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PRODUCT TECHNICAL STATEMENT

GINDE Multi-layer and GINDE Insulated Multi-layer pipe and fittings for water

GINDE Multilayer PEX pipe and fittings are a twin layered x-linked polyethylene pipe, with an aluminium core pipe for water supply.

This PTS covers the following products:

Model identification	Product description	WaterMark endorsed date
GMLP16 (in 5 and 50 m lengths)	PEX-AL-PEX	1 June 2012
GMLP20 (in 5 and 50 m lengths)	PEX-AL-PEX	1 June 2012
GMLP25 (in 5 and 50 m lengths)	PEX-AL-PEX	1 June 2012
GIMLP1650 (in 50 m lengths)	Insulated PEX-AL-PEX	1 June 2012
GIMLP2050 (in 50 m lengths)	Insulated PEX-AL-PEX	1 June 2012
GIMLP2550 (in 50 m lengths)	Insulated PEX-AL-PEX	1 June 2012
GIMLP3250 (in 50 m lengths)	Insulated PEX-AL-PEX	1 June 2012
Including all Ginde fittings as per WaterMark schedule – Certificate number: CMA-WM-80000		

Purpose and use

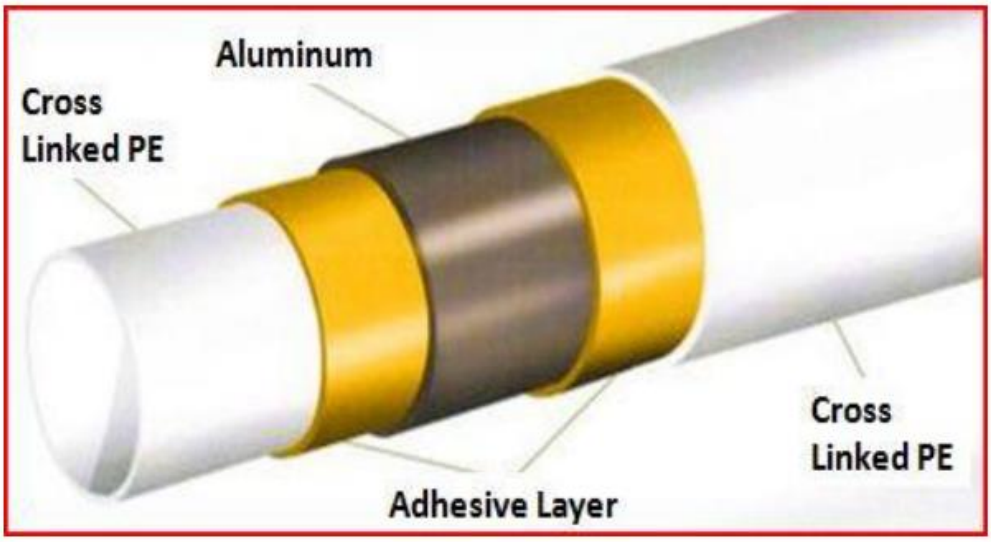
PEX-AL-PEX used for water reticulation, hot or cold (white pipe)

This systems abbreviated to - PAP

Product description

Multi layers of x-linked poly-ethylene and an aluminium core pipe for water supply

- At high pressure and high temperatures, chemical bonds – also called cross-links – are formed between the long molecular chains in the polyethylene using a cross-linking agent
- Extrusion press uses ultrasonic welding to weld aluminium band faces before co-extrusion of PE takes place. This is a one step 5 layer extrusion process.
    - Outer layer of cross-linked polyethylene
    - Hot-Melt Adhesive
    - Aluminium which is longitudinally joined using an ultrasonic overlap welding technology
    - Hot-Melt Adhesive
    - Inside layer of cross-linked polyethylene



When aluminium and copper are in contact with each other, it will cause ageing and electrical corrosion. Ginde PAP composite pipe has a polyethylene pad on the bottom of every fitting that completely separates the aluminium and the brass fittings – Prevents galvanic corrosion due to dissimilar metals

All brass fittings made from DR brass.

Aqualine supplies a wide range of GINDE fittings:

- press fittings
- compression fittings and
- clamp fittings
- Connectors
- Reducing Connectors
- Elbows
- Tee's
- Reducing Tee's

Key advantages

The most important commercial application for Ginde pipe is in pipe for water supply

- High resistance to corrosion
- No sediment or scale build-up
- Low noise transmission – water hammer reduced by 1/3 compared to metal pipes
- Low thermal conductivity saves on heating requirements
- Hygienic operation: does not give off any taste or smell or add any harmful substances
- Very strong and flexible at the same time
- Smooth inner surface enables 30% more flow than copper pipes
- Easy cutting, convenient installation
- Smaller diameter pipes easy to bend by hand
- Not affected if installed in certain building materials such as concrete, lime mortar, gypsum, etc.
- Underground pipes easily found by metal detectors
- Excellent static field properties and can be used for electrical line conduits
- Expected life span more than 50 years

