

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Low Voltage Cable**with type designation(s)
CHJJP85/NSC, CHJFP86/NSC

Issued to

**Baosheng Science & Technology Innovation Co., Ltd.
Yangzhou, 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.****Voltage class (V) 150/250****Temp. class (°C) 90**Issued at **Hamburg** on **2017-02-28**This Certificate is valid until **2022-02-27**.DNV GL local station: **Nanjing**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: CHJJP85/NSC, CHJFP86/NSC

Conductor	Tinned stranded copper conductor class 2
Core insulation	Mica tape +XLPE
Individual screen	Tinned copper wire braid
Inner sheath	PF - SHF1 or PJ - SHF2
Metal covering	8 - Tinned copper wire braided
Outer sheath	5 - SHF2 or 6 - SHF1

Number of cores x conductor cross-section	Overall diameter nom.	Overall diameter max.
mm ²	mm	mm
1 x 2 x 0,5	11.16	12.83
2 x 2 x 0,5	18.09	20.80
3 x 2 x 0,5	19.22	22.10
4 x 2 x 0,5	20.97	23.07
5 x 2 x 0,5	22.86	25.15
7 x 2 x 0,5	24.68	27.15
10 x 2 x 0,5	31.27	34.40
12 x 2 x 0,5	32.41	35.65
14 x 2 x 0,5	33.93	37.32
16 x 2 x 0,5	35.86	39.45
19 x 2 x 0,5	37.68	41.45
24 x 2 x 0,5	44.44	48.88
27 x 2 x 0,5	45.35	49.89
30 x 2 x 0,5	47.61	52.37
37 x 2 x 0,5	51.53	56.68
48 x 2 x 0,5	59.03	64.93
1 x 2 x 0,75	11.87	13.65
2 x 2 x 0,75	19.67	22.62
3 x 2 x 0,75	20.83	22.91
4 x 2 x 0,75	22.87	25.16
5 x 2 x 0,75	24.77	27.25
7 x 2 x 0,75	27.14	29.85
10 x 2 x 0,75	34.44	37.88
12 x 2 x 0,75	35.53	39.08
14 x 2 x 0,75	37.57	41.33
16 x 2 x 0,75	39.54	43.49
19 x 2 x 0,75	41.74	45.91
24 x 2 x 0,75	49.71	54.68
27 x 2 x 0,75	50.73	55.80
30 x 2 x 0,75	52.67	57.94
37 x 2 x 0,75	57.01	62.71
48 x 2 x 0,75	65.50	72.05

Number of cores x conductor cross-section	Overall diameter nom.	Overall diameter max.
mm ²	mm	mm
1 x 2 x 1	12.19	14.02
2 x 2 x 1	20.48	22.53
3 x 2 x 1	21.52	23.67
4 x 2 x 1	23.65	26.02
5 x 2 x 1	25.97	28.57
7 x 2 x 1	28.10	30.91
10 x 2 x 1	35.72	39.29
12 x 2 x 1	37.21	40.93
14 x 2 x 1	38.99	42.89
16 x 2 x 1	41.21	45.33
19 x 2 x 1	43.51	47.86
24 x 2 x 1	51.63	56.79
27 x 2 x 1	52.88	58.17
30 x 2 x 1	54.90	60.39
37 x 2 x 1	59.42	65.36
48 x 2 x 1	68.29	75.12
1 x 2 x 1,5	13.32	15.32
2 x 2 x 1,5	22.22	24.44
3 x 2 x 1,5	23.39	25.73
4 x 2 x 1,5	25.86	28.45
5 x 2 x 1,5	28.07	30.88
7 x 2 x 1,5	30.79	33.87
10 x 2 x 1,5	39.35	43.29
12 x 2 x 1,5	40.78	44.86
14 x 2 x 1,5	43.43	47.77
16 x 2 x 1,5	45.89	50.48
19 x 2 x 1,5	48.42	53.26
24 x 2 x 1,5	56.99	62.69
27 x 2 x 1,5	58.35	64.19
30 x 2 x 1,5	60.40	66.44
37 x 2 x 1,5	65.57	72.13
48 x 2 x 1,5	75.48	83.03

Number of cores x conductor cross-section mm ²	Overall diameter nom. mm	Overall diameter max. mm
1 x 2 x 2,5	14.18	16.31
2 x 2 x 2,5	23.94	26.33
3 x 2 x 2,5	25.61	28.17
4 x 2 x 2,5	28.13	30.94
5 x 2 x 2,5	30.75	33.83
7 x 2 x 2,5	33.53	36.88
10 x 2 x 2,5	43.64	48.00
12 x 2 x 2,5	45.04	49.54
14 x 2 x 2,5	47.56	52.32
16 x 2 x 2,5	50.28	55.31
19 x 2 x 2,5	53.07	58.38
24 x 2 x 2,5	62.66	68.93
27 x 2 x 2,5	64.15	70.57
30 x 2 x 2,5	66.60	73.26
37 x 2 x 2,5	72.27	79.50
48 x 2 x 2,5	83.17	91.49

Application/Limitation

This type of cable is fire resistant in accordance with IEC Publication 60331-1/21

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

Standard	Issued	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 60092-360	2014-04	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables.	
IEC 60092-376	2003-05	Electrical installations in ships - Part 376: Cables for control and instrumentation circuits 150/250 V (300 V)	
IEC 60331-1	2009-02	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	
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	

Job Id: **262.1-021990-1**
Certificate No: **TAE00001TT**

Standard	Issued	General description	Limitation
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 60332-1-2	2006-07	Tests on electric cables under fire conditions. Test for vertical flame propagation for a single insulated wire or cable.	
IEC 60754-1	2011-11	Test on gases evolved during combustion of materials from cables – Determination of the amount of halogen acid gas	Low Halogen: <0,5% Halogen
IEC 60754-2	2011-11	Test on gases evolved during combustion of materials from cables – Determination of the degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity	Halogen free: pH > 4,3 Conductivity < 10µS
IEC 60684-2	2011-08	Clause 45.2 Methods of determination of low levels of fluorine	HF max 0,1%
IEC 61034-1/2	2013-07/09	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke

Marking of product

Example:

Baosheng Science & Technology Innovation Co., Ltd.–CHJPJP85/NSC–size–voltage rating–
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) 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