

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Heat Shrinkable Tubing**

with type designation(s)

Heat shrinkable tubing: MDT-A-F-471 Polyolefin with hot melt adhesive

Issued to

**3M Nederland B.V. (Vestiging Amersfoort)
Amersfoort, Utrecht, Netherlands**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2020-06-22**This Certificate is valid until **2025-06-21**.DNV GL local station: **Netherlands CMC**for **DNV GL**Approval Engineer: **Ivar Bull**

**Marta Alonso Pontes
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.



Job Id: **262.1-031478-1**
Certificate No: **TAE00003ZS**

Product description

MDT-A-F-471 Polyolefin with hot melt adhesive

Color: Black
UV resistant: Yes
Shrink Ratio: up to 4,5:1
Tensile Strength: 10-13 N/mm²
Elongation at Break: 300-500%

List of sizes:

ID [mm]		Outer Wall Thickness [mm]	Adhesive Wall Thickness [mm]
Supplied (min)	Recovered (max)	Recovered (Avg.)	Recovered (Avg.)
12,0	3,0	2,0	0,50
19,0	6,0	2,5	0,85
27,0	7,5	2,5	1,00
32,0	7,5	2,5	1,00
38,0	12,0	2,5	1,00
50,0	18,0	2,5	0,85
70,0	26,0	2,5	0,85
90,0	36,0	2,5	0,85
120,0	36,0	2,5	0,85

Application/Limitation

For protection and or insulation of cables and wires.

Voltage: Max 1000 V.

Continuous Operating Temperature (outer wall): -40<>110°C

Breakdown Voltage:

Exp. ID:	Breakdown voltage:
10-25 mm	>12 kV/mm
26-50 mm	>10 kV/mm
51-120 mm	>8 kV/mm
≥121 mm	>6 kV/mm

Type Approval documentation

Tests carried out

Applicable tests listed in IEC 60684-2

Marking of product

3M – MDT-A-F-471 – 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.



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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