Compliance

Ginde PEX-AL-PEX multi-layer pipe for water are in full compliance with the requirements as set out in the New Zealand Building Code, as follows:

Building code	**Paragraph**	**Requirement**	**Tested to**
B2 (Durability)	AS1/1.2	Moderately difficult to access 15 years 50 years	Independently tested to AS4176.2:2010 and AS4176.3:2010 for achieving WaterMark Tests includes 2.3.3 Long-term rupture test: Tested to conform to a maximum of 1820 kPa at 80°C for a working life not less than 50 years.
	AS1/2.0 Maintenance	No maintenance required	
G12 (Water supplies)	VM1/1.0 Water supply systems	AS/NZS 3500.1 AS/NZS 3500.4	Full compliance, independently tested for achieving WaterMark
	AS1/2.0 Materials	Contamination of water AS/NZS 4020	
	AS1/5.3 Water pipe sizing	As per Table 3 and Table 4	
	AS1/6.12 Hot water pipe sizes	As per Table 3 and Table 4	

	AS1/7.3.3 Movement in concrete or masonry	Wrapped in flexible material / achieve 50 years (specifically the insulated version)	
	AS1/7.5 Water tightness	1500 kPa for > 15 minutes	
	AS1/9.0 Equipotential bonding	Plastic piping	

GINDE PEX-AL-PEX pipe for water supply complies with the following requirements as set out in AS/NZS 3500:

AS 4176 Plumbing Pipe & Fittings

This standard applicable on Multi-layer PEX-AL-PEX systems. The following requirements are specified in these standards:

PIPE

- General requirements
  - Diameter and wall thickness is specified
  - Adhesion properties between various layers
  - Freedom from defect – no blisters, voids, burnt particles or heat marks
  - Product shall be marked according to standard
- Test requirements for PEX-AL-PEX pipe (water piping)
  - Burst test - Fail in not less than 70 seconds
  - Pressure resistance test - Tested at 80°C
  - Long term rupture test - Tested at 80°C, no failure in 438 000 hrs at 1820 kPa
- Water piping
  - Degree of x-linking – not less than 65%
  - Environmental stress crack resistance
    - Tested at 95°C, withstand a pressure of 2000 kPa for 165 hrs
- Insulated pipe version
  - Closed cell structure for excellent water vapour barrier
  - UV resistant
  - Protects multi-layer pipe from movement in concrete or masonry

FITTINGS

- Fittings (general requirements)
  - Torque of 30 Nm can be applied with no failure

- Freedom from defects
- Porosity test (for cast metallic fittings)
- Dezincification resistance
- Marking

- Test requirements for PEX-AL-PEX (water piping/fittings)
  - Compatibility of fittings with pipe
    - Tested at 80°C, pipe and fittings shall withstand an internal pressure of:
      - 2800 kPa for 1 hr, and
      - 2000 kPa for 3000 hrs
  - Resistance to leaking when subjected to bending
    - Fittings on pipe tested at 95°C
      - 2800 kPa for 1 hr
  - Resistance to pull-out of assembled joint
    - No separation of fittings when tested at 20°C
  - Thermal cycling test
  - Liquid infiltration test
  - Pressure cycling test - 80°C, 500 000 cycles

Design, construction and installation instructions

A full range of tools is supplied. Designed specifically for both Ginde or Rifling PEX-AL-PEX and PEX-B Systems

Standard set comes with:

- Compact Design Tool
- 3 changeable Heads (Sizes 16 mm, 20 mm & 25 mm
- Fast Charge battery charger
- 2 x Battery packs

Assembly instructions as per the booklet supplied by Aqualine. In general, a 5-STEP assembly process is used.

1. Cut the pipe to the required length
2. Chamfer the internal and external diameter with the chamfer tool
3. Insert the pipe ring/fitting into the pipe
4. Clamp the fitting with the REMS Clamping Tool
5. Pipe and fitting is now ready for further connection

Ginde Installation Instructions for Pipes under the slab

Aqualine warrants Ginde pipe installed under the slab as long as it is installed according to the Building Code for durability for the term of 50 years. Aqualine recommends Ginde Insulated Pipe, but all Ginde pipe can be installed under the ground as long as it meets the requirements of the Building Code.

New Zealand Building Code G12/VM1

1.0.1 Comply with AS/NZS3500.4:2015

AS/NZS3500.4:2015

4.5.1.3 Under concrete slabs Water service pipes located beneath concrete slabs on ground level shall comply with the following:

(a) Pipes shall be insulated in accordance with Clause 8.2, laid in a narrow trench on a bed of sand or fine-grained soil, placed and compacted in a manner that will not damage the piping or insulation. There shall be a minimum distance of 75 mm between the pipe and the underside of the slab.

