



# TÜRK LOYDU

## TYPE APPROVAL CERTIFICATE

This Certificate consists of 3 pages.

This is to certify that the

**TİP 1 FR: NAVY SHIP POWER CABLES**

With type designations

**KT-MHCH-FR**

Manufactured by

**KABLOTEK KABLO SANAYİ VE TİCARET A.Ş.**

Is found to comply with

TÜRK LOYDU RULES CHAPTER E, PART 105 - NAVAL SHIP TECHNOLOGY,  
ELECTRICAL INSTALLATIONS  
TÜRK LOYDU RULES CHAPTER B, PART 5 – ELECTRIC  
TÜRK LOYDU ASKERİ GEMİ KABLOLARI İÇİN TEST GEREKSİNİMLERİ,  
IEC 60092-350, 352, 360, IEC 60332-1-2, IEC 60332-3-22,  
EN 50147-1, MIL-STD 285 (for EMC), IEC 60331-21 (FE 180) (Fire Resistant Types Only)

<b>Application</b>	: Tip 1, Power and lighting cables for naval ships, fire resistant type
<b>Design</b>	: Voltage class up to 1200 VAC & 1800 VDC and Temp. Class 90°C
<b>Sizes</b>	: Core Number: 1 to 33, Cross Section: 0,75 to 300 mm <sup>2</sup>
<b>Address of Manufacturer</b>	: Ali Paşa Mahallesi, Sanayi 12. Sokak, No:7, Silivri/İSTANBUL - TÜRKİYE
<b>Place and date</b>	: İSTANBUL / 01.09.2021

Subject to the conditions referred to in the following pages, this certificate is valid until 16.08.2026

**Emrah SÖĞÜTÇÜ**  
New Building Division Manager



118834

**Product description** : Power and lighting cables for naval and commercial ships with following properties:  
Voltage ratings: 1200 VAC or 1800 VDC  
Temperature Class: 90°C  
Cables mentioned in this certificate are Tip 1 type cables in TL Askeri Gemi Kabloları İçin Test Gereksinimleri

**Type Designation** : Below type designations can be used  
KT-MHCH: Halogen free screened power and lighting cables  
-FR is used for fire resistivity

**Materials used** :  
Conductor: Copper for electrical application  
Material for Insulation: Halogen free, cross linked polymeric material  
Material for Covering of Cores: Halogen free elastic or plastic compound  
Material for Screen: Cooper for electrical applications and additional cover for EMC types  
Material for Sheath: Halogen free, cross linked elastomeric compound  
Material for Fire Resistivity: Fire resistive tape (Mica tape) around conductor (FR types)

**Application/Limitation(Approval conditions):**

- Bending radius of the cables are to be according to the manufacturer specifications.
- Core color codes and numbers are to be according to the related standards, manufacturer may change the color codes with permission of TL. Different core coding must be stated in the TL test certificate.

**Documentation** : Product test reports (TL, KABLOTEK, TSE), KABLOTEK Crosspolimeri test report 26.07.2018

**Test carried out (and results)** : Below tests have been carried out and found satisfactory

- 1- Visual inspection and dimensional controls
- 2- Construction and finishing control
- 3- Marking control
- 4- Print durability control
- 5- Mechanical controls;
  - Tensile strength and elongation tests (Insulation and sheath)
  - Abrasion test
  - Notch sensitivity test
  - Tear resistance test
- 6- Thermal effect tests;
  - Cold bend test ( $d > 12,5$  mm), Coiling test at low temperature ( $d \leq 2,5$  mm)
  - Hot set test
  - Shrinkage test
  - Heat shock test
- 7- Fire retardant tests (single cable and cable bunch)
- 8- Tensile strength and elongation change tests after aging treatment (Insulation, sheath and complete cable)
- 9- Ozone resistance test
- 10- Smoke density control
- 11- Electrical controls;
  - Conductor resistance test
  - High voltage test
  - Insulation resistance test (20°C and 90°C)
  - Electromagnetic compatibility test
  - Increase in AC capacitance test
- 12- Halogen content control, corrosivity of combustion gases and Fluorine content test

- 13- Toxicity index control
- 14- Operation under fire condition (3h) test (Fire resistant types only)
- 15- Chemical resistance and oil resistance tests for sheath

**Place of test carried out** : KABLOTEK FACTORY, TSE

**Marking of product:** KABLOTEK, year of production, lot number, S.P 01-21, Cable TL type, cable code, number of cores, cross section



**Yağız YILDIRIM**  
**Surveyor**

This certificate is subject to terms and conditions described below:

- Any significant change in design or construction may render this Certificate invalid. Type Approval Certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. This certificate is not valid for products without marking above mentioned. The manufacturer should notify TÜRK LOYDU of any modifications or changes to the equipment in order to obtain valid certificate. This certificate shows that tested specimens as representative of the product complies of the TÜRK LOYDU rules, and relevant international instruments that apply to it.

