DNV·GL

Certificate No:
TAE00000FG

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Low Voltage Cable

with type designation(s)
P1 RFOU, P1/P8 RFOU

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

Application :

General power and lighting.

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

Type	Voltage class (V)	Temp. class (°C)
P1 RFOU	0,6/1 kV	90
P1/P8 RFOU	0,6/1 kV	90

This Certificate is valid until **2019-10-01**.

Issued at **Høvik** on **2015-10-02**

for **DNV GL**

DNV GL local station: **Nantong CMC**

Approval Engineer: **Georgy Abramenko**

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.

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Job Id: **262.1-013634-1**
Certificate No: **TAE00000FG**

Product description

Construction:

Conductors:	Tinned or plain stranded copper class 5
Core insulation:	EPR
Bedding / Filler (if any):	Halogen free compound
Armor / Screen	Copper wire braid
Outer sheath:	SHF2 or SHF MUD for P1/P8 RFOU cables

No of Elements:	Cross sectional area [mm^2]
1	1,5 2,5 4 6 10 16 25 35 50 70 95 120 150 185 240 300
2	1,5 2,5 4 6 10 16 25 35 50 70 95 120 150 185 240 300
3	1,5 2,5 4 6 10 16 25 35 50 70 95 120 150 185 240 300
4	1,5 2,5 4 6 10 16 25 35 50 70 95 120 150 185 240 300
2ph. + 1E	(25+16) (35+16) (35+25) (50+25) (70+35) (95+50) (120+70) (150+95) (185+95) (240+120)
3ph. + 1E	(25+16) (35+16) (35+25) (50+25) (70+35) (95+50) (120+70) (150+95) (185+95) (240+120)
4ph. + 1E	(25+16) (35+16) (35+25) (50+25) (70+35) (95+50) (120+70) (150+95) (185+95) (240+120)
5 7 10 12 14 16 19 24 27 30 37 44 48	1,5 2,5 4

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.

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 60092-353	2011-08	Single and multicore non-radial field power cables with extruded solid insulation for rated Voltages of 1 kV and 3 kV	
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	Halogen free:

Standard	Issued	General description	Limitation
		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	pH > 4,3 Conductivity < 10µS
IEC 61034-1/2	2013-07/09	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke
NEK 606 Ed. 4	2009-05	Cables for offshore installations. Halogen-free and/or mud resistant. Technical specification.	Mud resistance test: IRM903 100□C 7d. Calcium Bromide 70□C 56d. Carbo Sea 70□C 56d or EDC 95/11 70□C 56d
IEC 60092-350	2008-02	Annex E: Procedure 8.9.1: Temperature requirements	Cold bend: -40°C Cold impact: -35°C

Marking of product

Zhongtian Technology Industrial Wire and Cable System Co. LTD – P1 RFOU – 0,6/1 kV - IEC 60332-3-22 Cat. A – Year, or
Zhongtian Technology Industrial Wire and Cable System Co. LTD – P1/P8 RFOU – 0,6/1 kV – IEC 60332-3-22 Cat. A – Year

Periodical assessment

The scope of the Periodical assessment 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 Periodical assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routine Tests (RT) checked
- (if RT- and PST-test reports are 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
- Ensure traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment shall be performed at least every second year.

END OF CERTIFICATE