TECHNICAL NOTE WSA TN10

ACCEPTABLE COPPER ALLOYS WITHIN PRODUCTS INTENDED FOR USE IN CONTACT WITH DRINKING WATER

(Normative)

1 SCOPE

This Technical Note identifies acceptable copper alloys within products intended for use in contact with drinking water (including lead-free* copper alloys) that are deemed acceptable alternatives to copper alloys currently specified in Australian Standards for water industry products. The acceptability is based on compliance of copper alloys to recognised Australian or International Standards with acceptable dezincification and stress corrosion resistance. For applications in contact with highly corrosive drinking waters containing high chlorides, low alkalinity and/or high sulphates it is recognised that long term dezincification tests may be necessary to assess the suitability of these alloys.

**Note: The terminology lead-free is defined as a material with a weighted average of 0.25% lead or less, calculated across the wetted surfaces of a pipe, fitting or valve.*

2 RELEVANCE

The Australian Building Codes Board (ABCB) has included a requirement within the 2022 *National Construction Code Volume 3 - Plumbing Code of Australia* (PCA) that any product that contains copper alloy and is intended for use in contact with drinking water must have a weighted average lead content of no more than 0.25% in compliance with NSF/ANSI 372. A transition period has been allowed for the recertification of plumbing products containing copper alloy through the WaterMark Certification Scheme. The requirement will become mandatory for products installed after 1 May 2026. See ABCB advice for more information at the following link:

https://www.abcb.gov.au/news/2023/update-advice-new-lead-requirements

This requirement is related to Australian plumbing products within premises only and while there is no evidence to indicate high levels of lead leaching within the Network Utility Operators (NUO) infrastructure (upstream of the point of connection to the premises) WSAA is supportive of a reduction in lead content for all products intended for use in contact with drinking water. Many products that are used within the NUO infrastructure are also used within the plumbing infrastructure and may be required to incorporate lead-free copper alloys to ensure compliance with the new PCA regulation. However, it should be noted that the requirement for lead-free copper alloys is not currently planned to be mandatory in product standards.

Asset owners, specifiers, regulators and procurement agencies typically rely on ISO Type 5 product certification undertaken by third party Conformity Assessment Bodies (CABs) to demonstrate compliance of a product with the relevant Australian Standard. Product standards generally nominate specific copper alloys that comply with the suite of Australian Standards including AS 1565, AS/NZS 1567, AS/NZS 1568, AS 1572 and AS 2738. That suite of standards was revised in 2023 and a range of commercially available lead-free copper alloys are now included. However, where alternative copper alloys, including lead-free alloys, are utilised in products, those products may be deemed as non-compliant to the current product standard.

It will be necessary to revisit relevant product standards to amend clauses referencing acceptability of copper alloys. This issue has been considered by Standards Australia WS-022 Committee - Valves for Waterworks Purposes and it has been resolved to incorporate performance-based requirements into product standards in future rather than nominate specific copper alloys. This Technical Note adopts the Clause incorporated into the 2022 revision of AS 6401 (which is also consistent with the ABCB Notice of Direction 2022/1.1) and will be adopted in other product standards in future.

In the meantime, until revisions can be incorporated into the relevant product standards, where alternative copper alloy components (including lead-free) are proposed, the manufacturer and CAB can utilise this Technical Note for guidance regarding acceptable alternative alloys to ensure ongoing ISO Type 5 product compliance.

3 ACCEPTABLE COPPER ALLOYS

Components manufactured from copper alloys with a minimum 56% copper and a maximum of 0.25% arsenic that conform to any relevant recognised Standard are deemed acceptable. The components shall be dezincification resistant in accordance with AS 2345 and where manufactured using a final cold working process, be stress corrosion resistant when tested in accordance with ISO 6957 using a test solution of pH-value 9.5 without pickling. Compliance to AS/NZS 4020 remains mandatory.

4 ACKNOWLEDGEMENTS

This Technical Note was developed with the input of a ruling committee representing purchasers and manufacturers selected by WSAA from standing members of Australian Standard Committee WS-022. WSAA acknowledges and is grateful for the contribution of Jason Hall, Anthony Favero, Geoff Puckett, Scott Michaels, Doug Evans, Steve Evans, Carl Radford and Peter Pittard.