TYPE APPROVAL CERTIFICATE

Certificate No:
TAE00000NG
Revision No:
1

This is to certify:

That the Low Voltage Cable

with type designation(s)
MG - 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 :

Control and Instrumentation.
Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Rated voltage (V)	**600/1000**
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 - Flame retardant Halogen free Low smoke 0,6/1kV

Construction:

Conductor:	Plain or tinned copper Class 2 or Class 5
Insulation:	HF90
Inner covering:	Lapped
Individual screen:	Aluminum/polyester tape with tinned copper drain wire
Collective screen:	Aluminum/polyester tape with tinned copper drain wire
Outer sheath:	SHF1 or SHF2 or SHF2 MUD

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

No of Pairs:	Cross sectional area [mm$^{2]}$
2-27	1
2-23	1,5
2-19	2,5

No of Triads:	Cross sectional area [mm$^{2]}$
1-27	1
1-21	1,5
1-16	2,5

Cables may also include combinations of above elements.
Fictitious calculations shall be performed as if all elements were of the larger size.

Application/Limitation

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 60092-376 Ed.2.0	2017-05	Cables for control and instrumentation circuits 150/250 V (300 V)	Increased insulation thickness and voltage level 0,6/1kV
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 bunched wires or cables – Category A	Bunch test 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, 0,6/1kV, Jacket type, IEC 60332-3-22/24, 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) and selected type tests (ref. to applicable class programs) checked (if not available these tests shall 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