DNV·GL

Certificate No:
TAE000010A

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Low Voltage Cable

with type designation(s)
BIOI (c) 250 V, BIOI (i) 250 V

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 :

Control and instrumentation.

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)
BIOI (c) 250 V	**250**	**90**
BIOI (i) 250 V	**250**	**90**

This Certificate is valid until **2021-05-25**.

Issued at **Høvik** on **2016-05-26**

for **DNV GL**

DNV GL local station: **Certification of Materials - Singapore**

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.

Job Id: **262.1-018926-1**
Certificate No: **TAE000010A**

Product description

Type: BIOI(c) & BIOI (i) 250 V
Conductors: Plain/tinned, stranded copper class 2 or class 5
Core insulation: Mica tape + XLPE
Screen: Al foil w/tinned copper drain wire
Inner sheath: SHF1
Metal Covering: Tinned annealed copper wire braid
Outer sheath: SHF1

No of cores:	Cross sectional area [mm2]
1, 2, 4, 7, 8, 10, 12, 14, 16, 19, 24, 30, 32, 37 Pairs	0,75 & 1,0 & 1,5
1, 2, 4, 7, 8, 10, 12, 14, 16, 19, 24, 30, 32, 37 Triples	0,75 & 1,0 & 1,5

Application/Limitation

This tyype 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	Release	General description	Limitation
IEC 60092-350	2008-02	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 60092-376	2003-05	Cables for control and instrumentation circuits 150/250 V (300 V)	
IEC 60331-1/2	2009-05	Fire resistance / Circuit integrity – Test for method for fire with shock at temperature of at least 830ºC for cables rated up to and including 0,6/1 kV	Minimum 120 min. test.
IEC 60331-21	1999-04	Tests for electric cables under fire conditions – Circuit integrity – Part 21: Procedures and requirements – Cables of rated voltage up to and including 0,6/1,0 kV	Minimum 90 min. test
IEC 60332-3-22	2009-02	Flame retardance in bunch, cat. A	
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 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 < 10µS/mm
IEC 61034-1/2	2013-06	Measurement of smoke density of cables burning under defined conditions –	Light transmittance > 60%

		Test apparatus, procedure and requirements	

Marking of product

PT. JEMBO CABLE COMPANY - BIOI(c) or BIOI(i) – 150/250V – Size – IEC 60331-1/2 – IEC 60332-3-22 – Lot no.

Periodical assessment

The scope of the retention/renewal survey 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 survey 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.

Survey to be performed at least every second year.

END OF CERTIFICATE