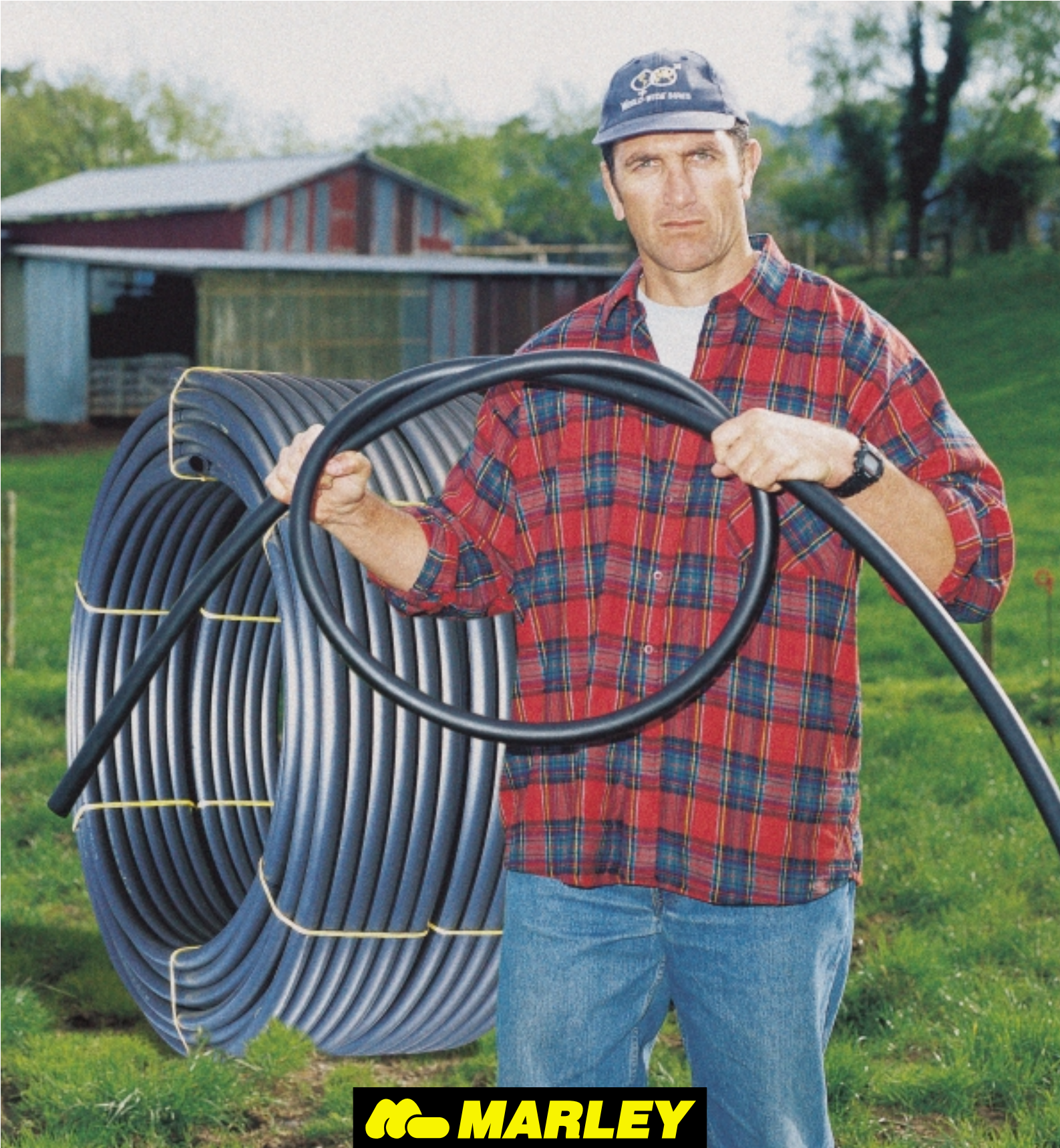


# Marley EnduroFlex

Low density compatible dimension pipe



 **MARLEY**

**RURAL**

P I P E L I N E S

## UNIQUE FEATURES OF MARLEY EnduroFlex

### Bloat resistance

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

### Design flexibility

The range of pressure ratings available with Marley EnduroFlex compared with LDPE (low density polyethylene pipe) allows for greater flexibility for easier design.

### Fittings compatibility

Marley EnduroFlex is fully compatible with Hansen polyethylene pipe fittings

## DESIGN INFORMATION







### Pipe Selection:

The first consideration in planning a piped water supply is to decide: (a) Where it is to go. (b) What purpose the water is required for (c) How much water will be required for the total 24 hour period. Have a close look at table 1 below. It will give you an indication of the amount of water you will need and allows for wastage and hot weather evaporation. With people, this table includes washing and general usage; with milking cows it allows for shed washing and cooling. To select the correct diameter of pipe for a water system, the following four points must be established:

1. Volume of water required at peak period.
2. Length of pipe required.
3. Maximum pressure in the pipe must NOT exceed working pressure.
4. Static pressure at outlet available to supply water.

**TABLE 1**

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

It must be emphasised that in order to obtain maximum efficiency for your EnduroFlex Pipeline, any installation must be properly planned. In order to ensure this, you are strongly advised to make your water requirement estimates as accurate as possible and to contact your Marley Representative for specific information before proceeding.

**TABLE 2. DIMENSIONS**

Nominal diameter (mm)	Mean Inside diameter (mm)	Coil Sizes (metres)
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

### Expansion and Contraction:

Polyethene 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 polyethene 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 EnduroFlex will generally remain constant throughout the life of the pipeline. Scale build-up in the bore is generally eliminated.

