

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Electric Power Cable**with type designation(s)
BUOU 0,6/1 kV

Issued to

PT. JEMBO CABLE COMPANY Tbk.
Tangerang, Indonesia

is found to comply with

DNV GL rules for classification – Ships and offshore units**DNV GL rules for classification – High speed and light craft****Application :****General power and lighting, Control.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Voltage class (kV) 0,6/1**
Temp. class (°C) 90This Certificate is valid until **2021-05-25**.Issued at **Høvik** on **2016-05-26**DNV GL local station: **Certification of Materials - Singapore**for **DNV GL**Approval Engineer: **Ivar Bull**-----
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.

Product description

Type: BUOU 0,6/1 kV
Conductors: Plain copper class 2
Core insulation: Mica tape + XLPE
Inner sheath: SHF1
Metal Covering: Tinned annealed copper wire braid
Outer sheath: SHF1

No of cores:	Cross sectional area [mm ²]
1	1,5 - 300
2 or 2+E	1,5 - 185
3 or 3 + E	1,5 - 240
4 or 4+E	1,5 - 185
2, 3, 4, 5, 7, 9, 10, 12, 16, 19, 24, 27, 33, 44	1 1,5 2,5

Application/Limitation

This type of cable is fire resistant according to IEC 60331-1/2

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	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	
IEC 60331-1/2	2009-05	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	Minimum 90 min. test.
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 61034-1/2	2013-07 2013-09	Measurement of smoke density of cables	Light transmittance ≥60%

Job Id: **262.1-018926-1**
Certificate No: **TAE0000109**

Marking of product

PT. JEMBO CABLE COMPANY – BUOU– 0,6/1 kV – 90°C – Size – IEC 60331-1/2 - IEC 60332-3-22 – Lot no.

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 Routines (RT) checked (if 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
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment to be performed at least every second year.

END OF CERTIFICATE