Aquaman L

Datasheet

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A Michelin Group Company

Industry

Safe Rehabilitation of Drinking Water Mains

NSF AS/NZS 4020 KTW-DVGW WRAS

Mandals Aquaman L is designed for the effective rehabilitation of drinking water mains. The hose is drinking water approved and is designed to have a lifespan of more than 50 years, and is resistant to microbiological attacks. It is available in low and medium-pressure versions.

With Mandals Aquaman L we offer a more sustainable solution to rehabilitate old pipelines with minimal disruption to traffic, pedestrians, and the environment in general, with an improved CO2 footprint and HSE performance. The liner is tested and approved for use with drinking water, and it is flexible in terms of the diameter variation of the original pipe, effortlessly passing sharp bends even at longer lenghts.minimizing the risk of water-borne diseases.

Mandals Aquaman L is a special designed thermoplastic covered hose developed for rehabilitation of potable water mains, ranging from 4" (DN100) to 12" (DN300) nominal pipe diameter.

The hose is packed and delivered in a "U-shape", using tape wrapped around it. Prior to installation a regular cleaning procedure is required of the host pipe and condition controlled by CCTV etc. afterwards.

The hose is pulled through the host pipe by using a wire winch e.g., and can be installed in water mains having bends up to at least 30° (R/D ≥5)[1]. No steaming is required to inflate the hose afterwards. Just by recoupling and setting the hose under minimum 1 bar pressure, it opens up and expands towards the inner pipe wall.

Mandals Aquaman L is a semi-structural, stand-alone hose that will ensure continual water supply even if the host pipe should break. It consists of a thermoplastic polyether based polyurethane (TPU) with excellent wear & tear properties, outstanding hydrolysis resistance and resistance against microbiological attack. Operational pH range is 4-9.[2] The "extrusion through the weave" production method gives excellent bonding between cover and lining as well as firmly encapsulating the circular woven polyester reinforcement

Service Life Time will depend on proper and correct installation into host pipe, as well as concentration of disinfectant chemicals added to the potable water. This should be kept at a minimum. Accelerated aging tests performed by the TPU supplier indicates more than 20 years until 50% Tensile strength reduction at a chlorine dosage in the range 0,05 to 2,5 ppm. (Arrhenius diagram). Please note that this hould be regarded as indicative data only. potable water. This should be kept at a minimum. Accelerated aging tests performed by the TPU supplier indicates more than 20 years until 50% Tensile strength reduction at a chlorine dosage in the range 0,05 to 2,5 ppm. (Arrhenius diagram). Please note that this should be regarded as indicative data only.

Aquaman L (Technical data)

Nominal Pipe Inner Diameter		Hose Int. Diameter		Wall Thickness		Weight		Burst Pressure (ISO 1402)		Maximum Working Pressure		Tensile Strength (4)		Abrasion Resistance (5)	Polymer adhesion level to weave
Inch	mm	Inch	mm	Inch	mm	lbs/ft	Kg/m	psi	bar	psi	bar	lbs x1000	tons	ds	kN/m
3"	80	2,83+0.08	72,0+2,0	0,12	3,0	0.54	0,8	700	48	275	19	14	6	> 250	> 3
4"	100	3,50+0.10	89,0+2,5	0,13	3,2	0.94	1,4	650	45	260	18	22	10	> 250	> 3
5"	125	4,45+0.12	113,0+3,0	0,13	3,4	1.14	1,7	650	45	260	18	33	15	> 250	> 4
6"	150	5,35+0.12	136,0+3,0	0,14	3,6	1.34	2,0	650	45	260	18	35	16	> 250	> 5
8"	200	7,20+0.12	183,0+3,0	0,16	4,0	1.88	2,8	610	42	245	17	66	30	> 250	> 5
10"	250	9,00+0.16	228,0+4,0	0,17	4,2	2.75	4,1	520	36	210	14	81	37	> 200	> 5
12"	300	10,65+0,20	271,0+5,0	0,18	4,6	3.08	4,6	435	30	175	12	98	45	> 150	> 5

Note:

(1) Will depend on Operating Pressure and Hose Diameter
(2) Depending on Operating Temperature. Contact Fenner Mandals for further advice
(3) A Safety Factor of 2,5 is applied
(4) Theoretical calculated Tensile Strength. Efficiency factor of 0,8 is applied
(5) In-house Test procedure (Double strokes –ds)
(6) Test procedure: NS-EN ISO 8033 (increased requirements)

Section lengths will depend on:

- Hose Dim: Large dim - > Shorter lengths. Secondly, higher friction and drum space
- Number of bends: More bend => Higher friction => Higher traction
- Bend angle and R/D ratio: Sharp bends => Higher friction and greater risk of damage to the hose during retraction. Can be dampened with good lubrication (silicone oil / cooking oil etc) on hose. High R/D ratio means less curvature and facilitates retraction, but also less "buckling" or folding of the hose at the smallest curvature radius

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