

Marley EnduroFlex2

Advanced second generation performance.



- ✓ IMPROVED U.V. PROTECTION
- ✓ HIGHER PRESSURE RATING THAN LDPE
- ✓ DESIGNED FOR USE WITH HANSEN FITTINGS
- ✓ BLOAT & TRACE ELEMENT RESISTANT
- ✓ IMPROVED WALL DIMENSIONS

MARLEY

Advantages of Marley EnduroFlex2

Improved performance

Marley EnduroFlex2 has been re-engineered with an improved compound and revised wall dimensions to take the lead in advanced product development in its class.

Fittings compatibility

Marley EnduroFlex2 has been specifically re-engineered in conjunction with Hansen to provide superior fitting grip across the entire Hansen fittings range. Marley recommend that only Hansen fittings be used with EnduroFlex2 to ensure the very best performance.



Improved U.V. resistance

Marley EnduroFlex2 has extra U.V. inhibitors to give better protection from sunlight when installed above the ground.

Higher pressure rating

Marley EnduroFlex2 has higher pressure ratings than LDPE across all diameters. This allows EnduroFlex2 to be used in a wider range of applications, especially with large dairy herds where higher flow and pressure ratings are required.

Bloat resistance

Marley EnduroFlex2 is suitable for use with active bloat treatments in the water system in accordance with ASTM.D.1693 condition C.

Resistant to trace elements

Marley EnduroFlex2 is resistant to common trace elements such as magnesium, copper and zinc and is ideally suited for use with Dosatron inline water medication systems where bloat treatments and trace elements are used.



Greater flexibility

Marley EnduroFlex2 has greater flexibility than LDPE. Refer table 1.

TABLE 1 - BENDING RADIUS

| Nominal diameter (mm) | EnduroFlex2 (mm) | LDPE (mm) |
|-----------------------|------------------|-----------|
| 15 | 150 | 330 |
| 20 | 250 | 440 |
| 25 | 350 | 550 |
| 32 | 680 | 704 |
| 40 | 800 | 880 |
| 50 | 1050 | 1100 |







Design information

Pipe Selection:

The first consideration in planning a piped water supply is to decide: (a) Where the pipeline will be situated. (b) For what purpose the water is required. (c) How much water will be required for the total 24 hour period.

Table 2 outlines the amount of water you will need and allows for wastage and hot weather evaporation.

TABLE 2 - Approximate 24 hour water consumption rates

| | | |
|----------------------|---|-----------------------|
| One person |  | = 182 litres/24 hours |
| One milking cow |  | = 140 litres/24 hours |
| One dry cow or steer |  | = 45 litres/24 hours |
| One horse |  | = 54 litres/24 hours |
| One ewe in milk |  | = 15 litres/24 hours |
| One dry sheep |  | = 7 litres/24 hours |

* Water consumption rates allow for all general household water consumption and include water used for farm/milk shed cleaning.

To select the correct diameter of pipe for a water system, the following three points must be established:

1. Volume of water required at peak period.
2. Length of pipe required.
3. Static pressure at outlet available to supply water.

*Maximum pressure in the pipe must NOT exceed working pressure.

TABLE 3 - Pressure rating comparisons at 20°C

| Nominal diameter (mm) | EnduroFlex2 | | LDPE | |
|-----------------------|-------------|-----|--------|-----|
| | m/head | PSI | m/head | PSI |
| 15 | 100 | 142 | 90 | 128 |
| 20 | 90 | 128 | 80 | 116 |
| 25 | 80 | 116 | 65 | 92 |
| 32 | 80 | 116 | 50 | 70 |
| 40 | 70 | 100 | 45 | 64 |
| 50 | 70 | 100 | 35 | 50 |

TABLE 4 - Dimensions

| Nominal diameter (mm) | Mean Inside diameter (mm) | Coil Sizes (m) |
|-----------------------|---------------------------|----------------|
| 15 | 12.85 | 25,50,100,200 |
| 20 | 18.90 | 25,50,100,200 |
| 25 | 25.40 | 25,50,100,200 |
| 32 | 32.00 | 50,100,200 |
| 40 | 37.80 | 50,100,200 |
| 50 | 50.40 | 50,100 |

In order to obtain maximum efficiency for your EnduroFlex2 Pipeline, any installation must be properly planned. Therefore, you are strongly advised to make your water requirement estimates as accurate as possible.



Installation instructions

Expansion and Contraction

Polyethylene has a relatively high co-efficient of expansion, expanding 2mm per lineal metre of pipe with every 10°C increase in pipe material temperature. In above ground installations where the pipe is not fixed and allowed to 'snake', the expansion will be taken up by the flexibility of the pipeline system. When Polyethylene pipe is buried no allowance for expansion and contraction is normally required if the pipeline is permitted to return to normal operating temperature prior to final connection and backfilling.

