



WaterMark Certification Scheme

Notice of Direction 2022/1.0

Acceptable copper alloys for the manufacture of lead free plumbing products

Intent

This notice is to provide direction on the material to be used in the manufacture of plumbing products, which contain copper alloy and are intended for use in contact with drinking water, to achieve compliance with the lead free requirements outlined in the National Construction Code (NCC) 2022 Volume Three (the Plumbing Code of Australia). This notice is to be read in conjunction with **Notice of Direction 2021/4.1 Certification transition arrangements for lead free plumbing products**, published by the ABCB.

Background

This Notice of Direction is provided in accordance with clause 5(c) of the Rules for the WaterMark Certification Scheme.

The Australian Building Codes Board (ABCB) decided to limit the allowable lead content in plumbing products, which contain copper alloys and are intended for use in contact with drinking water, to a weighted average lead content of not more than 0.25%.

A5G4 of NCC 2022 (at **Attachment 1**) outlines new requirements for any plumbing product containing copper alloy and intended for use in contact with drinking water, as well as the means for demonstrating evidence of suitability to those requirements.

A 3 year transition period will be provided in NCC 2022, and from 1 September 2025, A5G4(2) of the NCC Volume Three will take effect. Only products WaterMark certified as conforming to the lead free requirements, where required, will be authorised for use in plumbing installations. Products that do not conform to the lead free requirements will no longer have valid certification and will not be authorised for use in contact with drinking water.

This notice details the copper alloy lead compliance material requirements during the transition period and from when the requirements take effect on 1 September 2025.

These arrangements ensure the continuity of certification and authorisation for use of new products, products that have already been certified and products that will fall due for re-certification, from the date of this notice.

Lead is currently permitted in small proportions in the raw materials used to manufacture some plumbing products. Whilst the allowable lead levels permitted in these products ensures compliance with the Australian Drinking Water Guidelines, the use of lead free products will contribute to improved public safety.

Reference Documents

- AS 2345 Dezincification resistance of copper alloys
- AS 2738 Copper and copper alloys – Compositions and designations of refinery products, wrought products, ingots and castings
- AS/NZS 4020:2018 Testing of products for use in contact with drinking water
- ASTMs such as B124, B271, B371, B427, B453, B505, B584, B585 and others
- CEN/TS 13388 Copper and copper alloys - Compendium of compositions and products
- EN 1982 Copper and copper alloys – Ingots and castings
- ISO 6957:1988 Copper alloys – Ammonia test for stress corrosion resistance
- NSF/ANSI/CAN 372
- National Construction Code Volume Three 2022 (NCC 2022), and any subsequent editions
- [Manual for the WaterMark Certification Scheme](#)
- ABCB Notice of Direction 2021/4.1 Certification transition arrangements for lead free plumbing products

Direction

The directions, which include prescriptive and performance options (at 3.0 and 5.0 respectively), are as follows:

- 1.0 The lead free requirements of the NCC 2022 are shown at **Attachment 1** of this notice. Transition arrangements to comply with these requirements by 1 September 2025 will commence on 1 September 2022.
- 2.0 The meaning of words used in this notice are as per the [Manual for the WaterMark Certification Scheme](#) clause 1.3 Definitions.

