SecuraGold™ Polybutene-1 Pipe & DZR Brass Fittings

Marley New Zealand Limited supplies the SecuraGold™ range of polybutene pipe and fittings Hot and Cold Potable Water system, designed in New Zealand for the professional plumber. The system features include:

- Triple barb design for security
- Wider crimp area
- Fast to install
- Seeing eyelet for pipe location
- 25-year warranty
- Backed by Aliaxis, a global leader in advanced fluid management
- Producer/install statements for owner piece of mind

Material Specifications

Pipe

- Grey Pipe – Lyondell Basell Akoalit PB 4267 Grey Polybutene-1
- Green and Lilac Pipe – Lyondell Basell PB 4268 White

Fittings

- Fitting body – C35200 Dezincification resistant brass alloy
- Crimp Ring – Annealed copper
- Retaining ring – Ethylene-vinyl acetate
- End Cap – Low-density polyethylene
- Sealing Olive – Polybutene-1

Table 1: Pipe Product Codes

CODE	DESCRIPTION	PACK SIZE
N2PS5	12mm x 5m Straight	20
N3PS5	15mm x 5m Straight	20
N4PS5	20mm x 5m Straight	1
N5PS5	28mm x 5m Straight	5
N2PC25	12mm x 25m Coil	1
N3PC25	15mm x 25m Coil	1
N4PC25	20mm x 25m Coil	1
N5PC25	28mm x 25m Coil	1
N2PC50	12mm x 50m Coil	1
N3PC50	15mm x 50m Coil	1
N4PC50	20mm x 50m Coil	1
N2PC100	12mm x 100m Coil	1
N3PC100	15mm x 100m Coil	1
N3PS5L	15mm x 5m Straight (Lilac)	20
N3PC25L	15mm x 25m Coil (Lilac)	1
N4PS5L	20mm x 5m Straight (Lilac)	10
N4PC25L	20mm x 25m Coil (Lilac)	1
N3PS5G	15mm x 5m Straight (Green)	20
N3PC25G	15mm x 25m Coil (Green)	1
N4PS5G	20mm x 5m Straight (Green)	10
N4PS25G	20mm x 25m Coil (Green)	1

Table 2: Fittings Product Codes

CODE	DESCRIPTION
SC2	12mm Equal Coupling
SC3	15mm Equal Coupling
SC4	20mm Equal Coupling
SC5	28mm Equal Coupling
SC24	12mm x 20mm Reducing Coupling
SC32	15mm x 12mm Reducing Coupling
SC43	20mm x 15mm Reducing Coupling
SC54	28mm x 20mm Reducing Coupling
SAM3	15mm x ½" BSP Male Adaptor
SAM4	20mm x ¾" BSP Male Adaptor
SAM5	28mm x 1" BSP Male Adaptor
SAM23	12mm x ½" BSP Male Adaptor
SAM43	15mm x ¾" Male Adaptor
SAML3	15mm x ½" BSP Lugged Male Adaptor
SWT3	15mm x ½" BSP Female Lugged Tee
ST2	12mm Equal Tee
ST3	15mm Equal Tee
ST4	20mm Equal Tee
ST5	28mm Equal Tee
ST223	12mm x 12mm x 15mm Reducing Tee
ST224	12mm x 12mm x 20mm Reducing Tee
ST332	15mm x 15mm x 12mm Reducing Tee
ST334	15mm x 15mm x 20mm Reducing Tee
ST433	20mm x 15mm x 15mm Reducing Tee

