POSITION PAPER

USE OF RECYCLED CONTENT IN PLASTIC PIPES

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This paper provides insights into the plastic pipes and fittings industry position on the use of recycled content. Where possible, pipe manufacturers use post-consumer material back into new pipe. However, due to plastic pipes long service life there is very low volumes of plastic pipes in the waste stream.

The PVC, PE and PP materials used in the manufacture of PIPA members' pipes and fittings are 100% recyclable and sustainable. For over two decades the plastic pipe industry has been using post-consumer material wherever possible in the manufacturer of new pipes.

Forming the backbone of Australia's vital pipeline infrastructure, plastic pipes distribute drinking water, gas and electricity to our communities, protect the network of wires and cables for electricity, internet and telephone services. They are widely used in irrigation systems for essential food production, and safely convey sewage and stormwater thereby protecting the health of our communities and waterways.

In short, plastic pipes are smart, efficient, and sustainable, providing long-lasting and reliable infrastructure both now and into the future.

PIPA and its members are acutely aware of the very real problem society faces with plastic pollution resulting from its inappropriate disposal, the growing pressure to reduce our reliance on short lived, single-use products and the drive to increase levels of post-consumer plastic recycling (PCR).

Long Life, Not Single Use

Plastic pipe's durability is achieved through a combination of material selection, product design and quality manufacturing.

This excellent durability means that very little pipe reaches the end of its useful life or finds its way into the waste stream. This fact was confirmed by the NSW Government 2000 - 2005 audit of Construction and Demolition Waste, which established that plastic pipe waste amounted to less than 0.5% of construction waste sent to landfill.

Majority of plastic pipe used for water supply, sewerage and drainage applications are installed below ground. When these assets reach the end of their serviceable lives (100+ years), they are unlikely to be exhumed. These pipes gain a new life staying in the ground as a host for a new liner pipe saving resources associated with excavation and removal.

For further information please contact Plastics Industry Pipe Association of Australia Ltd
PO Box 957 North Lakes QLD 4509 or email **plasticspipe@pipa.com.au**

The Role of Australian Product Standards

The integrity of Australia's plastic pipeline infrastructure has benefitted enormously from the regulation of plastic pipe production and materials via third-party product certification to domestic (AS/NZS) and/or international (ISO) product standards.

As early as the 1990's Australian plastic pipe standards began specifying appropriate conditions for use of recycled material content. The amendments to product standards that provided for recycled material use was a PIPA initiative to reduce post-consumer waste, whilst ensuring product performance was not compromised.

Use of Post-Industrial Recycled (PIR) material in Pressure and Non-Pressure Pipes

Australian plastic pipe and fitting product standards currently permit manufacturers to use clean PIR recovered from their own production of pipes and fittings, provided its properties are known and traceable.

Use of Post-Consumer Recyclate (PCR) material in Non-Pressure Pipe

Australian product standards for non-pressure pipe applications allow for the use of post-consumer recyclate (PCR) materials, specifically:

- Perforated plastics drainage and effluent pipe AS 2439.1:2007 Cl. 2.2,
- PVC-U storm and surface water pipe standard AS/NZS 1254:2010 Cl. 1.3.9, and
- PVC-U drain, waste and vent pipe standard AS/NZS 1260:2017 Cl. 1.4.11.
- PVC conduit for electrical installations standard AS/NZS 2053.2
- Conduit systems for cable management standard AS/NZS 61386

In many cases non-pressure pipes are manufactured as sandwich construction pipe with three distinct layers of material within its wall structure; an inner and outer surface layer made from either virgin raw material or the manufacturer's in-house PIR material, sandwiching a central (core) layer of post-consumer recyclate material.

In the case of PVC sandwich construction pipe, approximately 50% of the pipe's material is the core layer and may be any colour, density, or any formulation of rigid PVC.

Most importantly, sandwich construction pipes conform to Australian product standards and provide service lives equal to pipe manufactured entirely from virgin materials.

Use of Post-Consumer Recyclate (PCR) material in Irrigation and Sub-Surface Drainage Pipe

Since the mid 1990's, low pressure PE irrigation pipes used to convey non-potable irrigation and stock water as well as PE corrugated sub-surface drainage pipes have been manufactured from PCR and PIR materials.

Limitations on the use of Post-Consumer Recyclate materials in Pressure Pipe

Australian product standards that are responsible for ensuring safe and reliable performance used for drinking water and gas pipes, exclude the use of PCR material in the manufacture of pressure pipe, specifically:

- PVC-U pressure pipe standard AS/NZS 1477:2017 Cl. 2.2 & Appendix B, Cl. B2.3,
- PE pressure pipe standard AS/NZS 4130:2018 Cl. 7.2,
- PVC-O pressure pipe standard AS/NZS 4441:2017 Appendix ZB, Cl. ZB2.3, and
- PVC-M pressure pipe standard AS/NZS 4765:2017 Appendix G, Cl. G2.3

Pressure pipes are used for transportation of drinking water and therefore the plastic materials used must not adversely affect water quality. Given the variability of the PCR material waste stream e.g., plastic bottles that contained pesticides or pipelines that transported toxic mining slurry. Therefore, it is in the interest of public safety that these PCR materials should not be used in drinking water applications. It is also impractical to reliably assess the long-term material performance characteristics of these materials.

The Industry's Commitment to future improvement in Environmental Outcomes

The plastic pipe industry has much to be proud of in terms of its environmental sustainability initiatives; from best practice manufacturing and material sourcing, world leading standards and material efficient products, to end of life product stewardship programs.

PIPA and its members are taking tangible steps to minimise the negative impact of plastic pollution via their efforts to divert plastic material from landfill into long-life recycled pipe products. These include:

- PIPA's Plastic Pipe Recycling Program identifies the location and contact details of PIPA members and established plastic recyclers that end users can contact to arrange for the return of surplus and waste pipe.
- Working closely with government, green building groups (GBCA, ISCA) and peak standards development bodies to develop product stewardship programs.
- Education and pilot programs that engage with other industry stakeholders to increase PCR recovery rates.
- Direct agreements with major plastic pipe users in "Take Back Contracts" for the recovery of off-cuts and product at the end of its in-use phase.
- Collaborating with waste management companies, major distributors of products and specific supplier/client agreements to collect and recover volumes of plastic pipes viable for recycling.

Throughout the lifecycle of plastic pipe, from material sourcing to manufacturing, use, recovery and reuse, PIPA members will maintain and grow their long-standing commitment to sustainable outcomes in a way that benefits all Australians, without compromise to product performance or public safety.

The plastic pipe industry's commitment to Australian community is simple – We aim wherever possible, to maximise the recycling of plastic pipe and other suitable post-consumer material into long-life plastic pipes.