



Marine & Offshore
Division

Certificate number: 07295/E0 BV

File number: ACE 01/103/10

Product code: 2505H

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
INSTRUMENTATION AND COMMUNICATION CABLES
150/250 V

RFE-FRSHF2, RFE-FRSHF2(i), RFE-EMC-FRSHF2, RFE-EMC-FRSHF2(i), RFE-FRHF, RFE-FRHF(i),
RFE-EMC-FRHF, RFE-EMC-FRHF(i).

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships & Offshore Units.

IEC 60092-350 (2014), 376 (2003), 360 (2014), IEC 60228 (2004), IEC 60754-1/2 (2011), IEC 61034-1/2 (2013), IEC 60331-1/2 (2009), IEC 60332-1 (2004), IEC 60332-3-22 Cat.A (2009), IEC 60684-2 (2011).

This certificate is issued to attest that BUREAU VERITAS 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: 09 Jan 2022

For BUREAU VERITAS,
At BV HELSINKI, on 09 Jan 2017,
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. 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 Division 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 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.

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BV Mod. Ad.E 530 October 2014

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Flame retardant/Fire resistant, low smoke and halogen free, Marine and Offshore control and instrumentation cables.

1.1 - Technical Specification:

Rated Voltage:	150/250 (300) V
Temperature Class:	90°C
Flame Retardant:	IEC60332-1-2 and IEC60332-3-22 (Cat.A)
Fire Resistant:	IEC60331-1/2
Halogen Free:	IEC60754-1/2
Smoke Density:	IEC61034-1/2

1.2 - Construction:

Conductor:	Stranded or tinned conductor composed of plain annealed copper
Insulation:	Halogen Free Cross-linked polyethylene HF-XLPE
Pair/Quadruple:	Twisted pair with a short lay or four conductors twisted together (for 1x4 only)
Fire-resisting layer:	Mica tape under the insulation
Pair shielding:	Polyester coated aluminium tape, ground tinned copper conductor (only for RFE-FRHF(i) cables)
Covering:	Separator tape of non-hygroscopic material
Collective Screen:	Braid of plain copper wires (may also be use like an electrostatic collective screen)
Sheath:	Thermoplastic, Halogen Free SHF1 or SHF2.

1.3 - Product Range:

Type	Number of cores	Cross-Sect. areas (mm ²)
RFE-FRHF RFE-FRSHF2 RFE-EMC-FRHF RFE-EMC-FRSHF2	1 x 2	0.75 - 1.50
	1 x 4	
	2 x 2	
	4 x 2	
	7 x 2	
	8 x 2	
	10 x 2	
	12 x 2	
	14 x 2	
	16 x 2	
	19 x 2	
RFE-FRHF (i) RFE-FRSHF2(i) RFE-EMC-FRHF (i) RFE-EMC-FRSHF2(i)	24 x 2	0.75 - 1.50
	32 x 2	
	37 x 2	
	2 x 2	
	4 x 2	
	7 x 2	
	8 x 2	
	10 x 2	
	12 x 2	
	14 x 2	
	16 x 2	
	19 x 2	
	24 x 2	
27 x 2		
30 x 2		
32 x 2		
37 x 2		

2. DOCUMENTS AND DRAWINGS :

HELKAMA specifications HBKQ 9.Spec.25 (RFE-FRHF) and Spec.45 (RFE-FRHF(i)) Updated 07.04.2005.
HELKAMA specifications HBKQ 9.Spec.25 (RFE-FRHF) and Spec.45 (RFE-FRHF(i)) Updated 24.11.2010.

For E0 version:

Specification ref. HBKQ 9.Spec.25, dated 13.Nov.2014.
Specification ref. HBKQ 9.Spec.177, dated 31.Jul.2015.

3. TEST REPORTS :

Report: N° GLRFEFR08-97

HELKAMA Reports:

- N° 075TT67579 dated 05.10.2000
- N° 4e.IEC 60332-1_s/ FR075TT67579 dated 27.09.2000
- N° IEC 60331_c/ FR075TT67579 dated 05.10.2000
- N° IEC 60331_i/ FR075TT67579 dated 05.10.2000
- Front / TT tests 8.3.2006 (BV 30777HSK06) with annexed test reports.
- N°96533 RFA-FRHF 12x2x0.75 dated 15.03.2011
- N°W01383 RFE-FRHF(i) 14x2x0.75 dated 15.03.2011.

SP reports:

- N° 99R2 3461B dated 04.02.1999
- N° 99R2 3913 dated 24.01.2000
- N° 99R2 3913B dated 25.01.2000
- N° 99K6 1506:A dated 1999-02-01.

Laboratories: HELKAMA BICA OY, REKA OY, Laboratory of analytical chemistry (Abo Akademi University) SP Sveriges Provnings- och Forskningsinstitut.

For E0 version:**HELKAMA:**

- Smoke emission test report dated 10.Nov.2016.
- Mechanical characteristics test report dated 15.Jul.2016.
- Flame properties test report dated 14.Jul.2016.

4. APPLICATION / LIMITATION :

BUREAU VERITAS Rules for the Classification of Steel Ships and IEC60092 Series.

5. PRODUCTION SURVEY REQUIREMENTS :

- 5.1 - The cables 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.
- 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 :

Name of Production Sites	Address	Country
HELKAMA BICA OY	FIN-10960 - Hanko	FINLAND
HELKAMA BICA (Shanghai) Co., LTD	Plot 1-2, FengPu Export Processing 201401	Shanghai (P. R. C.)
HELKAMA BICA OY	Lasitehtaankatu 12, 10960 Hanko	FINLAND

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:

- Lot number
- Voltage grade
- Cable symbol and Temperature Class
- Applicable standards to flame retardant and fire resistance if any
- Number of conductor and conductor size
- Manufacturer's name or trade mark and meter marking
- Year of manufacture.

7. OTHERS :

7.1 - This approval is given with the understanding that **HELKAMA BICA OY**, will accept full responsibility for informing shipbuilders, shipowners and/or their sub-contractors of the proper methods of fitting and general maintenance of the approved equipments and the conditions of this approval.

7.2 - This Certificate supersedes the Type Approval Certificate N° 07295/D1 BV issued on 07.Dec.2014. by the Society.

*** END OF CERTIFICATE ***