DNV·GL

Certificate No:
TAE00002JM

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Power Cable

with type designation(s)
0.6/1 kV (FX-)UX P108

Issued to
TMC Co., Ltd
Cheonan-si Chungcheongnam-do, Korea

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft
IEC 60092-353 (2016-09)
IEC 60332-3-22 (2009-02)
IEC 60754-1/2 (2011-11)
IEC 61034-1/2 Ed. 3.1 (2013-06)
NEK TS 606 (2016)

Application :

Earthing wire, bonding wire and single wire. Halogen free. Low smoke.

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 **Busan** on **2018-01-11**
This Certificate is valid until **2022-12-31**.
DNV GL local station: **Seoul**

for **DNV GL**

Approval Engineer: **Dong Ho Park**

Michael Jost Auf der Stroth
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: **262.1-003434-5**
Certificate No: **TAE00002JM**

Product description

Type: 0.6/1 kV (FX-)UX P108

Conductor: Tinned stranded copper class 2 (UX) or class 5 (FX-UX)
Sheath: SHF2 or SHF2 Mud (Category a, b, c, d)

Number of cores x conductor cross-section mm²
UX
1 x 1,0
1 x 1,5
1 x 2,5
1 x 4
1 x 6
1 x 10
1 x 16
1 x 25
1 x 35
1 x 50
1 x 70

Number of cores x conductor cross-section mm²
1 x 95
1 x 120
1 x 150
1 x 185
1 x 240
1 x 300
FX-UX
1 x 1,0
1 x 1,5
1 x 2,5
1 x 4
1 x 6

Number of cores x conductor cross-section mm²
1 x 10
1 x 16
1 x 25
1 x 35
1 x 50
1 x 70
1 x 95
1 x 120
1 x 150
1 x 185
1 x 240
1 x 300

Application/Limitation

The requirement of SOLAS Chapter II-1 Part D Reg.45, 5.2 to limit Fire Propagation along Bunches of Cables or Wires are fulfilled without any additional measures.

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	Power cables for rated voltages 1kV and 3kV	
IEC 60092-360	2014-04	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation, 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	2014-05	Test on gases evolved during combustion of materials from cables – Determination of the amount of halogen acid gas	Low halogen: ≤ 0.5%
IEC 60754-2	2014-05	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 condctivity	Halogen free: pH ≥ 4,3 Conductivity ≤ 10 µS
IEC 61034-1/2 Amd.1	2013-06	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke: Min. 60% light transmittance
IEC 60684-2	2011-08	Flexible insulating sleeving-Part 2:Methods of test	Fluorine content: < 0.1%
CSA C22.2 No.0.3	2005	Cold bending test at -40°C and cold impact test at -35°C	
ASTM D 2863	2009	Standard test method for measuring the minimum	32 min.

Standard	Release	General description	Limitation
		oxygen concentration to support Candle-like combustion of plastics	

Marking of product

0.6/1 kV – (FX-)UX – Size – P108 – (E, M, H or H-M) – IEC 60332-3 CAT-A – TMC – Year of manufacture – Length

Periodical assessment

The scope of the retention/renewal survey is to verify that the conditions stipulated for the Type Approval Certificate are complied with and that no alterations are made to the design and/or the material of product.

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Check of the results from Production Sample Tests(PST) and Routine Tests(RT) (if not available, PSTand RT are to be carried out)
- Review of type approval documentation
- Review of possible changes in design, material 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