

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Electric Power Cable**

with type designation(s)

CEF82 NA, CEF92 NA, CEV82 NA, CEV92 NA

Issued to

Changzhou Marine Cable Co., Ltd. (CMC)
CHANGZHOU, JIANGSU, 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.****Rated voltage (kV) 0,6/1****Temp. class (°C) 90**Issued at **Hamburg** on **2019-03-21**This Certificate is valid until **2024-03-20**.for **DNV GL**DNV GL local station: **Nanjing CMC**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

Type: CEF82 NA 0,6/1 kV CEF92 NA 0,6/1 kV
CEV82 NA 0,6/1 kV CEV92 NA 0,6/1 kV

Construction:
Conductors: Tinned stranded copper
Core insulation: Mica-tape/EPR
Inner sheath: SE1 (CEF.. Type), ST2 (CEV.. Type)
Metal covering: Galv. steel wire (92) or tinned copper wire braid (82)
Outer sheath: ST2

Number of cores x conductor cross-section mm2	Number of cores x conductor cross-section mm2	Number of cores x conductor cross-section mm2	Number of cores x conductor cross-section mm2	Number of cores x conductor cross-section mm2
CEF(V)82/92	2 x 1,0	3 x 10	24 x 1,0	4 x 2,5
1 x 1,0	2 x 1,5	3 x 16	27 x 1,0	5 x 2,5
1 x 1,5	2 x 2,5	3 x 25	30 x 1,0	7 x 2,5
1 x 2,5	2 x 4	3 x 35	33 x 1,0	10 x 2,5
1 x 4	2 x 6	3 x 50	37 x 1,0	12 x 2,5
1 x 6	2 x 10	3 x 70		14 x 2,5
1 x 10	2 x 16	3 x 95	4 x 1,5	16 x 2,5
1 x 16	2 x 25	3 x 120	5 x 1,5	19 x 2,5
1 x 25	2 x 35	3 x 150	7 x 1,5	24 x 2,5
1 x 35	2 x 50	3 x 185	10 x 1,5	27 x 2,5
1 x 50	2 x 70		12 x 1,5	30 x 2,5
1 x 70	2 x 95	4 x 1,0	14 x 1,5	33 x 2,5
1 x 95	2 x 120	5 x 1,0	16 x 1,5	37 x 2,5
1 x 120		7 x 1,0	19 x 1,5	
1 x 150	3 x 1,0	10 x 1,0	24 x 1,5	
1 x 185	3 x 1,5	12 x 1,0	27 x 1,5	
1 x 240	3 x 2,5	14 x 1,0	30 x 1,5	
1 x 300	3 x 4	16 x 1,0	33 x 1,5	
	3 x 6	19 x 1,0	37 x 1,5	

Application/Limitation

General power and lighting. Control.

This type of cable is fire resistant in accordance with IEC Publication 60331.

The requirements of SOLAS Amendments Chapter II-1, Part D, Reg. 45, 5.2 (provision to be taken to limit Fire Propagation along Bundles of Cables or Wires) are fulfilled without any additional measures.

Flame retardant Cat. A.

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 60092-353	2016-09	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 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 60332-3-22	2017-07	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	Charred portion of sample does not exceed 2,5m above bottom edge of burner.
IEC 60331-21	1999-04	Tests for electric cables under fire conditions – Circuit integrity – Part 21: Procedures and requirements – Cables of rated voltage up to and including 0,6/1,0 kV	Minimum 120 min + 15 min cooling down time
IEC 60331-1	2018-03	Fire resistance / Circuit integrity – Test for method for fire with shock at temperature of at least 830°C for cables rated up to and including 0,6/1 kV	For cables with an overall diameter exceeding 20 mm

Marking of product

Example:

Changzhou Marine Cable CO., Ltd. – CEF82 NA - size – 0,6/1 kV – IEC 60332-3-22 – IEC 60331-1/21

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.



Job Id: **262.1-007592-5**
Certificate No: **TAE00003CW**

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