- 3.0 In addition to Australian copper alloy standards, such as AS 2738, the following international technical specifications and standards may be used to determine an acceptable copper alloy composition for the manufacture of plumbing products to meet the lead free requirements of NCC 2022:
- CEN/TS 13388 Copper and copper alloys – Compendium of compositions and products
 - EN 1982 Copper and copper alloys – Ingots and castings
 - ASTMs such as B124, B271, B371, B427, B453, B505, B584, B585 and others
- 4.0 The international technical specifications or standards listed in direction 3.0 shall override any copper alloy technical specification or standard referenced in the Materials section of any technical specification or standard, referenced by the WaterMark Certification Scheme, that is used for certification of plumbing products containing copper alloy and intended for use in contact with drinking water.
- 5.0 Where suitable copper alloys are not able to be formulated according to the standards listed in direction 3.0, copper alloys may be approved for use within plumbing products provided:
- a)* These alternative materials meet the following requirements:
- I. 56% minimum copper content.
 - II. 0.25% maximum arsenic content.
- b)* Products using these alternate materials are tested to the following after all manufacturing processes are complete:
- I. AS/NZS 4020:2018.
 - II. AS 2345 for each manufacturing process for alloys with >15% zinc.
 - III. ISO 6957:1988 Cl 8 for each cold working manufacturing process as a last process, using a test solution pH9.5 without prior pickling.
- 6.0 From the date of this Notice, any plumbing product undergoing initial certification or renewal of certification, and being certified to meet the lead free requirements of NCC 2022, shall be tested to meet the full requirements of AS/NZS 4020:2018.
- 7.0 From the date of this Notice, any plumbing product that has meet the full requirements of AS/NZS 4020:2018, is undergoing copper alloy substitution with a lead free copper alloy only, and is being re-certified solely to meet the lead free requirements of NCC 2022:
- a)* shall, at a minimum, be required to meet the metals extraction test at clause 6.7 of AS/NZS 4020:2018; and
- b)* unless annual factory inspection and assessment is undertaken, where the manufacturer has changed the manufacturing process since last certification, including changes to or introducing lead washing processes, shall be tested to meet the full requirements of AS/NZS 4020:2018.
- 8.0 In addition, any plumbing product that has had a change to design, materials, manufacturing process or manufacturing location shall require additional assessment and/or performance testing in accordance with the applicable specification.

Further Information

Should any WaterMark Certification Scheme stakeholder require further clarification, they should contact the ABCB office directly for further advice on 1300 134 631 or email watermark@abcb.gov.au.

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ATTACHMENT 1

A5G4 Evidence of suitability – Volume Three (PCA) 2022

- (2) Any *product* that contains copper alloy and is intended for use in contact with *drinking water* must have a *weighted average* lead content of not more than 0.25% verified in the form of either—
- (a) a test report provided by an *Accredited Testing Laboratory*, in accordance with NSF/ANSI/CAN 372; or
 - (b) a *WaterMark Licence* issued in accordance with (3), if it includes compliance with NSF/ANSI/CAN 372.

Notes:

1. A5G4(2) does not take effect until 1 September 2025.
2. Note 1 does not prevent use of *products* certified in accordance with A5G4(2) prior to 1 September 2025.

Application:

Products subject to the requirements of A5G4(2) are specifically nominated in the *WaterMark Schedule of Products* and the *WaterMark Schedule of Excluded Products*.

Exemption:

Products that are used exclusively for non-drinking uses such as manufacturing, industrial processing, irrigation, or other uses where water is not anticipated to be used for human consumption are excluded from the requirements of A5G4(2).

Explanatory information:

1. Some examples of *products* subject to A5G4(2) include the following:
 - (a) Copper alloy fittings.
 - (b) Stainless-steel braided hoses.
 - (c) Valves (such as valves used for isolation, backflow prevention, alteration of pressure and temperature).
 - (d) Taps and mixers.
 - (e) Water meters.
 - (f) Pumps (for use with cold and heated water services).
 - (g) Water heaters.
 - (h) Residential water filtration equipment.
 - (i) Water dispensers (such as boiling and cooling units, drinking fountains and bottle fillers).
 - (j) Fire sprinkler systems connected to the cold water service that are not isolated from fixtures and fittings intended to supply water for human consumption
2. Some examples of *products* excluded from the requirements of A5G4(2) include the following:
 - (a) Shower heads for bathing.
 - (b) Emergency showers, eye wash and/or face wash equipment.
 - (c) Pumps used for irrigation, fire-fighting or other non-drinking purposes.
 - (d) Fire-fighting water services and equipment including residential fire sprinklers.
 - (e) Appliances, including washing machines and dishwashers.
 - (f) Commercial boilers associated with heating, ventilation and air-conditioning systems.
 - (g) Sanitary fixtures (such as toilets, cistern inlet valves, bidets and urinals).
 - (h) *Non-drinking water* services (such as recycled water systems).
3. *Product* certification transition arrangements are outlined in Notices of Direction issued through the *WaterMark Certification Scheme*.

4. Lead is currently permitted in small proportions in the raw materials used to manufacture some plumbing *products*. Whilst the allowable lead levels permitted in *products* manufactured prior to 1 September 2025 ensures compliance with the Australian Drinking Water Guidelines, the use of *products* compliant with the lead levels in A5G4(2) is encouraged, to avoid the potential for adverse effects on human health.