CODE	DESCRIPTION
ST434	20mm x 15mm x 20mm Reducing Tee
ST442	20mm x 20mm x 12mm Reducing Tee
ST443	20mm x 20mm x 15mm Reducing Tee
ST553	28mm x 28mm x 15mm Reducing Tee
ST554	28mm x 28mm x 20mm Reducing Tee
SE2	12mm Elbow 90°
SE3	15mm Elbow 90°
SE4	20mm Elbow 90°
SE5	28mm Elbow 90°
SE43	20mm x 13mm Elbow 90°
SE54	28mm x 20mm Elbow 90°
SE3045	15mm Elbow 45°
SE4045	20mm Elbow 45°
SE5045	28mm Elbow 45°
SWM2100	12mm x ½" BSP (100mm L) Wingback Elbow (M)
SWM3	15mm x ½" BSP (65mm L) Wingback Elbow (M)
SWM3100	15mm x ½" BSP (100mm L) Wingback Elbow (M)
SWM4100	20mm x ¾" BSP (100mm L) Wingback Elbow (M)
SEM3	15mm x ½" BSP Threaded Elbow (M)
SEM4	20mm x ¾" BSP Threaded Elbow (M)
SW23	12mm x ½" BSP Wingback Elbow (F)
SW3	15mm x ½" BSP Wingback Elbow (F)
SW34	15mm x ¾" BSP Wingback Elbow (F)
SW4	20mm x ¾" BSP Wingback Elbow (F)
SW43	20mm x ½" BSP Wingback Elbow (F)
SDWM3100	15mm x ½" BSP (100mm L) Double Fix Wingback (M)
SDWM3200	15mm x ½" BSP (200mm L) Double Fix Wingback (M)
SDWM4100	20mm x ¾" BSP (100mm L) Double Fix Wingback (M)
SDW3	15mm x ½" BSP Double Fix Wingback (F)
SDW4	20mm x ¾" BSP Double Fix Wingback (F)
SDW5	28mm x 1" BSP Double Fix Wingback (F)
SH3	15mm x ½" BSP Hoseplate (F)
SH4	20mm x ¾" BSP Hoseplate (F)

CODE	DESCRIPTION
SXE3	15mm x ½" BSP Swivel Elbow
SXE4	20mm x ¾" BSP Swivel Elbow
SXE5	28mm x 1" BSP Swivel Elbow
SXE23	12mm x ½" BSP Swivel Elbow
SXE24	12mm x ¾" BSP Swivel Elbow
SXE34	15mm x ¾" BSP Swivel Elbow
SXE43	20mm x ½" BSP Swivel Elbow
SXC3	15mm x ½" BSP Swivel Connector
SXC4	20mm x ¾" BSP Swivel Connector
SXC5	28mm x 1" BSP Swivel Connector
SXC23	12mm x ½" BSP Swivel Connector
SXC34	20mm x ½" BSP Swivel Connector
SXC43	15mm x ¾"BSP Swivel Connector
SXC54	28mm x ¾" BSP Swivel Connector
SAF3	15mm x ½" BSP Female Adaptor
SAF4	20mm x ¾" BSP Female Adaptor
SMF4203	20mm x 3 (12mm Outlets) Manifold
SMF4303	20mm x 3 (15mm Outlets) Manifold
SMF4204	20mm x 4 (12mm Outlets) Manifold
SMF4304	20mm x 4 (15mm Outlets) Manifold
SXT3	½" BSP x ½" BSP x 15mm Crox Tee Adaptor
SBP2	12mm Blank Plug
SBP3	15mm Blank Plug
SBP4	20mm Blank Plug
SBP5	28mm Blank Plug
SBT3	15mm Brazing Tail
SBT4	20mm Brazing Tail
SMC2520	25mm PE x 20mm PB Mains Coupling
SME2520	25mm PE x 20mm PB Mains Elbow
STCF3	15mm Threaded End Cap (F)
STCF4	20mm Threaded End Cap (F)

Product Intended Use

The SecuraGold™ system is designed to distribute Hot and Cold Potable Water within a residential or commercial building.

WaterMark Certification Licence Numbers:

WMKA 1289-1 – Fittings
WMK 1289/1 – Pipe

Manufacturing Standards

AS/NZS 2642.1 Polybutylene (PB) plumbing pipe systems - Polybutylene (PB) pipe extrusion compounds
AS/NZS 2642.2 Polybutylene (PB) plumbing pipe systems - Polybutylene (PB) pipe for hot and cold-water applications
AS/NZS 2642.3 Polybutylene (PB) plumbing pipe systems - Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold-water applications
AS2345:2006, (R2016) Dezincification resistance of copper alloys

On Product Identifiers

Where possible each fitting has the letters DUX, and DR embossed onto the brass body, additionally all Copper Crimp Rings are marked with Standards and Licencing information.

Polybutene-1 Pipe – is marked every metre with manufacturing and licencing information.

