

PIPE REHABILITATION INDUSTRIAL



Designed is a special designed thermoplastic covered hose developed for rehabilitation of industrial water mains as for instance cooling water-, fire water mains etc.

The Hose can be delivered in diameter range suitable for 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 Pipe Rehabilitation (Industrial) 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 4-9². 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 the host pipe, as well as operating temperature and chemical reactivity of the water based fluid transferred. Accelerated aging (hydrolysis) tests performed by the TPU supplier indicate more than 50 years time span to 50% Tensile Strength reduction at 23 °C (Arrhenius diagram). Note that these results are based on single tests, in pure water and must be seen as indicative only.

TECHNICAL DATA

NOMINAL PIPE INNER DIAMETER		HOSE INT. DIAMETER		WALL THICKNESS		WEIGHT		BURST PRESSURE (ISO 1402)		MAXIMUM WORKING PRESSURE (3)		TENSILE STRENGTH (4)		ABRASION RESISTANCE (5)	POLYMER ADHESION LEVEL TO WEAVE (6)
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

NOTES

- (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