DNV·GL

Certificate No:
TAE00003MD

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Low Voltage Cable

with type designation(s)
TCX(I)331 &(C)331 & TCX(I+C)331, TCX(I)331 & (C)331 & TCX(I+C)331 Flexiship

Issued to
NEXANS FRANCE
Mehun Sur Yevre, Cher, France

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

Application :

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

Type	Rated voltage (V)	Temp. class (°C)
TCX(I)331 &(C)331 & TCX(I+C)331	150/250	90
TCX(I)331 & (C)331 & TCX(I+C)331 Flexiship	150/250	90

Issued at **Høvik** on **2019-12-18**
This Certificate is valid until **2024-08-06**.
DNV GL local station: **France CMC**

Approval Engineer: **Ivar Bull**

for **DNV GL**

Trond Sjåvåg
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.

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Job Id: **262.1-006567-22**
Certificate No: **TAE00003MD**

Product description

Type: TCX(I)331 &(C)331 & TCX(I+C)331,
TCX(I)331 & (C)331 & TCX(I+C)331 Flexiship
Construction:
Conductors: Plain or tinned stranded copper class 2 or class 5
Core insulation: XLPE
Inner covering: Lapped (opt. extruded)
Metal covering: Plain or tinned copper wire braid
Outer sheath: SHF1

No of cores:	Cross sectional area [mm^{2}]
1, 2, 3, 4, 5, 7, 10, 12, 14, 19, 24, 27, 30, 37 Pairs	0,5, 0,75 1,0 1,5 2,5
1, 2, 3, 4, 7, 10, 14, 24, 27, 30, 37 Triples	0,5, 0,75, 1,0 1,5 2,5

Application/Limitation

This type of cable is fire resistant according to IEC 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

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 60092-376	2017-05	Cables for control and instrumentation circuits 150/250 V (300 V)	
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 60331-1	2018-03	Tests for electric cables under fire conditions - Circuit integrity - Part 1: 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 20 mm	Minimum 120 min
IEC 60331-2	2018-03	Tests for electric cables under fire conditions - Circuit integrity - Part 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 not exceeding 20mm	Minimum 120 min
IEC 60332-1-2	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 –Procedure for 1 kW pre-mixed flame	

Standard	Release	General description	Limitation
IEC 60332-3-22	2018-07	Tests on electric 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	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 – 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/mm
IEC 60684-2	2011-08	Clause 45.2 Methods of determination of low levels of fluorine	HF max 0,1%
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 >60%

Marking of product

NEXANS 279 TCX(I)331 &(C)331 & TCX(I+C)331 or TCX(I)331 & (C)331 & TCX(I+C)331 Flexiship – size – 150/250 V – 90C – IEC 60092-376 – IEC 60331-1/2[120min] – IEC 60332-3-22 – CE(Symbol) Order-No.

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