

Dear WS22 Committee Members

An issue of a possible conflict of specification within AS/NZS 2638.2:2011 *Gate valves for waterworks purposes-Resilient seated* arose recently during the assessment process for a WSAA Appraisal of a range of Resilient Seated Gate Valves. The issue will also effect AS/NZS 2638.1 *Gate valves for waterworks purposes-Metal seated*.

Clause 2.1 and Table 2.1 of AS/NZS 2638 nominates basic material requirements for the Spindle Seal Retainer as Copper Alloy C83600 to AS1565. Alternative allowable materials are nominated in Appendix C, which only lists other copper alloy grades. (Extracts are reproduced below). Section 2 and Appendix C currently does not allow any other material than copper alloy.

SECTION 2 MATERIALS AND COMPONENTS

2.1 MATERIALS

Table 2.1 lists the basic material requirements for the manufacture of valve components. Alternative materials are allowable; however, some alternative materials may have limitations on use.

Where alternative materials are used, they shall comply with the requirements of Appendix C.

TABLE 2.1
BASIC MATERIAL REQUIREMENTS FOR RESILIENT-SEATED VALVES

Component	Material	Standard	Minimum grade
Body	Ductile cast iron*	AS 1831	ISO 1083/JS/400-15†
Bonnet and seal retainer housing (where applicable)	Ductile cast iron*	AS 1831	ISO 1083/JS/400-15†
Bypass fittings	Ductile cast iron*	AS 1831	ISO 1083/JS/400-15†
Spindle seal retainer	Copper alloy‡	AS 1565	C83600
Gate core	Ductile cast iron* or copper alloy‡	AS 1831 AS 1565	ISO 1083/JS/400-15† C83600
Gate encapsulation	Synthetic rubber	AS 1646	EPDM
Gate nut	Copper alloy‡	AS 1565	C83600
Spindle	Stainless steel‡	ASTM A276	431
Spindle cap and handwheel	Ductile cast iron*	AS 1831	ISO 1083/JS/ 400-15†
Fasteners	Carbon steel, or	AS 1111.1 and AS 1111.2	4.6
	Stainless steel‡	ASTM A276	316
Gaskets	Synthetic rubber	AS 1646 and AS 681.1	EPDM
O-rings	Synthetic rubber	AS 1646 and AS 681.1	65-75 IRHD NBR

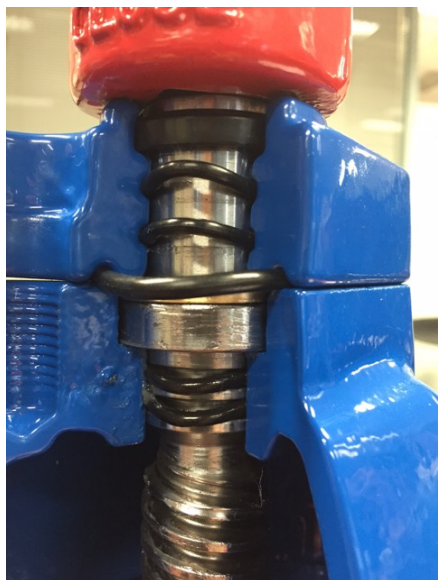
* To be coated in accordance with Section 4.

† Higher tensile strength ductile irons in accordance with AS 1831 are acceptable.

‡ Deemed corrosion resistant for the purposes of this Standard.

(Note that the previous version of the Standard allowed alternative materials to be used, where allowed by a ruling committee from WS22, selected by WSAA. This Clause has been deleted in the 2011 version)

The material of the spindle seal retainer in the valves submitted for appraisal is polymeric coated ductile iron. (See below)



The supplier of the valves, supported by the CAB, contends that the use of polymeric coated ductile iron spindle seal retainers is conforming, based on interpretation of Clause 4.2 as the governing clause that overrides Section 2. (Extract is reproduced below). It is claimed that the words "up to and including the valve spindle seals" indicates acceptance of polymeric coated ductile iron spindle seal retainers.

SECTION 4 COATINGS

4.1 GENERAL

Internal and external surfaces of all valves and bypass arrangements shall be coated with a polymeric coating in accordance with AS/NZS 4158. The purchaser may specify alternative coatings for valves for above-ground applications.

4.2 DESIGN

The valve design shall be such that the corrosion protection system specified for the internal surfaces shall be fully effective for all internally wetted surfaces up to and including the valve spindle seals. All surfaces that cannot be coated and tested shall be of corrosion-resistant material.

Input from Committee Members is sought to clarify the intent of the Standard in this matter. An amendment will no doubt need to be submitted, based on the Committee determination, to clarify requirements.

Possible Options (there may be more)

1. Reaffirm that the spindle seal retainer material must only be copper alloy.
2. Nominate alternative allowable materials for spindle seal retainers in Appendix C, including polymeric coated DI or excluding polymeric coated ductile iron.
3. Remove all references to the material for the spindle seal retainer and leave material selection entirely up to the manufacturer. If this was the preferred option a type test to demonstrate performance may be necessary.

Other considerations

- The dual stem seals are required to perform for dynamic operation with an expected minimum life of around 50 years.
- The operation frequency of gate valves in service may vary from rare to often.
- The standard requires that stem seals shall be capable of being replaced or repaired under operating pressure.
- The o-ring retainer is required to be corrosion resistant and also facilitate sealing performance for its anticipated life.
- Are the normal tolerances for dynamic O-ring seal design necessary for this application?
- Can a polymeric coated ductile iron seal retainer maintain the tolerances required for effective dynamic O-ring performance in a gate valve?

A web address for one of the many available O-ring design references is provided below:

<http://www.applerrubber.com/src/pdf/seal-design-guide.pdf>

Your response is requested prior to close of business on Monday 20th July 2015. If you do not wish to make a comment please advise accordingly.