DNV·GL

Certificate No:
TAE0000281

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Power Cable

with type designation(s)
CEPF86/SC, CEPF96/SC

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.
Rated voltage (kV) 0,6/1
Temp. class (°C) 90

Issued at **Hamburg** on **2017-09-12**
This Certificate is valid until **2022-09-11**.
DNV GL local station: **Nanjing**

Approval Engineer: **Holger Jansen**

for **DNV GL**

Joannis Papanuskas
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.

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Product description

Type: CEPF86/SC 0,6/1 kV

Conductor:	Copper class 2
Insulation:	EPR
Inner sheath:	SHF1
Metallic covering:	Copper wire braid
Outer sheath:	SHF1

Type: CEPF96/SC 0,6/1 kV

Conductor:	Copper class 2
Insulation:	EPR
Inner sheath:	SHF1
Metallic covering:	Galvanized steel wire braid
Outer sheath:	SHF1

CEPF86/SC only		
Conductor number x cross section	Cable diameter nom	Cable diameter max
mm^2	mm	mm
1 x 1	10,81	11,37
1 x 1,5	11,08	11,64
1 x 2,5	11,56	12,12
1 x 4	12,27	12,85
1 x 6	13,32	13,90
1 x 10	14,25	14,83
1 x 16	15,90	16,50
1 x 25	17,82	18,48
1 x 35	18,96	19,62
1 x 50	21,10	21,84
1 x 70	23,10	23,86
1 x 95	25,60	26,42
1 x 120	27,41	28,25
1 x 150	29,75	30,67
1 x 185	32,24	33,22
1 x 240	35,65	36,71
1 x 300	39,28	40,42

CEPF86/SC, CEPF96/SC

Conductor number x cross section	Cable diameter nom	Cable diameter max
mm^2	mm	mm
2 x 1	15,02	15,82
2 x 1,5	15,76	16,58
2 x 2,5	16,72	17,54
2 x 4	17,74	18,56
2 x 6	19,28	20,14
2 x 10	21,14	22,00
2 x 16	24,40	25,28
2 x 25	28,24	29,24
2 x 35	30,92	31,96
2 x 50	34,80	35,96
2 x 70	39,40	40,62
2 x 95	44,80	46,14
2 x 120	48,22	49,58
3 x 1	15,57	16,40
3 x 1,5	16,35	17,20
3 x 2,5	17,39	18,24
3 x 4	18,69	19,56
3 x 6	20,12	21,01
3 x 10	22,33	23,24
3 x 16	25,83	26,76
3 x 25	30,15	31,23
3 x 35	32,81	33,91
3 x 50	36,97	38,19
3 x 70	42,26	43,54
3 x 95	47,62	49,04
3 x 120	51,50	52,95
3 x 150	56,29	57,89
3 x 185	61,84	63,58

Conductor number x cross section	Cable diameter nom	Cable diameter max
mm^2	mm	mm
4 x 1,0	16,65	17,56
5 x 1,0	17,61	18,57
7 x 1,0	18,83	19,87
10 x 1,0	22,64	23,92
12 x 1,0	23,19	24,50
14 x 1,0	24,24	25,62
16 x 1,0	25,43	26,89
19 x 1,0	26,45	27,97
24 x 1,0	30,26	32,02
27 x 1,0	30,77	32,56
30 x 1,0	31,86	33,72
33 x 1,0	33,05	34,99
37 x 1,0	34,47	36,47
4 x 1,5	17,31	18,21
5 x 1,5	18,34	19,30
7 x 1,5	19,84	20,90
10 x 1,5	23,92	25,22
12 x 1,5	24,51	25,84
14 x 1,5	25,63	27,03
16 x 1,5	26,70	28,16
19 x 1,5	28,20	29,76
24 x 1,5	32,08	33,86
27 x 1,5	32,83	34,66
30 x 1,5	34,39	36,29
33 x 1,5	35,46	37,42
37 x 1,5	36,56	38,58
4 x 2,5	18,47	19,37
5 x 2,5	20,03	21,03
7 x 2,5	21,28	22,34
10 x 2,5	26,04	27,36
12 x 2,5	26,71	28,06
14 x 2,5	28,15	29,59
16 x 2,5	29,35	30,85
19 x 2,5	30,60	32,16
24 x 2,5	35,76	37,58
27 x 2,5	36,38	38,23
30 x 2,5	37,87	39,81
33 x 2,5	39,47	41,47
37 x 2,5	40,92	43,00

Application/Limitation

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.

General power and lighting. Flame retardant in bunch Cat.A. Halogen free. Low smoke.

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 installation in ships – Part 353: Power cables for rated voltages 1kV and 3kV	*0,6/1 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	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: Tethods of test	Halogen contents as specified in standard
IEC 61034-1/2	2013-06	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Light transmittance > 60%

Marking of product

Baosheng Science & Technology Innovation Co., Ltd. – CEPF86/SC or CEPF96/SC – 0,6/1 kV – size – 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