

VENA® PEM PURE

Ref: DO 03.10 FT 347 Rev. 02 Date: 13/02/2023

APPLICATIONS



Vena® PEM PURE is specially designed to fulfill the main requirements to use in the cathode and cooling of PEM (polymer electrolyte membrane) Fuel Cell systems.

Specially designed for the passage of oxygen and deionized water or coolants.

The use of high purity platinum cured silicone ensure the ultra-low content of leachable substances and component inertness in Fuel Cell ambient.

PROPERTIES

- Good mechanical properties.
- Low conductivity.
- Excellent purity – extremely low extractables and volatile compounds content.
- Specific postcuring process and cleaning protocol is applied to reduce the amount of environmental and production contaminants. Pharma-grade treatment.
- Imparts almost no conductivity to contact fluids.
- Excellent resistance to thermal aging and oxidizing agents (oxygen, ozone, UV).
- Hoses are capped so that they can be delivered with the lower possible level of contaminants.
- Operational temperature range from -60°C (-75 F) to +180°C (356 F), it may reach up to 200°C (392 F) during short periods of time.

CONSTRUCTION

- Transparent and smooth inner layer of platinum cured silicone, smooth and customized color external layer.
- Usually, external green color used for air application and external blue color for water and coolant application, but color could be customized under request
- This reference is manufactured with three polyester fabric reinforcements.
- Can be produced with customized lateral outlets and metal screwed connections for adapting any sensor
- Can be equipped with stainless steel or aluminum connections

Alternatives:

PEM PURE PLUS: One more layer of polyester fabric reinforcement to greater pressure resistance.

PEM PURE HT: Aramid layers instead polyester to reach up to +200°C (392 F) for operational temperature and 220°C (428 F) during short periods of time.

PEM PURE WIRED: Encapsulated coopered steel spring wire for vacuum resistance and bend availability.

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REGULATIONS

Pharma grade inner layer USP Class VI and FDA approved.

This reference can be classified as V1 by the flammability specification UL-94 (flame retardant and self-extinguishing) under request.

This reference is in accordance with the RoHS Directive 2002/95/EC and its subsequent amendments including the RoHS2 Directive 2011/65/EU and RoHS3 Directive 2015/863.

TECHNICAL SPECIFICATIONS

Inner Diameter		Wall Thickness		Working pressure ISO 1402		Bursting pressure ISO 1402	
mm	inch	+1.0/-0.5 mm	+0.04/-0.02 inch	Bar at room temperature	Psi at room temperature	Bar at room temperature	Psi at room temperature
6	1/4	4.30	0.17	16.2	234.4	48.5	703.3
13	1/2	4.30	0.17	9.7	140.6	29.1	421.7
19	3/4	4.30	0.17	7.3	105.4	21.8	316.1
25	1	4.30	0.17	5.9	85.6	17.7	256.7
32	1 1/4	4.30	0.17	4.9	70.8	14.7	212.5
38	1 1/2	4.30	0.17	4.3	62.2	12.9	186.5
45	1 3/4	4.30	0.17	3.8	54.7	11.3	164.0
51	2	4.30	0.17	3.4	49.7	10.3	149.1
57	2 1/4	4.30	0.17	3.2	45.7	9.5	137.0
63	2 1/2	4.30	0.17	2.9	42.3	8.8	127.0
70	2 3/4	4.30	0.17	2.7	39.1	8.1	117.2
76	3	4.30	0.17	2.5	36.5	7.6	109.5
80	3 1/8	4.30	0.17	2.3	33.6	7.0	100.8
90	3 1/2	4.30	0.17	1.9	27.8	5.7	83.2
100	4	4.30	0.17	1.7	23.9	5.0	71.8

PROPERTIES

Silicone properties

The inner platinum cured silicone rubber compound is an organopolysiloxane mixture. The typical properties of this silicone are listed below:

Property	Method	Unit	Value
Hardness	ISO 868	Shore-A	70±5
Specific gravity	ISO 2781	g/cm ³	1,24±0.02
Tensile strength	ISO 37	MpA	>7
Elongation at break	ISO 37	%	>200
Tear Strength	ISO 34	kN/m	>19

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Fabric properties

The typical properties of the polyester mesh fabric are:

Property	Method	Unit	Value
Weight	ISO 3801	g/m ²	145±5%
Thickness	-	mm	0.45±0.05
Break strength (length)	ISO 13934-2	N	>500
Break strength (width)	ISO 13934-2	N	>450
Break elongation (length)	ISO 13934-2	%	>60
Break elongation (width)	ISO 13934-2	%	>60



LIMITATIONS

Respect the work pressure established values. High temperatures may affect the bursting and working pressure values.

This type of tube is not recommended for applications with negative pressure (vacuum), excepts Vena® PEM PURE WIRED alternative.