

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Electric Power Cable**

with type designation(s)
RFOU P1/P8 0,6/1kV, RFOU EMC 0,6/1kV

Issued to

Tele-Fonika Kable S.A.
Myslenice, Poland

is found to comply with

Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards
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 (2009-05) (P-types only)

Application :

General power and lighting.
Flame retardant in bunch Cat. A. Halogen free. Low smoke.
Mud resistant

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

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

Issued at **Høvik** on **2017-05-31**

This Certificate is valid until **2019-06-30**.

for **DNV GL**

DNV GL local station: **Katowice**

Approval Engineer: **Ivar Bull**

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Andreas Kristoffersen
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 : RFOU P1/P8 0,6/1 kV and RFOU EMC 0,6/1 kV

Construction:

Conductors:	Circular tinned stranded copper conductor class 2 or class 5
Core insulation:	EPR
Inner covering:	Halogen free compound
Metal covering:	Tinned copper wire braid
For EMC cables:	Cu/PET tape under braid
Outer sheath	SHF Mud

No of cores x conductor cross-section mm ²
1X16/2,5*
1X25/4*
1X35/6*
1X50/6*
1X70/10*
1X95/10*
1X120/10*
1X150/10*
1X185/10*
1X240/16*
1X300/16*
2X1,5/4
2X2,5/4
2X4/6
2X6/6
2X10/10
2X16/16
2X25/16
2X35/16*
2X50/25
2X70/35
2X95/50
2X120/70
3X1,5/4
3G1,5
3X2,5/6
3G2,5
3X4/6
3G4
3X6/6
3G6

No of cores x conductor cross-section mm ²
3X10/10
3G10
3X16/16
3G16
3X25/16
3X35/16*
3X50/25
3X70/35
3X95/50
3X120/70
3X240/120
4X1,5/4
4G1,5
4X2,5/6
4G2,5
4X4/6
4G4
4X6/6
4G6
4X10/10
4G10
4X16/16
4G16
4X25/16
4G25
4X35/16*
4G35
4X50/25
4G50
4X70/35
4G70

No of cores x conductor cross-section mm ²
4X95/50
4G95
4X120/70
4G120
5X1,5/6
5G1,5
5X2,5/6
5G2,5
5X4/6
5G4
5G6
5G10
5X16/16
5G16
5G25
5G35
5G50
5X70/35
5G70
5G120
7X1,5/6
7G2,5
12X1,5/10
19X1,5/10
27X1,5/16
37X1,5/16
7X2,5/6
12X2,5/10
19X2,5/10
27X2,5/16
37X2,5/16

* Braid can not be used as protective earth conductor

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 60092-353	2011-08	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	0,6/1 kV
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 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	Charred portion of sample does not exceed 2,5m above bottom edge of burner.
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	2005-04	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%
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

Marking of product

TF KABLE 3 – RFOU P1/P8 or RFOU EMC - 0,6/1kV – Size – 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 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, PST and 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



Job Id: **262.1-015972-3**
Certificate No: **TAE00001WS**

Survey is to be performed at least every second year.

END OF CERTIFICATE