

PVC and Polyethylene Pipe Systems for Food Transport Applications

This technical note discusses the use of PVC and PE pipes in food applications which are not covered by current product standards. This is relevant to the use of pipes for the transportation of fluids such as dairy and wine products.

The primary reference for materials and products in contact with food is the *Australia New Zealand Food Standards Code*. Enforcement and interpretation are the responsibility of State and Territory health departments. The pertinent standards of the code are Standard 1.4.1, *Contaminants and Natural Toxicants*, and Standard 1.4.3, *Articles and Materials in Contact with Food*.

Standard 1.4.1 “sets out the maximum levels for a number of metal and non-metal contaminants and natural toxicants that may be present in food as a result of contact with the articles and materials regulated in this Standard.”

Standard 1.4.3 “provides permission for articles and materials to be in contact with food in accordance with the conditions set out in this Standard.” The Standard states that it “is the responsibility of food manufacturers and retailers to ensure that their products are safe and that they comply with all relevant legislation.” It also states that “Standards Australia has developed an Australian Standard for Plastics Materials for Food Contact Use, Australian Standard AS 2070 –1999.”

Materials/products that comply with AS 2070 also satisfy the requirements of Standard 1.4.1. (AS 2070 requires FDA or EC conformance). However, AS 2070 specifies a number of requirements that pipes and fittings will normally not meet. because the standard addresses manufacture and packaging of foods rather than transport in piping systems, although that is not specifically stated.

Product standards for PVC and Polyethylene pipes and fittings do not require conformance to AS 2070 requirements, because a major application for these pipe systems is the transport of potable water at 20° C and the performance requirements address this application.

The relevant Australian Standards for each of the plastics pressure pipe systems require compliance with AS/NZS 4020, which addresses the suitability of materials for contact with drinking water. This standard stipulates maximum levels of extractable contaminants such that conformance with Standard 1.4.1 is not compromised.

It also includes several other tests such as taste. Taste testing to AS/NZS 4020 is conducted at 20° C based on the drinking water application, but pipes and fittings are often used at higher temperatures in food processing applications. In this situation there may be certain taste issues so it is appropriate

to first investigate whether the pipe material imparts any taste to the food or drink under the expected operating conditions. In general, PVC offers no taste issues in temperatures up to 50° C, but where elevated temperature applications are contemplated, it is recommended that the manufacturer be contacted.

REFERENCES

- AS/NZS 4130 Polyethylene (PE) pipes for pressure applications
- AS/NZS 4129 Fittings for polyethylene (PE) pipes for pressure applications
- AS/NZS 1477 PVC pipes and fittings for pressure applications
- AS/NZS 4441 Oriented PVC (PVC-O) pipes for pressure applications
- AS/NZS 4765 Modified PVC (PVC-M) pipes for pressure applications.
- AS/NZS 4020 Testing of products for use in contact with drinking water....
- AS 2070 –1999 Plastics materials for food contact use

PIPA wishes to acknowledge and thank all our Technical Committee members and Industry Consultants for their contribution, expertise, and assistance in the development of this technical document.

DISCLAIMER - In formulating this document PIPA has relied upon the advice of its members and, where appropriate, independent testing. Notwithstanding, users of the document are advised to seek their own independent advice and, where appropriate, to conduct their own testing and assessment of matters contained in the document and to not rely solely on the document in relation to any matter that may risk loss or damage. PIPA gives no warranty concerning the correctness or accuracy of the information, opinions and recommendations contained in the document. Users of the document are advised that their reliance on any matter contained in the document is at their own risk.