



## TYPE APPROVAL CERTIFICATE

**Certificate No.** : SHI20704-EL001 **Initial Approval** : 8th August, 2007.

**Product** : Electric Cable

**Manufacturer** : Helkama Bica(Shanghai) Co., Ltd.

Plot 1~2, Minhang Export Processing Zone, No.3111, Huan Cheng West Road, Fengxian District, Shanghai, China

**Product Description** : Halogen free, fire resistant, flame retardant power and control cable  
- Type : LK Series

Halogen free, fire resistant, flame retardant control and communication cable

- Type : RF Series

" See Appendix 1 ~ 3 "

**Approval Condition** : 1. This approval is granted on the basis of the type approval certificate no. CPH155582-EL001 ~ EL010, the technical specification & the test reports.  
2. Individual Product Certification is required.

**THIS IS TO CERTIFY** that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows and entered in the "List of Approved Manufacturers and Type Approved Equipment".

Pt. 6, Ch. 1, Sec. 4 of the Rules for Classification, Steel Ships and IEC Standards.

This Certificate is valid until 7th August, 2017.

Issued at Shanghai, China on 21st January, 2013.



KOREAN REGISTER OF SHIPPING

President of  
CHINA KR Co., Ltd.

*Note : 1 : The approval will be automatically suspended and the Certificate become invalid from the expiry date of the Certificate in the event that the extension has not been granted or the renewal of the Certificate is not underway.*

*2 : The manufacturer should notify this Society of any modification or changes that may affect the validity of this Certificate.*

## Appendix 1

# Product Description and/or Approval Condition

Certificate No : SHI20704-EL001

Date of Issue : 21st January, 2013.

### Product Description :

1. LKM-HF, LKMM-HF 0.6/1kV
  - Application : Halogen free, flame retardant, power and control cable
  - Conductor : Stranded, plain (optional tinned) annealed copper, class 2 or class 5
  - Insulation : HF-XLPE
  - Sheath : SHF1, Halogen Free Thermoplastic
  - Temperature : Max. 90 °C
  - Rated Voltage : 0.6/1 kV(1.2kV)
2. LKSM-HF, LKMSM-HF 0.6/1kV
  - Application : Halogen free, flame retardant, screened power and control cable
  - Conductor : Stranded, plain (optional tinned) annealed copper, class 2 or class 5
  - Insulation : HF-XLPE
  - Armour : Braided armour of plain (optional tinned) annealed copper wires
  - Sheath : SHF1, Halogen Free Thermoplastic
  - Temperature : Max. 90 °C
  - Rated Voltage : 0.6/1 kV(1.2kV)
3. LKM-FRHF, LKSM-FRHF 0.6/1kV
  - Application : Halogen free, fire resistant, power and control cable
  - Conductor : Stranded, plain (optional tinned) annealed copper
  - Insulation : HF-XLPE, Fire resistant mica tape layer under the plastic insulation
  - Armour : Braided armour of plain (optional tinned) annealed copper wires  
(for LKSM-FRHF)
  - Sheath : SHF1, Halogen Free Thermoplastic
  - Temperature : Max. 90 °C
  - Rated Voltage : 0.6/1 kV(1.2kV)
4. LKEM-HF 0.6/1kV
  - Application : Halogen free, flame retardant, general power, lighting and switchboard wiring cable
  - Conductor : Stranded, plain (optional tinned) annealed copper, class 5
  - Insulation : HF90, Halogen Free Flame Retardant
  - Temperature : Max. 90 °C
  - Rated Voltage : 0.6/1 kV(1.2kV)
5. LKSM-HF 250V
  - Application : Halogen Free, flame retardant, screened power and control cable
  - Conductor : Stranded, plain (optional tinned) annealed copper, class 2
  - Insulation : XLPE, halogen free
  - Armour : Braided armour of plain (optional tinned) annealed copper wires  
An unisolated drain wire of size>0.5mm<sup>2</sup>, laid in contact with the braid
  - Sheath : SHF1, Halogen Free Thermoplastic
  - Temperature : Max. 90 °C
  - Rated Voltage : 150/250V(300V)
6. RFE-HF, RFE-HF(i) 250V
  - Application : Halogen free, flame retardant, instrumentation, control and communication cable
  - Conductor : Stranded, plain (optional tinned) annealed copper, class 2
  - Insulation : XLPE, halogen free
  - Armour : Braid armour of plain (optional tinned) copper wires
  - Sheath : SHF1, Halogen Free Thermoplastic
  - Temperature : Max. 90 °C
  - Rated Voltage : 150/250V(300V)

< To be continued >

## Appendix 2

# Product Description and/or Approval Condition

Certificate No : SHI20704-EL001

Date of Issue : 21st January, 2013.