### Corrosion Resistance:

Marley EnduroFlex 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:

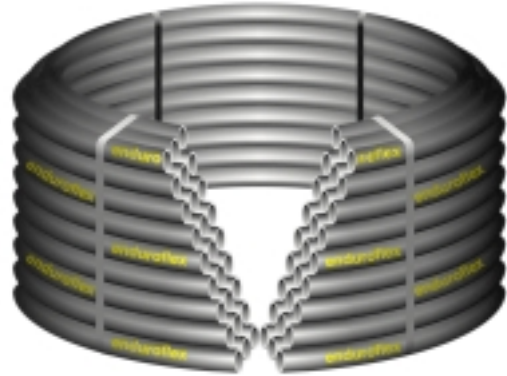
Moving liquids in pipelines induce kinetic energy due to the mass and velocity of the liquid flow. Sudden closure or opening of valves in pipelines results in a pressure surge (or "water hammer") being created as kinetic energy is converted into pressure energy.

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

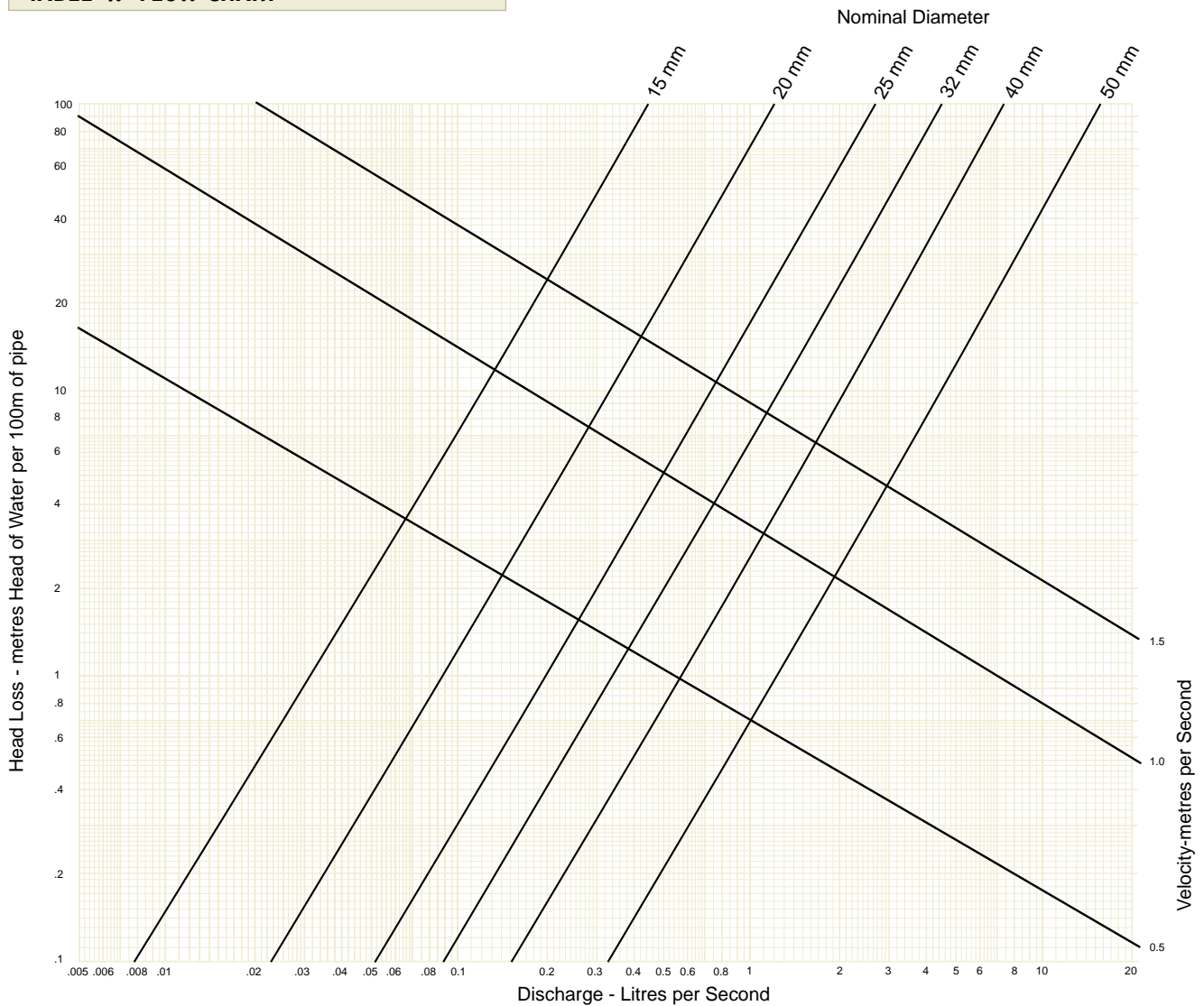
# MARLEY EnduroFlex • LOW DENSITY COMPATIBLE DIMENSION PIPE • FOR AGRICULTURAL USE

**TABLE 3. PRESSURE RATING COMPARISONS AT 20° C**

Nominal diameter (mm)	EnduroFlex		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. FLOW CHART**



**TABLE 5. BENDING RADIUS**

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



## INSTALLATION DETAILS

### Above Ground Pipelines:

Where Marley EnduroFlex 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 surfaces where abrasive action could occur, due to expansion and contraction of pipe, particularly during hot weather. Ensure 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, and the surface away from the sun remains cool, it has been noticed that the exposed surface could reach temperatures in excess of 93° C. These temperature differences in close proximity, combined with the expansion of the pipe causes 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 outwards 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, protect large bore pipe lines from direct sunlight and wherever possible bury.

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 object 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 EnduroFlex 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.

### Handling and Storage:

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

### Cutting:

Marley EnduroFlex 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.

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