DNV·GL

Certificate No:
**TAE00002CD**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Lightweight Electric Cable**

with type designation(s)
**CL90F-SU 0,6/1 kV, CL90F-PF & -TF & -PI & -TI & -PB & -TB 250 V**

Issued to
**Tyco Electronics UK Ltd**
**Swindon, United Kingdom**

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

## Application :

**Fire resistant cable for general power and lighting. Control. Instrumentation and communication.**
**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) |
|---|---|---|
| **CL90F-SU 0,6/1 kV** | **0,6/1** | **90** |
| **CL90F-PF & -TF & -PI & -TI & -PB & -TB 250 V** | **0,15/0,25** | **90** |

Issued at **Høvik** on **2018-01-01**
This Certificate is valid until **2022-12-31**.
DNV GL local station: **London**

Approval Engineer: **Ivar Bull**

for **DNV GL**

**Andreas Kristoffersen**
**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.


© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Job Id: **262.1-015897-6**
Certificate No: **TAE00002CD**

## Product description

CL90F -*SU 0,6/1 kV
CL90F -*PF & -*TF & -*PI & -*TI & -*PB & -*TB 150/250 V

| | |
|---|---|
| Conductors: | Tinned, stranded copper |
| Core insulation: | Mica tape + Halogen-Free Flame Retarded Thermoplastic compound |
| Individual screen (I) (if any): | Aluminium polyester tape |
| Inner sheath: | SHF1 |
| Metal covering: | Copper or tin plated copper or copper alloy or galvanised steel wire braid |
| Outer sheath: | SHF1 |

CL90F-SU 0,6/1 kV

| No of elements: | Cross sectional area [mm2] |
|---|---|
| 2, 3, 4, 5, 7, 10, 12, 14, 19, 24, 27, 37 cores | 1,0 1,5 2,5 |
| 2, 3, 4, 5 cores | 4, 6, 10, |

CL90F -*PF & -*TF & -*PI & -*TI & -*PB & -*TB 150/250 V

| No of elements: | Cross sectional area [mm2] |
|---|---|
| 1, 2, 3, 4, 7, 8, 10, 12, 14, 15, 16, 19, 24, 27, 32, 37 pairs | 0,50 0,75 1,0 1,5 2,5 |
| 1, 2, 3, 4, 7, 8, 10, 12, 15, 16, 19, 24, 32 triples | 0,50 0,75 1,0 1,5 2,5 |

## 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

## Tests carried out

| | Release | General description | Limitation |
|---|---|---|---|
| DNVGL-CP-0400 | 2015-12 | Class Programme Lightweight electric cables | |
| 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 60331-1/2 | 2009-05 | Fire resistance / Circuit integrity – Test for method for fire with shock at temperature of at least 830ºC for cables rated up to and including 0,6/1 kV | Minimum 120 min+15 min cooling down time |
| IEC 60332-3-22 | 2009-02 | 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 61034-1/2 | 2013-07<br>2013-09 | Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements | Low smoke<br>Light transmittance ≥60% |

## Marking of product

Tyco Electronics - CL90F -*SU size – 0,6/1 kV – IEC 60331-1/2 - IEC 60332-3-22 or
Tyco Electronics - CL90F-*PF or -*TF or -*PI or -*TI or -*PB or -*TB - size – 150/250 V – IEC 60331-1/2 - IEC 60332-3-22

## 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