### 7. RFE-FRHF, RFE-FRHF(i) 250V

- Application : Halogen free, fire resistant, instrumentation, control and communication cable
- Conductor : Stranded, plain (optional tinned) annealed copper, class 2
- Insulation : XLPE, halogen free
- Armour : Braid armour of plain (optional tinned) copper wires
- Sheath : SHF1, Halogen Free Thermoplastic
- Temperature : Max. 90 °C
- Rated Voltage : 150/250V (300V)

### 8. LKSM-EMC, LKAM-HF 0.6/1 kV

- Application : Halogen free, flame retardant, armoured (for LKSM-EMC) power and control cable
- Conductor : Stranded, plain (optional tinned) annealed copper, class 2 or class 5
- Insulation : XLPE
- Sheath : Thermoplastic SHF1
- Temperature : Max. 90 °C
- Rated Voltage : 0.6/1 kV

### 9. LKAM-FRHF 0.6/1 kV

- Application : Halogen free, fire resistant, flame retardant, power and control cable
- Conductor : Stranded, plain (optional tinned) annealed copper, class 2 or class 5
- Insulation : XLPE, fire resistant mica tape layer under the insulation
- Sheath : Thermoplastic SHF1
- Temperature : Max. 90 °C
- Rated Voltage : 0.6/1 kV

### 10. LKMGM-HF 0.6/1 kV

- Application : Halogen free, flame retardant, armoured power and control cable
- Conductor : Stranded, plain (optional tinned) annealed copper, class 2
- Insulation : XLPE
- Inner Sheath : Halogen Free Thermoplastic SHF1
- Armour : Braided armour of galvanized steel wires
- Outer Sheath : Halogen Free Thermoplastic SHF1
- Temperature : Max. 90 °C
- Rated Voltage : 0.6/1 kV

### 11. LKSM-VFD 1.8/3 kV

- Application : Halogen Free, flame retardant, screened power and control cable, design to meet requirements for Variable Frequency Drives (VFD)
- Conductor : Stranded, plain (optional tinned) annealed copper Class 2 or Class 5
- Insulation : HF XLPE
- Armour : Braided armour of plain (optional tinned) annealed copper wires
- Sheath : Thermoplastic SHF1
- Temperature : Max. 90 °C
- Rated Voltage : 1.8/3 kV

### 12. LKM-HF, LKAM-HF 250 V

- Application : Halogen free, flame retardant, armoured control and instrumentation cable
- Conductor : Stranded, plain (optional tinned) annealed copper
- Insulation : XLPE
- Armour : Braided armour of plain (optional tinned) annealed copper wires
- Sheath : Thermoplastic SHF1
- Temperature : Max. 90 °C
- Rated Voltage : 250 V

< To be continued >

## Appendix 3

# Product Description and/or Approval Condition

Certificate No : SHI20704-EL001

Date of Issue : 21st January, 2013.

13. LKM-FRHF, LKSM-FRHF, LKAM-FRHF 250 V
- Application : Halogen Free, fire resistant, flame retardant control cable
  - Conductor : Stranded, plain (optional tinned) annealed copper Class 2
  - Insulation : HF XLPE with fire resistant mica tape
  - Armour : Braided armour of plain (optional tinned) annealed copper wires (for LKSM-FRHF)  
Aluminiumpolyester (for LKAM-FRHF)
  - Sheath : Thermoplastic SHF1
  - Temperature : Max. 90 °C
  - Rated Voltage : 250 V
14. RFA-HF, RFA-HF(i) 250 V
- Application : Halogen Free, flame retardant control and communication cable
  - Conductor : Stranded, plain (optional tinned) annealed copper Class 2
  - Insulation : HF XLPE
  - Pair shielding: Plastic coated aluminium tape and ground conductor (for RFA-HF(i))
  - Sheath : Thermoplastic SHF1
  - Temperature : Max. 90 °C
  - Rated Voltage : 250 V
15. RFA-FRHF, RFA-FRHF(i) 150 V/250 V(300 V)
- Application : Halogen Free, fire resistant, flame retardant data communication cable
  - Conductor : Stranded, plain (optional tinned) annealed copper Class 2
  - Insulation : HF XLPE with mica fire resistant mica tape
  - Pair shielding: Plastic coated aluminium tape and ground conductor (for RFA-FRHF(i))
  - Sheath : Thermoplastic SHF1
  - Temperature : Max. 90 °C
  - Rated Voltage : 150 V/250 V
16. RFS-HF, RFS-HF(i) 250 V
- Application : Halogen Free, flame retardant, collective screened control and communication cable
  - Conductor : Stranded, plain (optional tinned) annealed copper Class 2
  - Insulation : HF XLPE
  - Pair shielding: Ployester coated aluminium tape and ground conductor (for RFS-HF(i))
  - Screen : Braided electrostatic screen of plain copper wires
  - Sheath : Halogen Thermoplastic SHF1
  - Temperature : Max. 90 °C
  - Rated Voltage : 250 V
17. RFS-FRHF, RFS-FRHF(i) 250 V
- Application : Halogen Free, fire resistant flame retardant collective screened control and communication cable
  - Conductor : Stranded, plain (optional tinned) annealed copper Class 2
  - Insulation : HF XLPE with mica fire resistant mica tape
  - Pair shielding: Ployester coated aluminium tape and ground conductor (for RFS-FRHF(i))
  - Screen : Braided electrostatic screen of plain copper wires
  - Sheath : Halogen Thermoplastic SHF1
  - Temperature : Max. 90 °C
  - Rated Voltage : 250 V

### Documentation :

- Approved drawings :  
HBKQ 9. SPEC No. 3, 5, 10, 19, 23, 24, 25, 28, 32, 33, 38, 40, 41, 45, 56, 57, 58,  
60, 61, 63, 64, 65, 66, 67, 69, 79, 80, 81, 82

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