Relevant New Zealand Building Code Clauses

The SecuraGold™ System when used, installed, and maintained in accordance with the installation requirements detailed within the SecuraGold™ Technical Manual will meet or contribute to meeting of the following NZBC clauses:

- NZBC B2: Durability – SecuraGold™ pipe and fittings will meet and exceed the 50-year durability requirement of B2
- NZBC G12/AS1: As a fully WaterMark certified system, SecuraGold™ meets all the tests required by WaterMark and will therefore meet the requirements of G12/AS1 as a potable Hot and Cold-water system
- NZBC H1 Energy Efficiency – SecuraGold™ pipe meets the volume requirements of NZS 4305

SecuraGold™ fittings are manufactured and tested at audited manufacturing sites with secondary quality controls carried out by staff at the Marley warehouse including full dimensional and visual checking, in conjunction with dezincification and chemical composition testing at an independent IANZ accredited laboratory

Design

When designing a Hot and Cold Potable Water system using SecuraGold™ there are several points to consider to ensure that appliances meet the flow requirements of sanitary fixtures under G12:

Table 3 from G12 Water Supplies has been reproduced and is correct at the time of this document version.

Table 3: Acceptable Flow Rates to Sanitary fixtures Paragraph 5.3.1

SANITARY FIXTURE	FLOW RATE AND TEMPERATURE L/S AND °C	HOW MEASURED
Bath	0.3 at 45°C	Mix hot and cold water to achieve 45°C
Sink	0.2 at 60°C* (hot) and 0.2 (cold)	Flow rates required at both hot and cold taps but not simultaneously
Laundry Tub	0.2 at 60°C* (hot) and 0.2 (cold)	Flow rates required at both hot and cold taps but not simultaneously
Basin	0.1 at 45°C	Mix hot and cold water to achieve 45°C
Shower	0.1 at 42°C	Mix hot and cold water to achieve 42°C

*The temperatures in this table relate to the temperature of the water used by people in the daily use of the fixture.
Note: The flow rates required by Table 3 shall be capable of being delivered simultaneously to the kitchen and one other fixture.

As shown in Table 3 there are specific flow rates to certain appliances, to achieve these flow rates it is important to understand the flow rate capabilities of Polybutene-1 pipe considering pressure loss from the incoming supply.

To assist with this design work there are a set of calculators on the Marley website (www.marley.co.nz) including Flow Rate and Pressure Loss calculators for SecuraGold™ that will calculate the pressure loss and flow rate through the 4 sizes of pipe. Knowing what the pressure loss in comparison to the incoming pressure will help the installer identify if a size pipe is suitable or if you need to increase the flow using the next pipe size up.

Design - Energy Efficiency

In hot water systems it is important to understand the requirements for the acceptable maximum lengths of developed pipework that are stipulated in NZS 4305 Energy Efficiency – Domestic Type Hot Water Systems shown below.

3.2 Pipe-runs

3.2.1
In a household unit, the developed length of the pipe-run from the water heater to the kitchen sink outlet shall be minimized. Table 5, (reproduced below) provides acceptable maximum pipe lengths. Where the pipe supplying the sink unit is composed of sections of different diameters, the total volume of water in the pipe run shall not exceed 2 litres.

Table 5: Acceptable maximum pipe lengths

NOMINAL PIPE SIZE (MM)	10	15	20
LENGTH (M)	25	12	7

PIPE x STIPULATED LENGTH	VOLUME (LITRES)
12mm @ 25m	1.725
15mm @ 12m	1.512
20mm @ 7m	1.743

12mm, 15mm and 20mm Polybutene-1 pipe satisfy the volume requirements of NZS 4305 Energy Efficiency – Domestic Type Hot Water Systems.

Installation

SecuraGold™ is a simple crimp system that is fast and easy to install however, there are critical steps that need to be taken to ensure that the installation has been carried out correctly.

- Only use Marley supplied materials and tools.
- Check for damage to the pipe prior to installation.
- Confirm the pipe path is away from heat sources such as flues and light fittings.
- Confirm the flow rates to the appliances meet G12/AS1 requirements.
- When pulling pipe through tight areas make sure the pipe does not scrape on sharp edges or become kinked, any damaged or kinked areas must be cut out of the installation.
- When passing Polybutene-1 through timber framework the requirements of *AS/NZS 3500.1 call for the annular space between the timber and the pipe to have a collar or neutral cure silicone applied.
- Polybutene-1 is not UV resistant and must be safeguarded away from direct sunlight.
- Use the gauge tool throughout the installation to ensure the copper crimp rings gauge correctly, if a copper ring does not gauge it is advised that the fitting should be replaced rather than re-crimped. The tool should be checked and calibrated before moving on with the installation.
- A Hydrostatic Pressure test as per AS/NZS 3500.1 must be carried out on the installation to 1500kPa for a minimum of 30 minutes.
- Installations must be carried out by a licensed/registered plumber.
- If SecuraGold™ is to be used for anything other than potable water consult the known chemical resistance charts in the Technical Manual for suitability. Using SecuraGold™ other than for potable water is at the installers risk.