(b) Pipe ends shall be crimped or capped prior to pouring of the concrete and measures shall be taken to protect the exposed pipe from damage.

(c) Any piping that penetrates the slab shall be at right angles to the surface of the slab and shall be lagged with an impermeable, flexible plastic material not less than 6 mm thick for the full depth of the slab penetration.

(d) Soft-soldered joints shall not be used.

(e) The number of joints shall be kept to a minimum.

Aqualine does not recommend using fittings under the slab or buried in the ground.

New Zealand Building Code G12/AS1

7.3.3 Movement in concrete or masonry

Pipes penetrating concrete or masonry elements shall be either wrapped with a flexible material, or passed through a sleeve or duct, to permit free movement for expansion and contraction.

Pipework in or under a concrete slab must be installed in a manner to achieve a 50 year durability.

Conditions of use

Special Expansion Compensators are needed if:

- The water pipe is supported and anchored at less than 6 metres intervals
- Special Expansion Compensators are not needed if :
- The water pipe is run in a conduit where the necessary space for expansion is provided in the gap between the pipe and the conduit
- The pipe is run in long lengths on a rack

However, in installations allowing for thermal expansion, where the pipes are expected to stay straight, expansion compensators should be used.

Pipes and fittings should be treated carefully during loading and transportation to avoid damage and keep away from oil contamination

Pipes and fittings should be stored in a shed or under cover and should not be exposed to direct sunlight for long periods

Do not scratch the surface of the pipes with any tool

The System can be pressure tested up to 1500 kPa immediately after the installation being completed

Protection from Ultra Violet rays

- In the event where the piping system is exposed to direct sunlight, such an installation should be protected against ultra violet exposure.
- This protection can be done by covering the pipe. The pipe can also be painted with a UV resistant paint to protect it. It is important to apply an undercoat primer before the final UV resistant coat is applied.

Additional information

PEX cannot be welded or repaired with adhesives

If damaged, cut away and install a new coupling

PEX pipes are normally bent without the need for any special tool

Bends with small radii requires a bending support.

Maintenance requirements

No specific maintenance is required over the life of all GINDE PAP or PEX pipe systems.

Quality assurance

The following certifications has been accredited to the product and/or manufacturer:

WaterMark license WMKA21306 for Multilayer PEX-AL-PEX piping systems (GINDE)

- Certified to the AS 4176: 1994 standard

WaterMark license WM80000 for Multilayer PEX-AL-PEX piping systems (GINDE)

- Certified to the AS 4176.2 and AS4176.3: 2010 standard

ISO 9001 and ISO 14001 (GINDE)

International approvals

- WRAS - Water Regulation Advisory Scheme Certificate
- Certificate for Product Exemption from Quality Surveillance Inspection
- ISO9001 International Quality System Certificate
- ISO14001 International Environmental Management System Certificate
- GOST - Russian National Standard Certificate
- Ukraine National Certification Association
- SABS - Certificate of South African Bureau of Standards
- JASWIC - Joint Acceptance Scheme for Water Installation Components
- AENOR - Certificate of Spanish Technical Certification Committee of Plastics
- Certificate of Standards Association of Australia
- PZH - Hygiene Certification of the National Institute of Hygiene in Warsaw
- DVGW - Certificate of Germany Association of the Gas and Water Industry Technical
- Scientific Association
- SKZ - Testing Laboratory Accredited by German Accreditation System for Testing GMBH
- Certificate of the Slovak National Institute of Hygiene
- Certificate of Hungary National Plastics Testing Agency
- SGS - Inspection Certificate

Product support

Full product support can be found at the following:

Your local Mico stores, or:

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Warranty information

Ginde Offers a 30 Year Warranty

Ginde warrants the Pex-Al-Pex pipe and fittings for water and gas, to be free from defects in material and workmanship. The limited warranty shall expire 30 years from the date of purchase, unless otherwise specified in writing.

Products sold under this limited warranty must:

1. Be installed according to applicable Ginde product manual/instructions using appropriate trade workmanship and according to the local building code(s).

2. Remain in their originally installed location.
3. Be applied for authorised applications and within authorised temperature and pressure limits, and
4. Show no evidence of tampering, mishandling, neglect, accidental damage, modification, or repair without the approval of Ginde, damage caused by Acts of God or anyone other than Ginde.

Furthermore, Ginde warrants:

That Ginde crimp brass fittings, can be used on Rifeng Pex-Al-Pex and Pex-B pipes and Rifeng crimp brass fittings on Ginde Pex-Al-Pex and Pex-B pipes.

Ginde declares that any responsibility for losses incurred due to quality issues of pipe and/or fittings shall be carried by Ginde Company.

Life expectancy is in excess of 50 years