

**TYPE APPROVAL CERTIFICATE****This is to certify:****That the Low Voltage Cable**with type designation(s)  
**LFMSGSSG BFOU(c&i) 250 V**

Issued to

**Untel Kablolari San. ve Tic. A.S.**  
**Dilovasi, Turkey**

is found to comply with

**Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards**  
**IEC 60092-376 (2003-05)**  
**IEC 60331-21 (1999-04)**  
**IEC 60332-3-22 (2009-02)**  
**IEC 60754-1 (2011-11)**  
**IEC 60754-2 (2011-11)**  
**IEC 61034-2 Ed. 3.1 (2013-06)****Application :****Instrumentation and communication. Fire resistant. Flame retardant Cat. A.**  
**Halogen free. Low smoke. Cold bend (-30°C) and impact (-30°C).****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Voltage class (V) 250**  
**Temp. class (°C) 90**This Certificate is valid until **2019-06-24**.Issued at **Høvik** on **2015-06-25**DNV GL local station: **Istanbul**Approval Engineer: **Georgy Abramenko**for **DNV GL**.....  
**Marit Laumann**  
**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.

## Product description

Type: LFMSGSSG BFOU(c&c&i) 250 V  
 Construction:

Conductors: Tinned stranded copper class 2  
 Core Insulation: Mica tape + XLPE  
 Individual screen: Copper wire braid  
 Separating foil: Halogen free foil  
 Inner covering: Halogen free foil  
 Common screen 1: Copper wire braid  
 Separating foil: Halogen free foil  
 Common screen 2: Copper wire braid  
 Outer sheath: SHF2

Number of cores x conductor cross-section mm <sup>2</sup>	Overall diameter (c+i) mm
5 x 3 x 0,5	19,5
12 x 3 x 0,5	28,5
19 x 3 x 0,5	31,2

## 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.

## Type Approval documentation

Data sheets: **FR 72-571 REV.2 REV. TAR 03.12.2010**  
 Test reports: **Dated 16.09.2010**

## Tests carried out

Standard	Release	General description	Limitation
IEC 60092-350	2008-02	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
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 60092-376	2003-05	Cables for control and instrumentation circuits 150/250 V (300 V)	
IEC 60754-1	2011-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	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	Halogen free: pH > 4,3 Conductivity < 10µS/mm
IEC 61034-1/2	2013-06	Measurement of smoke density of cables burning under defined conditions -	Low smoke

Job Id: **262.1-008110-2**  
Certificate No: **TAE0000037**

Standard	Release	General description	Limitation
		Test apparatus, procedure and requirements	
IEC 60331-21	1999-04	Fire resistance / Circuit Integrity – test for fire alone of at least 750 °C	90 min. test
IEC 60332-3-22	2009-02	Flame retardance in bunch, cat. A	

### Marking of product

Üntel – LFMSGSSG BFOU(c&c&i) – size – IEC 60331-21 – IEC 60332-3-22 Cat A. – 150 / 250 V

### Periodical assessment

The scope of the retention/renewal survey is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and 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.

Survey to be performed at least every second year.

END OF CERTIFICATE