



# DET NORSKE VERITAS

## TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **E-12459**

This is to certify that the  
**Lightweight Electric Cable**

with type designation(s)  
**FFCS & FFCS(S) 0,3/0,5 kV**

Manufactured by  
**Young Chang Silicone Co.Ltd**  
**SEOUL, Republic of Korea**

is found to comply with  
**Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards**  
**Type Approval Programme No. 6-827.11.1**  
**IEC 60332-3-22 (2009-02)**

Application  
**Control.**  
**Flame retardant in bunch Cat. A.**

**Voltage class (kV) 0,3/0,5**  
**Temp. class (°C) 95**

This Certificate is valid until **2017-06-30**.

Issued at **Høvik** on **2013-06-04**

DNV local station: **Pusan**

Approval Engineer: **Ivar Bull**

for **Det Norske Veritas AS**

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**Marit Laumann**  
**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.  
If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

**Product description**

Type: FFCS & FFCS(S) 300/500 V  
 Conductors: Tinned, stranded copper class 5  
 Core insulation: Fluorinated ethylene propylene (FEP)  
 Inner covering: PVC or S95 ((S) type)  
 Shield: Tinned, Copper wire braid with drain wire  
 Outer sheath: Ethylene-tetrafluoroethylene (ETFE)

Number of cores x conductor cross-section mm <sup>2</sup>	Overall Diameter Min. mm	Overall Diameter Max. mm
2 x 0,75	5,6	6,6
3 x 0,75	5,9	6,9
5 x 0,75	7,1	8,1
7 x ,075	7,5	8,5
12 x 0,75	9,9	10,9
16 x 0,75	11,1	12,1
20 x 0,75	12,0	13,0
2 x 1,0	6,0	7,0
3 x 1,0	6,3	7,3
5 x 1,0	7,4	8,4
7 x 1,0	8,0	9,0

Number of cores x conductor cross-section mm <sup>2</sup>	Overall Diameter Min. mm	Overall Diameter Max. mm
2 x 1,5	6,6	7,6
3 x 1,5	6,8	7,8
5 x 1,5	8,3	9,3
7 x 1,5	9,0	10,0
2 x 2,0	7,5	8,5
3 x 2,0	7,9	8,9
2 x 2,5	7,9	8,9
3 x 2,5	8,4	9,4

**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 Bundles of Cables or Wires) are fulfilled without any additional measures.

**Type Approval documentation**

**Tests carried out**

Mandatory Type Tests according to Type Approval Programme 6-827.11 (2013-06).  
 Optional tests: IEC 60332-3-22 and Oil Resistance & Fluid Immersion" in accordance with BS 3G 230.

**Marking of product**

YOUNG CHANG – FFCS or FFCS(S) – size – 300/500 V – IEC 60332-3-22 – Lot No.

**Certificate retention survey**

The scope of the retention/renewal survey is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and 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.

Survey to be performed at least every second year.  
 END OF CERTIFICATE