

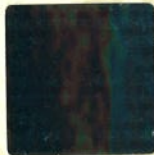


TYPE APPROVAL CERTIFICATE
No. **ELE187316XG/001**

This is to certify that the product below is found to be in compliance with the applicable requirement of the RINA type approval system.

<i>Description</i>	ELECTRIC CABLES
<i>Type</i>	Marine Low Voltage Cables (0.6/1kV and 1.8/3kV)
<i>Applicant</i>	TKF (BV Twentsche Kabelfabriek) P.O. BOX 6 7480 AA HAAKSBERGEN NETHERLANDS
<i>Manufacturer</i>	TKF (BV Twentsche Kabelfabriek)
<i>Place of manufacture</i>	P.O. BOX 6 7480 AA HAAKSBERGEN NETHERLANDS
<i>Reference standards</i>	IEC 60092-350; IEC 60092-351; IEC 60092-353; IEC 60092-359; IEC60092-360; IEC 60332-3-22; IEC 60754-2; IEC 61034-1/2; RINA Rules for the Classification of Ships; RINA Rules for Testing and Certification of Marine Materials an Equipment.

Issued in **HAMBURG** on **January 20, 2017**. *This Certificate is valid until* **January 19, 2022**



RINA Services S.p.A.
Giuseppe Russo

This certificate consists of this page and 1 enclosure

TYPE APPROVAL CERTIFICATE
No. ELE187316XG/001
Enclosure - Page 1 of 1
Marine Low Voltage Cables (0.6/1kV and 1.8/3kV)

Description:

Low voltage power cables for power and lighting applications in all ship areas. High abrasion resistant sheath. Halogen-free and low-smoke , flame-retardant in fire conditions. Different sheath colours.
Maximum conductor temperature: 90°C.

Technical Data/Materials/Components:

Nomenclature of cable designation:

MarineLine:	Unbraided, braided or screened power cables
MarineLine+:	Filled, unbraided or braided power cables
MarineFlex:	Flexible, braided or unbraided power cables
Y:	Crosslinked insulation
O:	Armouring
Z:	Halogen free sheath
af:	Aluminium foil screen
p:	Power cable
+	Cable with HFFR filler
X-FR:	Fire resistant according to IEC 60331-1/2 and 60331-21
EMC:	EMC-screen consists of copper/PETtape and (CU) braiding

This Certificate is Valid for the Following Types :

- MarineLine YZp 0,6/1 kV
- MarineLine YZp X-FR 0,6/1 kV
- MarineLine YZafp 0,6/1 kV
- MarineLine YOZp 0,6/1 kV
- MarineLine YOZp EMC 0,6/1 kV
- MarineLine YOZp 1,8/3 kV
- MarineLine YOZp EMC 1,8/3 kV
- MarineLine YOZp X-FR 0,6/1 kV
- MarineLine YOZp X-FR EMC 0,6/1 kV
- MarineLine+ YZp 0,6/1 kV
- MarineLine+ YZp X-FR 0,6/1 kV
- MarineLine+ YOZp 0,6/1 kV
- MarineLine+ YOZp EMC 0,6/1 kV
- MarineLine+ YOZp EMC 0,6/1 kV (1,8/3kV)
- MarineLine+ YOZp X-FR 0,6/1 kV
- MarineLine+ YOZp X-FR EMC 0,6/1 kV
- MarineFlex YZp 0,6/1 kV
- MarineFlex YZp X-FR 0,6/1 kV
- MarineFlex YOZp 0,6/1 kV
- MarineFlex YOZp EMC 0,6/1 kV
- MarineFlex YOZp 1,8/3 kV
- MarineFlex YOZp EMC 1,8/3 kV
- MarineFlex YOZp X-FR 0,6/1 kV
- MarineFlex YOZp X-FR EMC 0,6/1 kV

TYPE APPROVAL CERTIFICATE
No. ELE187316XG/001
Enclosure - Page 2 of 2
Marine Low Voltage Cables (0.6/1kV and 1.8/3kV)

Marking of Product:

- TKF-Size-0,6/1kV-CS 90 mbzh-MarineLine YZp-HALOGEN FREE {Batch No}
- TKF-Size-0,6/1kV-CS 90 mbzh-MarineLine+ YZp 0,6/1kV-HALOGEN FREE {Batch No}
- TKF-Size-Class 5-0,6/1kV-CS 90 mbzh-MarineFlex YZp 0,6/1kV-HALOGEN FREE {Batch No}
- TKF-Size-Class 5-CS 90 mbzh-MarineFlex YZafp-0,6/1kV-{Batch No}

Test standards:

- IEC 60092-350
- IEC 60092-351
- IEC 60092-353
- IEC 60092-359
- IEC 60092-360
- IEC 60332-3-22
- IEC 60754-2
- IEC 61034-1/2

Test reports:

- Report 445.pdf
- Report 301.pdf
- TKF MarineLine 18 3 kV certification.pdf
- TKF MarineLine YZafp Certification.pdf

Additional Documents:

- TKF_Catalogus_EN_20160616.pdf
- ISO 9001:2008 / 14001/2004 Certificate: See Report 445.pdf

HAMBURG January 20, 2017



A handwritten signature in black ink, appearing to be 'J. P. ...'.