DNV·GL

Certificate No:
**TAE00000WW**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Electric Power Cable**

with type designation(s)
**P1 TFOU 0,6/1 kV, P1/P8 TFOU 0,6/1 kV**

Issued to
## TBEA Deyang Cable Co., Ltd.
**Deyang, China**

is found to comply with
**DNV GL rules for classification – Ships and offshore units**

## Application :

**General power and lighting. Control.**

**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) |
|---|---|---|
| **P1 TFOU 0,6/1 kV** | **0,6/1** | **90** |
| **P1/P8 TFOU 0,6/1 kV** | **0,6/1** | **90** |

This Certificate is valid until **2021-01-20**.

Issued at **Høvik** on **2016-01-21**

for **DNV GL**

DNV GL local station: **Wuhan**

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.


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Job Id: **262.1-011057-2**
Certificate No: **TAE00000WW**

## Product description

Type: P1 TFOU 0,6/1 kV & P1/P8 TFOU 0,6/1 kV

Construction:

| | |
|---|---|
| Conductors: | Tinned, stranded copper class 2 |
| Core insulation: | XLPE |
| Inner covering: | Halogen free thermoset compound |
| Metal covering: | Tinned annealed copper wire braid |
| Outer sheath: | SHF2 or SHF Mud |

| No of cores: | Cross sectional area [mm$^{2]}$ |
|---|---|
| 1 | 1,5 - 400 |
| 2 | 1,5 - 240 |
| 3 | 1,5 – 185 |
| 4 | 1,5 - 150 |
| 5 | 1 - 300 |
| 5, 7, 9, 10, 12, 14, 16, 19, 24, 27, 30, 33, 37 | 1,5 2,5 |

## Application/Limitation

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 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: |
| 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: |
| IEC 61034-1/2 | 2013-07<br>2013-09 | Measurement of smoke density of cables | IEC 61034-1/2 |
| NEK 606 Ed. 4 | 2009 | Cables for offshore installations. Halogen-free and/or mud resistant. Technical specification. | Mud resistance test:<br>IRM903 100°C 7d. |

| Standard | Issued | General description | Limitation |
|---|---|---|---|
| | | | Calcium Bromide 70°C 56d.<br>Oil based mud:<br>Carbo Sea 70°C 56d or<br>EDC 95/11 70°C 56d |

## Marking of product

TBEA Deyang Cable Co., Ltd – P1 TFOU or P1/P8 TFOU – Size – 0,6/1 kV – IEC 60332-3-22 Cat.A –Year

## 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 Routine Tests (RT) checked
- (if RT- and PST-test reports are 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
- Ensure traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment shall be performed at least every second year.

END OF CERTIFICATE