

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Lightweight Electric Cable

with type designation(s)
L-2X(ST)C & 2X CH 230 V

Issued to

LEONI Special Cables GmbH
Friesoythe, Germany

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.

Voltage class (kV) 230

Temp. class (°C) 90

This Certificate is valid until **2021-07-01**.

Issued at **Hamburg** on **2016-11-30**

DNV GL local station: **Leer**

for **DNV GL**

Approval Engineer: **Carsten Hunsalz**

Duy Nam Le
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

Type: L-2X(ST)C 1 x 4 x 0,75
2x CH 9 x 1 x 1,0 VZN SW 230 V
Conductors: Stranded copper class 5
Core insulation: XLPE
Inner covering: Plastic tape
Screen: Aluminated foil
Metal covering: Tinned, Copper wire braid
Outer sheath: SHF1

Number of cores x conductor cross-section	Overall diameter
mm ²	mm
1 x 4 x 0,75 + 9 x 1 x 1,0	13,0±0,8

Application/Limitation

Only to be used for FRNC Windscreen Wiper.

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
DNVGL-CP-0400	2015-12	DNV GL Type approval program for Lightweight electric cables	
Wiper K 06	2004-08		
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 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

LEONI L – L-2X CH 1 x 4 x 0,75 (ST) (C) + 9 x 1 x 1,0 VZN FRNC 230 V

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



Job Id: **262.1-023107-1**
Certificate No: **TAE00001JH**

- 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