



Applications

This reference is recommended for its use in cooling systems in buses, coaches, lorries and industrial vehicles, cooling systems in cogeneration units and marine engines, and transport of high temperature fluids in general industry. These hoses are commended for its use in straight sections without curves.

The inner layer could be made in FVMQ silicone which is especially recommended for turbocharger systems in industrial vehicles due to its high capacity to withstand hydrocarbons and oil particles in the cooling pressurized air.

It can also be made with R/A VMQ silicone which is especially recommended for cooling systems.

Limitations

Respect the work pressure established values.

Gas oil and oil stains do not damage the tubes, but they should not be used to transport fuel or oil, nor be submerged in these liquids.

This type of tube is not recommended for applications with negative pressure (vacuum).

This product is not recommended for the transport of abrasive particles.

Regulations

- The outer VMQ silicone for this hose is classified as M1 according to UNE 23.727-90 standard and as F2 according to NF F 16-101.
- The burning, smoke and dripping class of this reference is S-3, SR-2 and ST-2 according to DIN 54837:2007 test standard and DIN 5510-2:2009 classification standard.
- This reference is classified by UL94 as V1.
- Silicone rubber used is in accordance with EU Directive 2002/95/ECC for Restriction of the use of hazardous substances (RoHS).

Properties

- Smooth inner and outer appearance. Red outer and inner color. When the inner layer is made of FVMQ silicone the inner layer is dark blue or black.
- Excellent flexibility during the assembly process.
- Not affected by anti-freeze or anti-rust liquids.
- Excellent resistance to thermal aging and oxidizing agents (oxygen, ozone and UV)
- Highly resistant to hardening with very good compression characteristics.
- Operational temperature range from -60°C (-75 F) to +200°C (392 F), it may reach up to 220°C (428 F) during short periods of time.
- The standard manufacturing length is 4 meters long (13.12 ft.), although it is available in shorter lengths if necessary.

Technical Specifications

For the three aramid reinforcement construction (Vena® Sil 200) independently of the inner layer construction the technical specifications are listed below:

Inner Diameter		Wall thickness		Working Pressure ISO 1402/2009		Bursting Pressure ISO 1402/2009	
<i>mm</i>	<i>inch</i>	<i>+1/ -0.5 mm</i>	<i>+0.04/ -0.02 inch</i>	<i>Bar at 20°C</i>	<i>Psi at 68°F</i>	<i>Bar at 20°C</i>	<i>Psi at 68°F</i>
18	5/7	3.70	0.15	13.4	194.3	40.3	584.4
25	1	3.70	0.15	8.4	121.8	25.3	366.9
38	1 1/2	3.70	0.15	4.6	66.7	13.7	198.7
48	1 7/8	3.70	0.15	4.1	59.5	12.3	178.4
60	2 3/8	3.70	0.15	3.5	51.2	10.6	153.7
65	2 9/16	3.70	0.15	3.3	47.9	9.9	143.6
70	2 3/4	3.70	0.15	3.1	44.5	9.2	133.4
75	3	3.70	0.15	2.8	40.6	8.4	121.8
80	3 1/8	3.70	0.15	2.6	37.2	7.7	111.7
90	3 1/2	3.70	0.15	2.1	30.5	6.3	91.4

For the four aramid reinforcement construction (Vena® Sil 240) independently of the inner layer construction the technical specifications are listed below:

Inner Diameter		Wall thickness		Working Pressure ISO 1402/2009		Bursting Pressure ISO 1402/2009	
<i>mm</i>	<i>inch</i>	<i>+1/ -0.5 mm</i>	<i>+0.04/ -0.02 inch</i>	<i>Bar at 20°C</i>	<i>Psi at 68°F</i>	<i>Bar at 20°C</i>	<i>Psi at 68°F</i>
18	5/7	4.50	0.18	14.6	211.7	43.8	635.1
25	1	4.50	0.18	10.4	150.8	31.3	453.9
38	1 1/2	4.50	0.18	7.8	113.1	23.5	340.8
48	1 7/8	4.50	0.18	6.1	88.5	18.3	265.4
60	2 3/8	4.50	0.18	5.4	78.3	16.1	233.5
65	2 9/16	4.50	0.18	5.0	72.5	15.0	217.5
70	2 3/4	4.50	0.18	4.7	68.2	14.1	204.5
75	3	4.50	0.18	4.4	63.8	13.4	194.3
80	3 1/8	4.50	0.18	4.2	60.9	12.6	182.7
90	3 1/2	4.50	0.18	3.7	53.7	11.2	162.4
100	4	4.50	0.18	2.2	31.9	6.5	94.3

Construction

This reference could be manufactured with three or four aramid reinforcements. The external rubber is always VMQ silicone rubber (Vinyl-Methyl Quality) and the inner layer could be made in FVMQ or in VMQ silicone.

Silicone Properties

The typical properties of the outer VMQ silicone are:

Property	Method	Unit	Value
Hardness	ISO 868:2003	Shore A	70±3
Tensile strength	ISO 37:2011	MPa	>7
Elongation at break	ISO 37:2011	%	>300
Tear Strength (Method B)	ISO 34-1:2010	kN/m	>19

The typical properties of the inner R/A VMQ Silicone layer are:

Property	Method	Unit	Value
Hardness	ISO 868:2003	Shore A	56±5
Tensile strength	ISO 37:2011	MPa	>7
Elongation at break	ISO 37:2011	%	>300
Tear Strength (Method B)	ISO 34-1:2010	kN/m	>19

The typical properties of the inner FVMQ silicone are:

Property	Method	Unit	Value
Hardness	ISO 868:2003	Shore A	60±5
Tensile strength	ISO 37:2001	MPa	>7
Elongation at break	ISO 37:2001	%	>200
Tear Strength (Method B)	ISO 34-1:2010	kN/m	13-23

Fabric Properties

The typical properties of the fabric are:

Property	Method	Unit	Value
Weight		g/m ²	145±5%
Thickness		mm	0.50±0.10
Breaking Elongation Warp Weft	ASTM D-5035-95	%	60 60
Breaking Strength Warp Weft	ASTM D-5035-95	Kgf/cm ²	>100 >100