Brass for European Potable Water Applications

Product designers and engineers

To meet E.U. drinking water requirements, product designers and engineers can specify leaded and lead-free brass alloys included on the 4MS list of approved compositions in approved application categories. This flexibility allows product designers and engineers to take full advantage of multiple brass alloy solutions that each offer an attractive combination of properties.

Potable water component manufacturers

Plumbing components can be made from one or more different metallic materials and may also contain subcomponents or residues made from organic materials (e.g. plastics, greases or lubricants). Demonstrating compliance with the DWD in member states which recognize the 4MS scheme is a two step process.

First, a compositional analysis of the product must be conducted in accordance with relevant E.U. standards to demonstrate that all of the constituent metal material(s) comply with the 4MS list of approved compositions (see Table 1). Second, products may be required to demonstrate compliance with surface testing standards in the following scenarios:

1) Products that do not include a processing step to remove organics deposited during manufacturing (e.g. greases or lubricants) must conduct testing to relevant standards to identify the residue composition (e.g. EN 723).7 Organic materials may be subject to additional compliance requirements.
2) Products with metallic materials that contain greater than 1% lead by weight must demonstrate compliance to EN 16057 to verify that any metallic lead surface residue falls below set levels.[8]
3) Products with nickel or nickel-chrome coatings must demonstrate compliance to EN 16058 to verify that any metallic nickel residue falls below set levels.[9] There are special categories on the approved composition list for pipes and fittings with specific coatings (e.g. tin).

Thus, a product is accepted for use in member states which recognize the 4MS scheme if all constituent metallic materials comply with the approved composition list and if the product passes any applicable surface testing requirements. Manufacturers may also need to adjust machining parameters to accommodate the different manufacturing properties of lead-free alloys and segregate different types of leaded and lead-free brass scrap to avoid upstream recycling issues.

Labeling requirements and identification for end-users

There are no mandatory or universally accepted product labeling/identification requirements to demonstrate compliance with the DWD. Manufacturers typically use several methods to demonstrate product compliance including third-party certification listings, product and packaging markings, specification sheets and manufacturer declarations.

Ideal materials for drinking water components in Europe

Brass alloys are versatile engineering materials used to make safe and durable products that readily meet regulatory requirements for drinking water applications in European member states. Brass alloys are 100% recyclable and are made almost entirely from recycled content contributing to a more sustainable planet. Compared to other materials, the unparalleled machinability, excellent corrosion resistance and high scrap value of brass make it a preferred material for potable water systems.

Cu
Copper Development Association Inc.
Copper Alliance

1 'Council directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption', Official Journal of the European Communities, L 330, May 12, 1998.
2 'Procedure for the acceptance of metallic materials for PDW', Part A, 'Procedure for the acceptance', 4MS Joint Management Committee, 6th Revision, May 27, 2016
3 'Procedure for the acceptance of metallic materials for PDW', Part B, '4MS Common Composition List', 4MS Joint Management Committee, 6th Revision, May 27, 2016.
4 'Influence of metallic materials on water intended for human consumption – dynamic rig test for assessment of metal release', Part 1, 'Design and operation', EN 15664-1:2008.
5 'Influence of metallic materials on water intended for human consumption – dynamic rig test for assessment of metal release', Part 2, 'Test waters', EN 15664-2:2008.
6 'Corrosion of metals – corrosion of metallic materials under corrosion load by water inside of pipes, tanks and apparatus', Part 6, 'Evaluation process and requirements regarding the hygienic suitability in contact with drinking water', DIN 50930-6:2013.
7 'Copper and copper alloys. Combustion method for determination of the carbon content on the inner surface of copper tubes or fittings', BS EN 723:2009.
8 'Influence of metallic materials on water intended for human consumption - Determination of residual surface lead (Pb) - Extraction method', EN 16057:2012. 9 'Influence of metallic materials on water intended for human consumption. Dynamic rig test for assessment of surface coatings with nickel layers. Long-term test method', BS EN 15068:2012.