TYPE APPROVAL CERTIFICATE

Certificate No:
TAE000040R
Revision No:
2

This is to certify:

That the Electric Power Cable

with type designation(s)
M2XCH-FFR EMC, M2XCH-FFR 1,8/3kV

Issued to
Untel Kablolari San. ve Tic. A.S.
Dilovası, **Turkey**

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

Low voltage power cables. Fire resistant.
Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Type	Rated voltage (kV)	Temp. class (°C)
M2XCH-FFR EMC	0,6/1	90
M2XCH-FFR 1,8/3kV	1,8/3	90

Issued at **Høvik** on **2022-01-05**

for **DNV**

This Certificate is valid until **2025-07-02**.
DNV local station: **Istanbul**

Approval Engineer: **Ivar Bull**

Trond Sjåvåg
Head of Section

Product description

Type: M2XCH-FFR EMC 0,6/1 kV
Conductor: Stranded copper class 2 or class 5
Insulation: XLPE + Mica Tape
Shielding: CU/PETP Tape + Copper wire braid
Outer sheath: SHF1 or SHF2

Number of cores	Conductor cross-section mm^2
3	2,5 6, 16, 25, 35

Type: M2XCH-FFR 1,8/3 kV
Conductor: Stranded copper class 2 or class 5
Insulation: XLPE + Mica Tape
Inner covering Separating foil
Shielding: Tinned copper wire braid
Outer sheath: SHF1 or SHF2

Number of cores	Conductor cross-section mm^2
1	35, 70, 95

Application/Limitation

This type of cable is fire resistant in accordance with IEC Publication 60331.

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.

General power and lighting.
Fire resistant. Flame retardant in bunch Cat. A. Low smoke.

Type Approval documentation

Specification: Untel Kablolari San. ve Tic. A.S., 3+8/2019
Untel Kablolari San. ve Tic. A.S., M2XCH-FFR FLEX [TCWB] [NOFI] 2021_08-TS-108 24.08.2021
Test report: Untel Kablolari San. ve Tic. A.S., No: 19001-R00, dated 19/09/2019
Untel Kablolari San. ve Tic. A.S.,T210159-R00 witnessed by DNV , dated 25.10.2021

Tests carried out

Standard	Release	General description	Limitation
DNVGL-CP-0399	2016-03	Class Programme Electric cables	
IEC 60092-350	2020-01	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-353	2016-09	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	
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 60332-1-2	2015-07	Tests on eletric cables under fire conditions. Test for vertical flame propagation for a single insulated wire or cable.	

Standard	Release	General description	Limitation
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	
IEC 60331-1/2	2018-03	Fire resistance / Circuit integrity – Test for method for fire with shock at temperature of at least 830ºC for cables rated up to and including 0,6/1 kV	
IEC 60331-21	1999-04	Tests for electric cables under fire conditions Circuit integrity Part 21: Procedures and requirements. Cables of rated voltage up to and including 0,6/1,0 kV	
IEC 60754-1	2011-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	For outer Sheath only Low Halogen: <0,5% 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	For outer Sheath only Halogen free: pH > 4,3 Conductivity<10µS/mm
IEC 61034-1/2	2013-06	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%

Marking of product

UNTEL. – M2XCH-FFR EMC – Size – 0,6/1kV – IEC 60331-1/21 – IEC 60332-3-22 Cat.A – Lot no. or

UNTEL – M2XCH-FFR – Size – 1,8/3kV – IEC 60331-1/2 – IEC 60332-3-22 Cat.A – Lot no.

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.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE