

**Flange Gasket Specifications**

Rubber Insertion has historically been used as a material for flange gaskets within the Water Industry... but not without some performance problems. The material typically consists of 2 (or 3) natural rubber sheets vulcanised together with the inclusion of cotton or synthetic cloth, sandwiched between the layers. The tensile strength of the rubber is typically low (around 5-6 MPa) and the insertion cloth is intended to compensate for its low tensile strength and counter the tendency for the rubber to extrude between the flange joint. The material was adopted primarily because of its relatively low cost.

The manufacturing quality of rubber insertion is critical to its performance as a gasket material. If the vulcanising process is not properly carried out or the insertion cloth is not of adequate quality, water can permeate through the layers and weep at the circumference of the gaskets. The quality of the rubber, particularly relating to the amount of filler added in the manufacturing process, will also have an impact on the behaviour of the material as a gasket. The cloth may also be susceptible to bacterial attack.

Prior to 2002 there was no recognised Standard to adequately specify flange gaskets for application in the Water Industry. Tyco Water recognised this deficiency and proposed to the Water Services Association of Australia (WSAA) that a suitable specification should be created. The specification, *WSA 109 Industry standard for flange gaskets and O rings* is now available from the WSAA website at [www.wsaa.asn.au/nationalcodes/standards/standards.html](http://www.wsaa.asn.au/nationalcodes/standards/standards.html)

Dunlop Industrial had been the only manufacturer of Rubber Insertion material within Australia for many years, until they closed their Melbourne manufacturing facility in late 2001. Whilst experience indicated that Dunlop rubber insertion was generally reliable for flange gasket applications up to 1600 kPa operating pressures, Dunlop had never rated the material for pressures above 1000 kPa.

Tyco Water had always specified flange insertion gaskets to be manufactured from Dunlop material, as some imported materials were known to have inferior and/or inconsistent quality, thus leading to performance problems.

The closure of Dunlop's sheet rubber facility together with the publication of an Industry Specification provided the catalysts for Tyco Water to seek alternative flange gasket materials that would conform to the requirements of WSA 109. (It is interesting to note that the Dunlop rubber insertion material would not meet the requirements of WSA 109).



## Flange Gaskets

Our search led us to recommend the following materials for supply to our customers:

**Class 16 - Allowable Operating Pressure 1600 kPa**

Solid 3mm thick EPDM rubber (SEAL-16). Material sourced from Trelleborg.

**Class 35 – Allowable Operating Pressure 3500kPa**

1.5mm thick compressed fibre (TEADIT NA1000). Material sourced from Teadit.

These materials have been successfully tested to the requirements of WSA 109, which includes AS4020 water contact suitability.

Both gasket types are easily recognised by appropriate labelling.

We recommend that customer specifications for flange gaskets call up gaskets that comply with WSA 109.

Updated: 1<sup>st</sup> September 2006.

Issue No: 3