

# TYPE APPROVAL CERTIFICATE

Certificate No:  
**TAE000017J**  
Revision No:  
**1**

## This is to certify:

That the Electric Power Cable

with type designation(s)

**MarineLine YZp & MarineLine+ & Marine(E)Flex 0,6/1 kV, MarineLine YZafp 0,6/1 kV**

Issued to

**B.V. Twentsche Kabelfabriek**  
**Haaksbergen, Netherlands**

is found to comply with

**DNV GL rules for classification – Ships and offshore units**

**DNV GL class programme DNVGL-CP-0399 – Type approval – Electric cables**

## Application :

**General power and lighting.**

**Products approved by this certificate are accepted for installation on all vessels classed by DNV.**

| Type                                                                 | Rated voltage (kV) | Temp. class (°C) |
|----------------------------------------------------------------------|--------------------|------------------|
| <b>MarineLine YZp &amp; MarineLine+ &amp; Marine(E)Flex 0,6/1 kV</b> | <b>0,6/1</b>       | <b>90</b>        |
| <b>MarineLine YZafp 0,6/1 kV</b>                                     | <b>0,6/1</b>       | <b>90</b>        |

Issued at **Høvik** on **2021-07-08**

This Certificate is valid until **2026-06-30**.

for **DNV**

DNV local station: **Netherlands FIS**

Approval Engineer: **Ivar Bull**

.....  
**Marta Alonso Pontes**  
**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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



## Product description

MarineLine YZp 0,6/1 kV,  
MarineLine+ 0,6/1 kV,  
Marine(E)Flex 0,6/1 kV,  
MarineLine YZafp 0,6/1 kV

### Construction:

Conductors: Plain or tinned stranded copper class 2, round or sector shaped or class 5 (MarineFlex)  
Core insulation: XLPE  
Filler: Non hygroscopic tape or Halogen free filler (MarineLine+ and MarineFlex)  
Common screen: Aluminum PE foil (YZafp types only)  
Outer sheath: SHF1

### MarineLine YZp 0,6/1 kV

| No of cores: | Cross sectional area [mm <sup>2</sup> ] |
|--------------|-----------------------------------------|
| 1 -37        | 1 – 2,5                                 |
| 1-5          | 4 – 300                                 |

### MarineLine+ YZp 0,6/1 kV

| No of cores: | Cross sectional area [mm <sup>2</sup> ] |
|--------------|-----------------------------------------|
| 1-5          | 1 – 300                                 |

### Marine(E)Flex YZp 0,6/1 kV

| No of cores: | Cross sectional area [mm <sup>2</sup> ] |
|--------------|-----------------------------------------|
| 1-5          | 10 – 300                                |

### MarineLine YZafp 0,6/1 kV:

| No of cores: | Cross sectional area [mm <sup>2</sup> ] |
|--------------|-----------------------------------------|
| 1-37         | 1 – 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 Bundles of Cables or Wires) are fulfilled without any additional measures.

## Type Approval documentation

### Tests carried out

| Standard                     | Release | General description                                                                                                                                                                        | Limitation                                                                  |
|------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| IEC 60092-350                | 2020-01 | Electrical installations in ships - Part 350: General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications                   |                                                                             |
| IEC 60092-360                | 2021-01 | Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables            |                                                                             |
| IEC 60092-353                | 2016-09 | Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV                                                                                                |                                                                             |
| IEC 60332-1-2:2004+AMD1:2015 | 2004    | Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame | Flame retardant small scale                                                 |
| IEC 60332-3-22               | 2018-07 | 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                  | 2019-11 | Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content                                                                   | Low Halogen:<br><0,5% Halogen                                               |

|               |         |                                                                                                                                                                                                                         |                                                                                                   |
|---------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| IEC 60754-2   | 2019-11 | Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content                                                                                                | Halogen free:<br>pH > 4,3<br>Conductivity < 10µS/mm                                               |
| IEC 60684-2   | 2011-08 | Flexible insulating sleeving – Part 2: Methods of test<br>Clause 45.1 Methods of determination of low levels of chlorine, an/or Bromine and/or iodine<br>Clause 45.2 Methods of determination of low levels of fluorine | HCl + HBr + HJ max 0,5%<br>[0,014% can be detected]<br><br>HF max 0,1%<br>[0,02% can be detected] |
| IEC 61034-1/2 | 2019-11 | Measurement of smoke density of cables burning under defined conditions –<br>Part 1: Test apparatus<br>Part 2: Test procedure and requirements                                                                          | Low smoke<br>Light transmittance >60%                                                             |

### Marking of product

TKF - Size - 0,6/1kV - MarineLine YZp – HALOGEN FREE - {batch nr}  
 TKF - Size - 0,6/1kV - MarineLine+ YZp – HALOGEN FREE - {batch nr}  
 TKF - Size - 0,6/1kV – Marine(E)Flex YZp – HALOGEN FREE - {batch nr}  
 TKF - Size – 0,6/1kV - MarineLine YZafp – HALOGEN FREE {batch nr}

### 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) checked (if not available tests according to 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.

Assessment to be performed at least every second year.

END OF CERTIFICATE