFD – 6/10 kV.

Number of cores x conductor cross-section mm ²
1x35
1x50
1x70
1x95
1x120
1x150
1x185
1x240
1x300
1x400
1x500
1x630

Number of cores x conductor cross-section mm ²
3x35
3x50
3x70
3x95
3x120
3x150
3x185
3x240
3x300

Number of cores x conductor cross-section mm ²
3x35+3x6
3x50+3x10
3x70+3x16
3x95+3x16
3x120+3x25
3x150+3x25
3x185+3x35
3x240+3x50

Type HFX-A/Cu 1 core, 3 cores and VFD – 8,7/15 kV.

Number of cores x conductor cross-section mm ²
1x35
1x50
1x70
1x95
1x120
1x150
1x185
1x240
1x300
1x400
1x500
1x630

Number of cores x conductor cross-section mm ²
3x35
3x50
3x70
3x95
3x120
3x150
3x185
3x240
3x300

Number of cores x conductor cross-section mm ²
3x35+3x6
3x50+3x10
3x70+3x16
3x95+3x16
3x120+3x25
3x150+3x25
3x185+3x35
3x240+3x50

Type HFX-A/Cu 1 core, 3 cores and VFD – 12/20 kV.

Number of cores x conductor cross-section mm ²
1x35
1x50
1x70
1x95
1x120
1x150
1x185
1x240
1x300
1x400
1x500
1x630

Number of cores x conductor cross-section mm ²
3x35
3x50
3x70
3x95
3x120
3x150
3x185
3x240
3x300

Number of cores x conductor cross-section mm ²
3x35+3x6
3x50+3x10
3x70+3x16
3x95+3x16
3x120+3x25
3x150+3x25
3x185+3x35
3x240+3x50

Type HFX-A/Cu 1 core, 3 cores 18/30 kV.

Number of cores x conductor cross-section mm ²
1x50
1x70
1x95
1x120
1x150
1x185
1x240
1x300

Number of cores x conductor cross-section mm ²
1x400
1x500
1x630
3x50
3x70
3x95
3x120

Number of cores x conductor cross-section mm ²
3x150
3x185
3x240
3x300

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.

High voltage power.

Flame retardant in bunch Cat. A. Halogen free. Low smoke.

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 60092-354	2014-08	Electrical installations in ships - Part 354: Single- and three-core power cables with extruded solid insulation for rated voltages 6 kV (Um = 7,2 kV) up to 30 kV (Um = 36 kV)	
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 60332-1-2	2015-07	Tests on electric cables under fire conditions. Test for vertical flame propagation for a single insulated wire or cable.	
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	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
IEC 60684-2	2011-08	Clause 45.2 Methods of determination of low levels of fluorine	Fluorine content < 0,1%
IEC 61034-1/2	2013-06	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%

Marking of product

Job Id: **262.1-017272-2**
Certificate No: **TAE00003SN**

PRYSMIAN HFX-A/Cu 3,6/6kV or HFX-A/Cu-VFD 3,6/6kV or HFX-A/Cu 6/10kV or HFX-A/Cu-VFD 6/10kV or HFX-A/Cu 8,7/15kV or HFX-A/Cu-VFD 8,7/15kV or HFX-A/Cu 12/20kV or HFX-A/Cu-VFD 12/20kV or HFX-A/Cu 18/30kV - Size - IEC 60332-3-22 - Year. - LOT number

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) checked (if not available tests according to RT to 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