TYPE APPROVAL CERTIFICATE

Certificate No:
TAE00000NF
Revision No:
1

This is to certify:

That the Electric Power Cable

with type designation(s)
MG - Armoured. Fire resistant. Flame retardant Halogen free Low smoke 0,6/1kV

Issued to
TELDOR Cables & Systems Ltd.
Israel, **Israel**

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

Application :

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

Rated voltage (kV)	**0,6/1**
Temp. class (°C)	**90**

Issued at **Høvik** on **2021-09-10**

This Certificate is valid until **2026-06-30**.
DNV local station: **Haifa**

Approval Engineer: **Ivar Bull**

for **DNV**
Digitally Signed By: Sneen, Ståle
Location: DNV Høvik, Norway
on behalf of

Marta Alonso Pontes
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: MG - Armoured. Fire resistant. Flame retardant Halogen free Low smoke 0,6/1kV

Construction:

Conductor:	Plain or tinned copper Class 2 or Class 5
Insulation:	Mica tape + HF90
Inner covering:	Lapped
Inner sheath:	SHF1 or SHF2
Metal covering:	Plain/tinned copper wire braid or copper alloy wire braid or galvanized steel wire braid (multi core cables only)
Outer sheath:	SHF1 or SHF2 or SHF2 MUD

No of cores:	Cross sectional area [$mm^{2]}$
1-37	1 1,5 2,5 4
1-33	6
1-23	10

Application/Limitation

This cable type is fire resistant according to IEC 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: See approval letter
Test reports: See approval letter
8MG0116107 dated by 28/12/2020
8MG2116101 dated by 28/12/2020
NEK 606 dated by 15/07/2019
8MG0036101 dated by 11/01/2018
8MG1186101 dated by 11/01/2018
8MG1296101 dated by 11/01/2018

Tests carried out

Standard	Release	General description	Limitation
IEC 60092-350 Ed.5.0	2020-01	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-360 Ed.2.0	2021-01	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables.	
IEC 60092-353 Ed.2.0	2016-09	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	
IEC 60331-1/2 Ed.2.0	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	Minimum 180 min with mechanical shock
IEC 60331-21 Ed.1.0	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	Minimum 180 min
IEC 60332-3-22 Ed.2.0	2018-07	Tests on electric and optical fibre cables under fire conditions – Part 3-22: Test for vertical flame spread of vertically-mounted	Bunch test Category A

		bunched wires or cables – Category A	
IEC 60332-3-24 Ed.2.0	2018-07	Tests on electric and optical fibre cables under fire conditions – Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category C	Bunch test Category C
IEC 60754-1 Ed.3.0	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 Ed.2.0	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 61034-2 Ed.3.2	2019-11	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance ≥60%
NEK 606 Ed.5.0	2016-05	Cables for offshore installations. Halogen- free and/or mud resistant. Technical specification.	Mud resistance test: IRM903 100°C 7d. Calcium Bromide 70°C 56d. Oil based mud: Carbo Sea 70°C 56d or EDC 95/11 70°C 56d
IEC 60092-350 Ed.5.0	2020-01	Annex E: Cold bend test and impact test for low temperature behavior	Cold bend: -40°C Cold impact: -35°C
CSA C22.2 No. 03	2009	Flexibility at any specified temp.	Cold bend: -40°C
CSA C22.2 No. 03	2009	Abnormal low temperature – impact	Cold impact: -35°C
IEC 60332-1-1 Ed.1.1	2015-07	Tests on electric and optical fibre cables under fire conditions - Part 1-1: Test for vertical flame propagation for a single insulated wire or cable - Apparatus	
IEC 60332-1-1/2/3 Ed.1.1	2015-07	Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame	

Marking of product

Marking shall include at least the following:

TELDOR, Part number with “MG”, Number & Type of units - 0.6/1 (1.2) kV, Armor type, Jacket type, IEC 60332-3-22/24, IEC 60331-1/2/21, Batch (lot) number, METER MARK

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