Certificate no.:
TAE00004W1

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Electric Power Cable

with type designation(s)
BUXU 0.6/1 kV

issued to
TMC Co., Ltd
Cheonan-si, Chungcheongnam-do, **Korea, Republic of**

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

General power and lighting.

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

Rated voltage (kV)	**0.6/1**
Temp. class (°C)	**90**

Issued at **Busan** on **2024-05-16**

This Certificate is valid until **2029-05-15**.

for **DNV**

DNV local unit: **Seoul**

Approval Engineer: **Dong Ho Park**

Product description

Type: BUOU 0.6/1 kV

Conductors:	Stranded tinned annealed copper wires, class 2
Core insulation:	Mica tape + EPR
Inner sheath:	SHF2
Outer sheath:	SHF2

Sheath code according to NEK 606 (2016)
"no marking": category a
E: category b
M: category b & c
H: category b & d
H-M: category b & c & d

Category a – Minimum required oil resistance
Category b – Enhanced Oil resistant
Category c – Mud resistant
Category d – Hydraulic / gear Oil resistant

Number of cores x conductor cross-section mm^2	Number of cores x conductor cross-section mm^2	Number of cores x conductor cross-section mm^2	Number of cores x conductor cross-section mm^2
1 x 1.5	2 x 1.5	3 x 1.5	4 x 1.5
1 x 2.5	2 x 2.5	3 x 2.5	4 x 2.5
1 x 4	2 x 4	3 x 4	4 x 4
1 x 6	2 x 6	3 x 6	4 x 6
1 x 10	2 x 10	3 x 10	4 x 10
1 x 16	2 x 16	3 x 16	4 x 16
1 x 25	2 x 25	3 x 25	4 x 25
1 x 35	2 x 35	3 x 35	4 x 35
1 x 50	2 x 50	3 x 50	4 x 50
1 x 70	2 x 70	3 x 70	4 x 70
1 x 95	2 x 95	3 x 95	4 x 95
1 x 120	2 x 120	3 x 120	4 x 120
1 x 150	2 x 150	3 x 150	4 x 150
1 x 185	2 x 185	3 x 185	4 x 185
1 x 240	2 x 240	3 x 240	4 x 240
1 x 300	2 x 300	3 x 300	4 x 300

Application/Limitation

This cable is fire resistant according to IEC 60331.

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 60092-353	2016	Power cables for rated voltages 1kV and 3kV	
IEC 60331-1	2018	Fire resistance / Circuit integrity – Test method for fire *with shock* at temperature of at least 830ºC for cables rated up to and including 0,6/1 kV	@ 830 ˚C (120 min) or 1000 ˚C (90 min) w/shock

Standard	Release	General description	Limitation
IEC 60331-2	2018	Tests for electric cables under fire conditions - Circuit integrity - Part 2: Test method for fire with shock at a temperature of at least 830°C for cables of rated voltage up to and including 0,6/1,0 kV and with an overall diameter not exceeding 20mm	@ 830 ˚C (120 min) or 1000 ˚C (90 min) w/shock
IEC 60332-3-22	2018	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	2019	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	2019	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 ≥4,3pH, ≤10µS/mm
IEC 61034-1/2	2019	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke >60%
NEK 606	2016	Cables for offshore installations	Oil & Mud resistant – Category a/b/c/d
IEC 60092-350 Annex E	2020	Cold bend test and impact test for low temperature behaviour	Cold bend: -40°C Cold impact: -35°C
ASTM D2863	2019	Standard test method for measuring the minimum oxygen concentration to support candle-like combustion of plastics (Oxygen index)	Oxygen index ≥32%

Marking of product

Voltage rating – Type designation – Size – Sheath code – Applicable standard – TMC – Year of manufacture – Length

Ex) 0.6/1kV BUXU 50SQMM×3C E IEC 60332-3 CAT-A IEC 60331-1(120) TMC 2024 0001M

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) and selected type tests (ref. to applicable class programs) checked (if not available these tests shall 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