DNV·GL

Certificate No:
**TAE00002HV**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Electric Power Cable**

with type designation(s)
**C(s)Gl (Fp 0,5…10 mm²)**

Issued to
**LEONI HighTemp Solutions GmbH**
**Halver, 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.**
**Rated voltage (kV) 0,3/0,5**
**Temp. class (°C) 130 / 180 / 200 / 260**

Issued at **Hamburg** on **2018-05-29**
This Certificate is valid until **2023-05-28**.
DNV GL local station: **Essen**

Approval Engineer: **Carsten Hunsalz**

for **DNV GL**

**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.

Job Id: **262.1-026812-1**
Certificate No: **TAE00002HV**

## Product description

ETFE, FEP or PTFE insulated and sheathed connection cables

| | |
|---|---|
| Type: | C(s)Gl (Fp 0,5...10 mm²) |
| Rated voltage : | 300 / 500 V |
| Operating temperature : | - 65°C up to 130°C ETFE or FEP (20000h) copper plain<br>- 65°C up to 180°C FEP (20000h) copper tinned<br>- 65°C up to 200°C PTFE or FEP (20000h) copper silvered<br>- 65°C up to 260°C PTFE (20000h) copper nickel-plated |
| Conductor : | Copper- plain / tinned / silvered / nickel-plated, class 5 |
| Core insulation : | ETFE, FEP or PTFE |
| Inner sheath: | Narrow mesh fiberglass weave |
| Braid / screen: | Copper- plain / tinned / silvered / nickel-plated or Galvanisiert steel, steel V4A |

| Number of cores: | Cross-sectional area: |
|---|---|
| 2 to 12 | 0,5 - 2,5 mm² |
| 1 to 4 | 6 - 10 mm² |
| 1 to 5 | 4 mm² |

## Application/Limitation

Measures for limitation of the propagation of fire along cable bundles are required (fire stops)

Heat-resistant cables (wires) for use e.g. at diesel engines, turbines, boilers

## Type Approval documentation

| | |
|---|---|
| Test Report: | LEONI dated 14.08.2012 and 21.09.2012 |
| Data Sheet: | LEONI Article 18983 Version 3.0 dated 14.08.2012 |

## Tests carried out

| Standard | Issued | General description | Limitation |
|---|---|---|---|
| NEMA HP3 /HP4 | 2012 | Standard for Electrical & Electronic PTFE /FEP Insulated High Temperature Hook-Up Wire | |
| VDE 0207-6 | 2004-10 | Insulating and sheath mixtures for cables and insulated wires | |
| VG 95218-29 | 2016-11 | Cables and insulated wires - Part 29: Cables, longitudinal watertight, transversal watertight | only transversal watertight tested |
| ISO 14752 | 2007 | Chemical resistance | |
| IEC 60228 | 2004-11 | Conductors of insulated cables | |
| IEC 60332-1-2 | 2015-07 | Tests on electric and optical fibre cables under fire conditions –<br>Part 1-2: Test for vertical flame propagation for a single insulated wire or cable –Procedure for 1 kW pre-mixed flame | |

## Marking of product

Example: LEONI HighTemp Solutions GmbH - C(s)Gl (Fp 10 mm²) – 300/500V

## 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