Certificate No.: 2309261737156354

TÜRK LOYDU

TYPE APPROVAL CERTIFICATE

This is to certify that the

TYPE 4: NAVY SHIP SIGNAL AND COMMUNICATION CABLES

Manufacturer	ÜNİKA UNİVERSAL KABLO SAN. TİC. A.Ş.
Address	Veliköy Organize Sanayi Bölgesi ,Sanayi Bulvarı 3.Cd. No:4 PK:59500, Çerkezköy/Tekirdağ
Product Type	U-NV3XHF2AT (A), U-NV3XHF2FRAT (A)
Reference Rule	TL Rules, Part E, Chapter 105 - Naval Ship Technology, Electrical Installations, 01.01.2022 S-P 01/21 ASKERİ GEMİ KABLOLARI İÇİN TEST GEREKSİNİMLERİ, 15.01.2021
Place and Date	ISTANBUL / 06.10.2023

Subject to the conditions referred to in the following pages, this certificate is valid until 17.06.2028.

130288

Emrah SÖĞÜTÇÜ

New Building Division Manager

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 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 revelant international instruments that apply to it.

Product	: TYPE 4: NAVY SHIP SIGNAL AND COMMUNICATION CABLES
Type of Product	: U-NV3XHF2AT (A), U-NV3XHF2FRAT (A)
Approval No / Date	: PAE-EPAS/015528/23-0229/GTÇ/22.03.2023
Application	: Tip 4, Screened Twisted Pair, Overall Screened, Signal and Communication Cables For Naval Ships
Design	: Voltage Class up to 250 VAC & 355 VDC and Temp. Class 90°C
Cross Section	: 0,75 mm2
Size	: Pair Count: 2, 4, 7, 11, 14, 19, 24
Product Description	: Screened Twisted Pair, Overall Screened, Signal and Communication Cables For Naval Ships Voltage Ratings: 250VAC or 355 VDC Temperature Class : 90°C Cables mentioned in this certificate are "Type-4" cables in S-P 01/21 Test Requirements for Cables of Naval Ships.
Type Designation	: Below type designations are to be used; U-NV3XHF2AT (A):Halogen free, screened pair and overall screened signal and communication cables U-NV3XHF2FRAT (A):Halogen free, screened pair and overall screened signal and communication cables with fire resistant capability -(A) letter is used for screened pair
Material Used	: Conductor: Copper for electrical application Material for Insulation: XLPE Cross-Linked Polyethylene - Halogen free, cross-linked compound in which the polymer is a low density polyethylene or equivalent synthetic polymer Material for Covering of Cores: - Halogen free, elastic compound Material for Screen: - Copper Braiding Screen Material for Sheath: SHF 2 halogen-free rubber - Halogen free, cross-linked compound in which the polymer is a polyolefin or equivalent synthetic polymer Material for Fire Resistivity: - Fire Resistive tape-Mica tape or equivalent material around conductor(FR Types)
Application/Limitation	: Applications other than the "Material Used*" upper mentioned are not covered by this type approval certificates.
Documentation	: 1. Type-4 : Navy Ship Power Cables Test Plan 2. Service Life Test for SHF2 (Sheath): - IMQ Test Report 01SM00037 REV. 1 -(SHF-2) - Accreditation Certificate of IMQ SpA MILANO LAB. 0121L Rev. 04 3. Service Life Test for XLPE (Insulation): - Determination of Temperature Index (TI), Issued By UNIKA-21/09/2023 4. Routine Test Report, Issued By UNIKA-10/08/2023 5. Ageing Test with Air Oven Test Report 6. Ageing Test with 15W40 Test Report

Surveyor Name : Abdullah DEMİRCİ

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7. Ageing Test with MDO-Main Diesel Oil Test Report
8. Electrolytic Copper Resistivity Test Report, Issued By UNIKA-10/08/2023,
9. HotSet Test for SHF 2 Test Report
10. HotSet Test for XLPE Test Report
11. Fire Resistivity Test Report, Issued By UNIKA-04/09/2023
12. Flame Propagation Test Report Issued By UNIKA-11/08/2023
13. Ozone Resistance(Method A), Halogen Gas Emission (HCL,HBR Max.), Fluorine Content (HF Max.), Iodine Screening Test Report Issued By UL Solutions-28/08/2023
14. Cold Bending Test Report, Issued By UNIKA-10/08/2023
15. ToxicityTest Report for SHF 2, Issued By VDE-22.09.2008
16. Transfer Impedance Test Report, Issued By 2M KABLO-11.09.2023
17. Halogen Content -Determination of Acidity and Conductivity Test Report, Issued By UNIKA-07.06.2023
18. Tear Resistance Test Report for SHF 2, Issued By UNIKA-10/08/2023
19. Pressure Test at High Temperature Test Report, Issued By UNIKA-11.08.2023
20. Attenuation to Crosstalk Ratio Test Report, B.30.2.BÜN.0.45.00.00/Ob1 Issued By BOGAZICI UNIVERCITY-05.08.2023

Performed Tests **:** Following Test have been carried out and found satisfactory;

Visual Inspection and Dimensional Controls

Marking Control

Print Durability Control

Mechanical Controls;

-Tensile Strength and Elongation Tests

-Abrasion Test

-Tear Resistance Test

-Pressure Test at High Temperature

Thermal Effect Tests;

-Cold Bending Test

-Hot Set Test

-Shrinkage Test

-Heat Shock Test

Flame Retardant Tests

Tensile Strength and Elongation Change Tests After Ageing Treatment

Ozone Resistance Test

Smoke Density Test

In Service Life Test

Electrical Controls;

-Conductor Resistance Test

-High Voltage Test

-Insulation Resistance Test

-Electromagnetic Compatibility

-Increase in AC Capacitance Test

-Effective capacitance test

-Review of Attenuation to Crosstalk Ratio Test Report

Surveyor Name : Abdullah DEMİRCİ

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	Halogen Content Control, Corrosivity of Combustion Gases and Fluorine Content Test
	Toxicity Index Control
	Operation Under Fire Condition(3 hours) test (Fire Resistant Types Only.)
	Chemical Resistance and Oil Resistance Tests for Sheath
Test Place	: ÜNİKA ÜNİVERSAL KABLO SANAYİ VE TİCARET ANONİM ŞİRKETİ
Marking of Product	: UNIKA, year of production, lot number, cable code, number of cores, cross section and standard.
Test Scope	: Type Tests
Approval Conditions	: Applications other than the "Material Used*" mentioned in this certificate are not covered by this type approval certificates.

Surveyor Name : Abdullah DEMİRCİ

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