Maximum Flow:

The flow through Marley EnduroFlex2 will in normal circumstances remain constant throughout the life of the pipeline.

Corrosion Resistance:

Marley EnduroFlex2 is resistant to most forms of chemical attack. It is unaffected by aggressive water or ground conditions and is not subject to electrolytic corrosion.

However, where aggressive chemicals are to be conveyed the suitability for use should be checked against the Chemical Resistance tables in the Marley Pressure Pipelines Manual.

Water Hammer:

Moving liquids in pipelines induce kinetic energy due to the mass and velocity of the liquid flow. Sudden closure or opening of valves in pipelines results in a pressure surge (or 'water hammer') being created as kinetic energy and is converted into pressure energy.

Valves should therefore be opened and closed slowly on all but short, small diameter pipelines.

Above Ground Pipelines:

Where Marley EnduroFlex2 is laid above ground, it is essential to ensure that the pipes are adequately protected from damage by stock and vehicles. Keep pipes away from sharp edges where abrasive action could occur, due to expansion and contraction of pipe, particularly during hot weather. Ensure the pipe has freedom of movement, and if secured to fences the method of clipping should be such that the pipe can move freely when necessary.

More care is necessary when pipelines above 25mm diameter are exposed. This is due to the larger area of pipe exposed to direct sunlight which results in high heat absorption with consequent rise in temperature of the exposed surface. Being a poor thermal conductor, the increase in temperature tends to be localised. While the surface away from the sun remains cool the exposed surface could reach temperatures in excess of 93°C. These temperature differences, combined with the expansion of the pipe cause very severe stresses, leading to an ultimate risk of cracking or fracture. This could be further aggravated in cases where hot fluids are passing through the pipe. The combination of direct sunlight and high fluid temperature will cause expansion to take place, resulting in the pipe bending towards the sunlight. If the pipeline is



under pressure this bending is aggravated, due to reduced tensile strength on the sunlight side of the pipe.

It is therefore recommended that where possible, large bore pipe lines are protected from direct sunlight and where ever possible are buried.

If the pipeline cannot be buried, it should be laid on a flat smooth surface such as a shallow channel three to six times the pipe diameter, snake the pipe and ensure that it has freedom of movement, this also allows for contraction of the pipe under colder conditions.

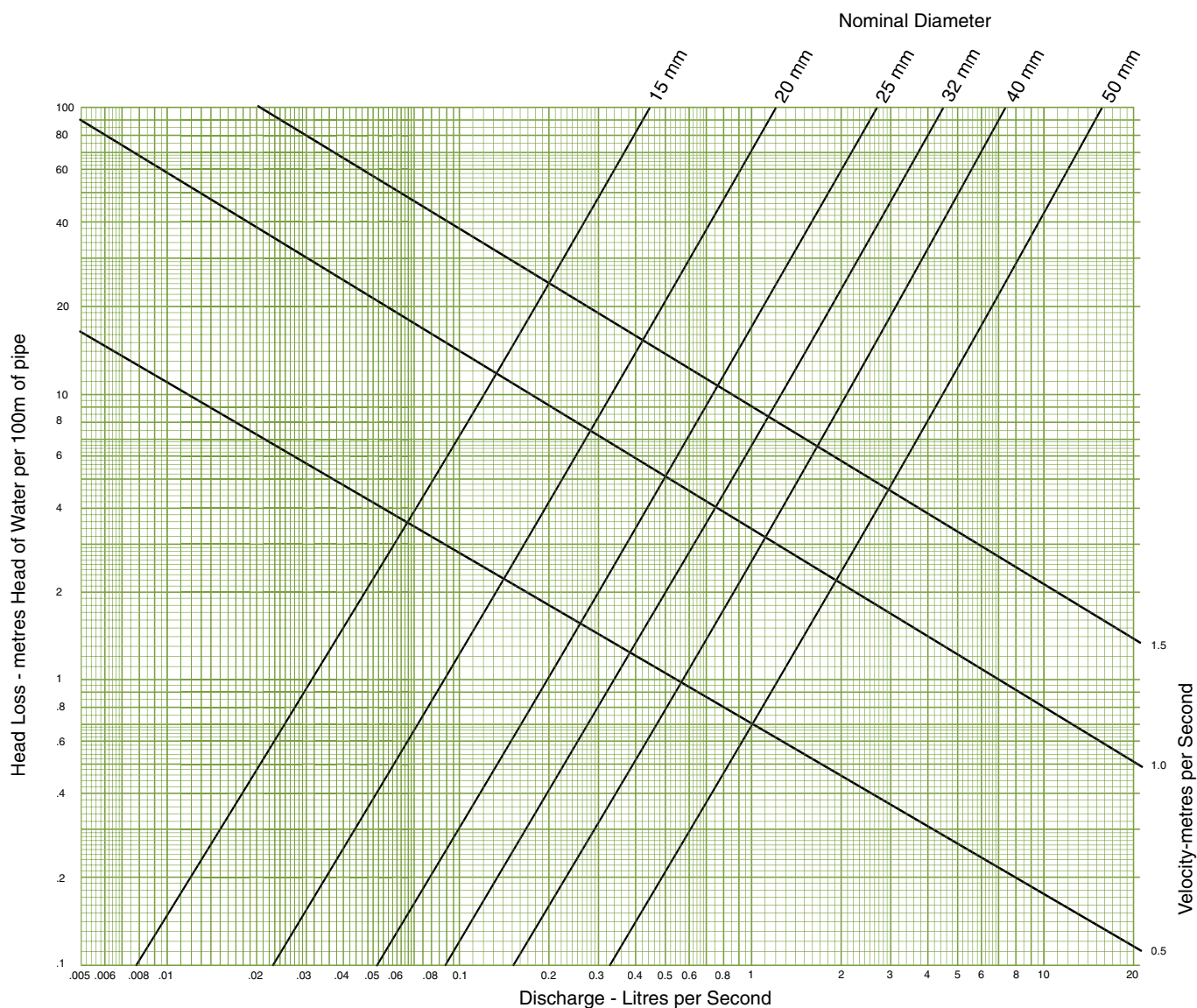
Buried Pipelines:

Below ground installations should have a minimum cover of 300mm and a greater cover in trafficked areas. Bedding material must not contain any sharp objects such as stones as these can cause indentations and scoring of the pipe. Care should be taken to remove all levelling pegs or temporary packing before the commencement of pipe laying.

Ploughing In:

Marley EnduroFlex2 can be ploughed directly into the ground using a pipe laying plough. The pipe must be stationary in relation to the surrounding soil and special care should be taken that the pipe is not subjected to excessive tension during or after the laying operation. The pipe should be inspected to ensure that it is not being scored by the machine. Soils with sharp stones are considered unsuitable for ploughing in techniques.

TABLE 5 - Flowchart



Handling and Storage:

Marley EnduroFlex2 is tough, flexible and in general resistant to impact damage. However, EnduroFlex2 should not be dropped, dragged or subjected to rough treatment and particular care should be taken when loading and unloading. EnduroFlex2, and all polyethylene pipes are susceptible to scoring from sharp edges and are subject to distortion under load, particularly at elevated temperatures.

Cutting:

Marley EnduroFlex2 can be cut with a hacksaw, a fine toothed woodsaw or pipe cutter. Burrs and swarf should be removed with sand paper, fine file or sharp knife.

DISCLAIMER

This technical data sheet has been compiled by Marley New Zealand Limited ("The Company") to promote better understanding of the technical aspects of the Company's products to assist users in obtaining from them the best possible performance. The technical data sheet is supplied subject to acknowledgment of the following conditions: The technical data sheet is protected by Copyright and may not be copied or reproduced in any form or by any means in whole or in part without prior consent in writing by the Company. Product specifications, usage data and advisory information may change from time to time with advances in research and field experience. The Company reserves the right to make such changes at any time without notice. Correct usage of the Company's products involve engineering judgements which cannot be properly made without full knowledge of all the conditions pertaining to each specific installation. The Company expressly disclaims all and any liability to any person whether supplied with this publication or not in respect of anything and of the consequences of anything done or omitted to be done by any such person in reliance whether whole or partial upon the whole or any part of the contents of this publication. No offer to trade, nor any conditions of trading, are expressed or implied by the issue or content of this manual. Nothing herein shall override the Company's Conditions of Sale, which may be obtained from the Registered Office or any Sales Office of the Company. This technical data sheet is and shall remain the property of the Company, and shall be surrendered on demand to the Company.

AUCKLAND

Mahia Road, Manurewa, Private Bag 802 Manurewa
Sales Department: Telephone 09 279 2777
Direct Fax 09 279 2778 Freefax 0800 652 621
Head Office: Telephone 09 279 2799 Fax 09 279 2798
Sales Hotline: 0800 222 922

CHRISTCHURCH

Shands Road, Hornby, PO Box 16233 Christchurch
Sales Hotline: 0800 222 922