DNV·GL

Certificate No:
TAE00003DT

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Heat Shrinkable Tubing

with type designation(s)
Heat shrinkable tubing: FCSM

Issued to
Tyco Electronics Raychem GmbH
Ottobrunn, Germany

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Issued at **Hamburg** on **2019-04-11**
This Certificate is valid until **2024-04-10**.
DNV GL local station: **Augsburg**

Approval Engineer: **Carsten Hunsalz**

for **DNV GL**

Arne Schaarmann
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.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Product description

Component		1 Colour	Property	Material / Product specification
Tubing	**Coating**			
FCSM		Black	Flame retarded	PPS 3010/06
-/S	Adhesive	Opaque	Sealant against moisture	PPS 3012/76

List of sizes:

Type FCSM tubing	Inside diameter		Wall thickness
	As supplied Minimum (mm)	After free recovery Maximum (mm)	After free recovery Minimum (mm)
Size			
9/3	9	3	2
19/6	19	6	2,4
28/9	28	9	3,2
38/12	38	12	4,1
51/16	51	16	4,1
68/22	68	22	4,1
90/30	90	30	4,1
120/40	120	40	4,1
177/63	177	63	4,1

Application/Limitation

For protection and or insulation of cables and wires.
Voltage: Max 1000 V.
Temperature class: -40 °C to +90 °C
Dielectric Strength: 130 kV/cm Min.

Type Approval documentation

Tests carried out

Heat shock (ASTM D2671), Elongation, Aging (ISO 188), Flamability (IEC 60332-1), Low Temp Flexibility (ASTM D2671), Dielectric strength (IEC 60243).

Marking of product

Raychem – Product type – size – batch no.

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) checked (if not available tests according to 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.

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