DNV·GL

Certificate No:
TAE00003DW

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Heat Shrinkable Tubing

with type designation(s)
Heat shrinkable tubing: MWTM & WCSM

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.

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Product description

Component		Colour	Property	Material / Product specification
Tubing	**Coating**			
MWTM Mono		Black	Insulating low voltage application	PPS 3010/19
Coex S	Adhesive	Opaque	Sealant against moisture	PPS 3012/76
WCSM Mono		Black	Insulating low voltage application	PPS 3010/10
Coex S	Adhesive	Opaque	Sealant against moisture	PPS 3012/76

List of sizes:

Type **MWTM tubing**	Inside diameter		Wall thickness
	As supplied Minimum (mm)	After free recovery Maximum (mm)	After free recovery Minimum (mm)
Size			
10/3	10	3	1
12/3**(coex)**	12	3	2
16/5	16	5	1.4
25/8	25	8	2
30/8	30	8	2
35/12**(coex)**	35	12	2
35/12**(mono)**	35	10	2
50/16	50	16	2
63/19	63	19	2.4
70/26**(coex)**	70	26	2.0
70/26**(mono)**	73	26	2.0
75/22	75	22	2.7
85/25	85	25	2.8
90/36**(coex)**	90	36	1.9
90/36**(mono)**	94	36	1.9
95/29	95	29	3.1
105/34	105	34	3.1
115/34	115	34	3.1
120/54**(coex)**	120	54	2.0
120/54**(mono)**	124	54	2.0
140/42	140	42	3.1
160/50	160	50	3.2
164/80**(coex)**	164	80	1.9
164/80**(mono)**	164	80	1.9
180/60	180	60	3.2
195/102	195	102	1.9
245/80**(mono)**	245	80	2.4

Type **WCSM tubing**	Inside diameter		Wall thickness
Size	As supplied Minimum (mm)	After free recovery Maximum (mm)	After free recovery Minimum (mm)
12/3	12	3	2.0
16/4	16	4	2.4
24/6	24	6	2.7
34/8	34	8	4.0
48/12	48	12	4.5
56/16	56	16	4.4
70/20	70	20	4.4
90/25	90	25	4.3
110/30	110	30	4.3
130/35	130	35	4.3
160/50	160	50	4.3
180/50	180	50	4.3
200/50 (coex)	200	50	4,3
250/65 (coex)	250	65	4,3
285/95	285	95	4,3
320/95	320	95	4,3

Application/Limitation

For protection and or insulation of the core joints and repair of the outer sheath of cables.
Voltage: Max 1000 V.
Temperature class: -40 °C to +90 °C
Dielectric Strength: 100 kV/cm Min. – 200 kV/cm Min. dependent upon material type and wall thickness.
MWTM and WCSM are not considered flame retardant.
This will normally not hinder its use due to the limited amount of material used.

Type Approval documentation

Tests carried out

Heat cycling, Submerged test, Insulation Resistance (WSCM part of repair joint).

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