



Marine & Offshore

Certificate number: 07294/F1 BV

File number: ACE 01/103/09

Product code: 2501H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to
HELKAMA BICA OY
 KAARINA - FINLAND

for the type of product
CABLES (LOW VOLTAGE)
 LKM, LKAM, LKSM series
 0.6/1kV

Requirements:

BUREAU VERITAS Rules for the Classification of Steel Ships.
 IEC 60092-350 (2014), IEC 60092-353 (2016), IEC 60092-360 (2014)
 IEC 60228 (2004)
 IEC 60331-1/2 (2009)
 IEC 60332-1-2 (2015), IEC 60332-3-22 Cat.A (2009)
 IEC 60684-2 (2011)
 IEC 60754-1/2 (2011)
 IEC 61034-1/2 (2013)

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 10 Dec 2019

For Bureau Veritas Marine & Offshore,

At BV HELSINKI, on 25 Jun 2018,

Tommy Andersson



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <http://www.veristarp.com/veristarnb/jsp/viewPublicPdfTypepec.jsp?id=pbndefotm3>

BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Flame retardant, Fire Resistant, low smoke and Halogen Free, Marine & Offshore Power, Lighting and Control cables.

1.1 - Common specifications:

Rated voltage: 0.6/1 kV
 Temperature class: 90°C
 Halogen Free: IEC 60754-1/2, IEC 60684-2
 Low Smoke: IEC 61034-1/2
 Flame retardant: IEC 60332-1 and IEC 60332-3-22 Cat. A
 Fire Resistant: IEC 60331-1/2

1.2 - Construction:

Conductor: Stranded plain annealed copper (Class 2 or 5)
 Fire Layer: Mica tape
 Insulation: Halogen Free Cross-Linked PolyEthylene (HF XLPE)
 Separator: Tape
 Inner sheath: SHF1 or SHF2 (DS type)
 Armour: Annealed Cu wires (LKSM Type only)
 Outer Sheath: Halogen Free thermoplastic SHF1 or SHF2 - Thermoset

1.3- Product Range:

Type	Number of cores	Cross sectional areas (mm ²)	Remarks
LKM-FRHF LKM-FRSHF2 LKAM - FRFH	1 to 5 2 to 37	1.0 to 300 1.0 to 2.5	Flame retardant according to IEC 60332-1 & 60332-3-22 Cat.A Fire resistant according to IEC 60331-1/2
LKSM-FRHF LKSM-FRSHF2 LKSM-EMC-FRHF LKSM-EMC-FRSHF2 LKAM-FRSHF2	1 to 5 2 to 37	1.5 to 300 1.5 to 2.5	Flame retardant according to IEC 60332-1 & 60332-3-22 Cat.A Fire resistant according to IEC 60331-1/2 Braided Armour
LKSM-DS-FRHF LKSM-DS-FRSHF2	1 to 5 7 10 to 37	1.5 to 300 1 to 25 1 to 2.5	Flame retardant according to IEC 60332-1 & 60332-3-22 Cat.A Fire resistant according to IEC 60331-1/2 Braided Armour Inner sheath

2. DOCUMENTS AND DRAWINGS :

HELKAMA BICA:

Cable data sheets: HBKQ9.SPEC.23 and HBKQ9.SPEC.24 dated 13.05.2004
 Cable data sheets: HBKQ9.SPEC.23 and HBKQ9.SPEC.24 dated 02.10.2006
 Cable data sheets: HBKQ9.SPEC.190, dated 17.07.2017

3. TEST REPORTS :

TT_1_5.XLS dated 27.10.99
 TT1_5MSM.XLS dated 21&27.10.99
 TT_70.XLS dated 27.10.99
 TT_1_5SM.XLS dated 27.10.99
 TT_70SM.XLS dated 27.10.99
 99K6 1506:A dated 01.02.99
 2768, 2769, 2759, 2758 and 2765, dated 15.12.98
 2957 dated 03.02.99
 98R2 3404 dated 22.12.98
 99R2 3461 dated 19.01.99.
 Tests reports on LKAM-HF / LKM-HF / LKM-SHF2 / LKSM-EMC / LKSM-EMC-SHF2 / LKSM-HF / LKSM-SHF2 dated on 2014.
 Tests reports N° CT18-00856-1/2/3, dated 08.04.2018
 Tests report N° CT16-6157-2, dated 14 Jan 2017

Laboratories: Helkama Oy, REKA Oy, Laboratory of Analytical Chemistry (Abo Akademi University), FIMKO.

4. APPLICATION / LIMITATION :

BUREAU VERITAS Rules for the Classification of Steel Ships and IEC 60092-3 series.

5. PRODUCTION SURVEY REQUIREMENTS :

5.1 - The CABLES (LOW VOLTAGE) are to be supplied by **HELKAMA BICA OY** in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 - **HELKAMA BICA OY** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

5.4 - For information, **HELKAMA BICA OY** has declared to Bureau Veritas the following production site(s):

HELKAMA BICA OY**Lakimiehenkatu 4****20780 KAARINA****FINLAND****Helkama Bica Oy****Lasitehtaankatu 12****10960 Hanko****FINLAND****Helkama Bica (Shanghai) Co., Ltd****Plot 1-2, MinHang EPZ****No. 3111 Huan Cheng West Road****Feng Xian District****SHANGHAI****CHINA****6. MARKING OF PRODUCT :**

The cable shall be marked on the surface outer sheath, in a durable legible and visible manner, with the following information through the length of cable:

- 1) - Voltage grade.
- 2) - Cable symbol and temperature class.
- 3) - Number of conductors and conductor size.
- 4) - Applicable standards to flame retardant(s) and fire resistant, if any.
- 5) - Manufacturer's name or trade mark.
- 6) - Year of manufacture.

7. OTHERS :

7.1 - It is **HELKAMA BICA OY**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2 - This certificate supersedes the Type Approval Certificate N° 07294/F0 BV issued on 10 Dec 2014 by the Society.

*** END OF CERTIFICATE ***