*Refer to standard AS/NZS3500.1 for more information

Installation - Temperature/Pressure relationship

There are limitations placed on all plastic pipes that need to be adhered to, especially when dealing with temperature and pressure. This relationship determines that at varying temperatures maximum set pressures must not be exceeded, the below chart details these requirements as set down in the standard AS/NZS 2642.2 exceeding these maximum temperature/pressure combinations can lead to a shortened service life and/or failure of the pipe wall.

Table 4: Working Pressure Rating of Polybutene-1 Pipe

	WORKING PRESSURE MPa					
Class	20°C	40°C	60°C	72°C	80°C (25 Years) *	95°C (10 Years) **
16	1.60	1.37	1.05	0.88	0.74	0.49
kPa	1600	1370	1050	880	740	490
PSI	232.06	198.7	159.29	127.63	107.33	71.07

Note: Manufacturers recommendations should be sought for applications involving continuous use at temperatures above 60°C
*Note: Continuous use at temperatures above 72°C to a maximum of 80°C will reduce the service life of the pipe to a maximum of 25 years
** Note: Continuous use at temperatures above 80°C to a maximum of 95°C will reduce the service life of the pipe to a maximum of 10 years

Guidelines for safe water temperatures set out in the New Zealand Building Code G12/AS1 should be followed:

6.14 Safe water temperatures
6.14.1 Maximum temperatures

The delivered hot water temperature at any sanitary fixture used for personal hygiene shall not exceed:

a. 45°C for early childhood centres, schools, old people's homes, institutions for people with psychiatric or physical disabilities, hospitals, and

b. 55°C for all other buildings

Comment:

1. At greatest risk from scalding are children, the elderly, and people with physical or intellectual disabilities, particularly those in institutional care.

2. Sanitary fixtures used for personal hygiene includes showers, baths, hand basins and bidets.

Maintenance

Due to the method of installation the SecuraGold™ system is mostly inaccessible, (inside wall cavities or in the roof spaces etc.) and therefore maintenance of the system is typically not feasible or required.
Occasionally unless there is a need for an extension to the system. Where there has been an extension to the system there is a need to carry out a hydrostatic pressure test as per AS/NZS 3500.1, the pressure test must be carried out on the new section of the installation only. Marley has a full Non-Conformance system for defects and/or installation issues for details or assistance please contact the local Marley Territory Manager or Marley at the below address.

Importer/Distributor

Marley New Zealand Limited

- 32 Mahia Road, Manurewa, Auckland 2102, New Zealand
- 0800 627 539
- info@marley.co.nz
- www.marley.co.nz
- NZBN: 9429038863431

Manufacturers

In line with Marley dual supply policy SecuraGold® fittings are supplied from two manufacturing sites using standardized production drawings:

Roxxon (Australia) Pty. Limited/Sanfitec Brass Industry Co., Ltd. – Fittings

- 4/36 Abbott Road, Seven Hills, NSW 2147, Australia
- +61 2 9624 1823
- roxxonli@optusnet.com.au
- No website available

WaterTec (Malaysia) SDN BHD – Componentry

- Lot 3 & 4, Jalan Halba Satu 16/16A, Section 16, 40200 Shah Alam, Selangor Darul Ehsan, Malaysia
- +60 (3) 5510 7808
- No company email available
- www.watertec.biz

Marley New Zealand Limited – Polybutene-1 Pipe

- 32 Mahia Road, Manurewa, Auckland 2102, New Zealand
- 0800 627 539
- info@marley.co.nz
- www.marley.co.nz
- NZBN: 9429038863431

Limitations on use

SecuraGold™ is primarily a potable Hot & Cold-water system, using the system for any other purpose cannot be covered by the SecuraGold™ warranty. For chemicals other than potable water please see the SecuraGold™ Technical Manual for charts showing the known range of chemical compatibilities.

Warnings and/or Bans

SecuraGold™ is not subject to any Warnings or Bans relating to the installation and or use of the pipe and fittings supplied under the brand name SecuraGold™ with any council or local authority that Marley is aware of in New Zealand.

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