

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Power Cable

with type designation(s)
CJ85/NC

Issued to

**Zhongtian Technology Industrial Wire & Cable System
Co.,Ltd.
Nantong, China**

is found to comply with

**Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske
Veritas' Offshore Standards
IEC 60092-353 (2011-08)
IEC 60331-1 (2009-05)
IEC 60331-21 (1999-04)
IEC 60332-3-22 (2009-02)
IEC 60754-1/2 (2011-11)
IEC 61034-1/2 Ed. 3.1 (2013-06)**

Application :

**General power and lighting
Fire resistant
Flame retardant according to cat. A
Halogen free
Low smoke**

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed
by DNV GL.**

**Voltage class (kV) 0,6/1
Temp. class (°C) 90**

This Certificate is valid until **2019-07-05**.

Issued at **Høvik** on **2015-07-06**

DNV GL local station: **Shanghai**

Approval Engineer: **Georgy Abramenko**

for **DNV GL**

**Marit Laumann
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

CJ85/NC	0,6/1kV
Conductor	Copper class 2 or 5
Fire resisting layer	Mica tape
Insulation	XLPE
Tape	Non-hygroscopic binder tape
Metal covering	Copper wire braid
Outer sheath	SHF2

No. of cores x Conductor cross section mm2	No. of cores x Conductor cross section mm2	No. of cores x Conductor cross section mm2	No. of cores x Conductor cross section mm2	No. of cores x Conductor cross section mm2
1 x 1,0	2 x 1,0	3 x 6	16 x 1,0	30 x 1,5
1 x 1,5	2 x 1,5	3 x 10	19 x 1,0	33 x 1,5
1 x 2,5	2 x 2,5	3 x 16	24 x 1,0	37 x 1,5
1 x 4	2 x 4	3 x 25	27 x 1,0	4 x 2,5
1 x 6	2 x 6	3 x 35	30 x 1,0	5 x 2,5
1 x 10	2 x 10	3 x 50	33 x 1,0	7 x 2,5
1 x 16	2 x 16	3 x 70	37 x 1,0	10 x 2,5
1 x 25	2 x 25	3 x 95	4 x 1,5	12 x 2,5
1 x 35	2 x 35	3 x 120	5 x 1,5	14 x 2,5
1 x 50	2 x 50	3 x 150	7 x 1,5	16 x 2,5
1 x 70	2 x 70	3 x 185	10 x 1,5	19 x 2,5
1 x 95	2 x 95	4 x 1,0	12 x 1,5	24 x 2,5
1 x 120	2 x 120	5 x 1,0	14 x 1,5	27 x 2,5
1 x 150	3 x 1	7 x 1,0	16 x 1,5	30 x 2,5
1 x 185	3 x 1,5	10 x 1,0	19 x 1,5	33 x 2,5
1 x 240	3 x 2,5	12 x 1,0	24 x 1,5	37 x 2,5
1 x 300	3 x 4	14 x 1,0	27 x 1,5	

Application/Limitation

Fire resistant according to IEC 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.

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
IEC 60092-350	2008-02	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-353	2011-08	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	0,6/1 kV

Standard	Release	General description	Limitation
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 <i>with shock</i> at temperature of at least 830°C for cables rated up to and including 0,6/1 kV	Minimum 90 min
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	90 min. test
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 60684-2	2011-08	Flexible insulating sleeving – Part 2: Methods of test Clause 45.1 Methods of determination of low levels of Chlorine, and/or Bromine and/or iodine Clause 45.2 Methods of determination of low levels of fluorine	HCl + HBr + HI max 0,5% [0,014% can be detected] HF max 0,1% [0,02% can be detected]
IEC 61034-1/2	2013-06	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke

Marking of product

Zhongtian technology industrial cable system co Ltd. – CJ85/NC – IEC 60332-3-22 IEC 60331-1

Periodical assessment

The scope of the retention/renewal survey is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials. The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and 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.

Survey shall be performed at least every second year.

END OF CERTIFICATE