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Purpose

The purpose of this specification is to describe the requirements for chlorine pigtails (copper flexible tubing/piping) used at Water Corporation sites to connect chlorine drums to the chlorine manifold.

Scope

This specification applies to all Water Corporation chlorine liquid drum facilities. The requirements listed below are mandatory for chlorine pigtails.

Definitions

N/A

References

AS 1572:2023 – Copper and Copper Alloys – Seamless Tubes for Engineering Purposes

AS/NZS 1567:2023 - Copper and copper alloys - Wrought rods, bars and sections

AS/NZS 2927:2019 – The Storage and Handling of Liquefied Chlorine Gas

AS/NZS ISO 9001:2016 - Quality management systems - Requirements

TARR Chlorine Drum Handling (Liquid systems) work instruction

<https://nexus.watercorporation.com.au/otcs/cs.exe/app/nodes/109616753>

Specification

The CHLORINE PIGTAIL is a round coiled tube/pipe made from copper alloy with brass alloy end fittings which shall comply with the following requirements;

- Supplier certified to AS/NZS ISO 9001:2016
- Copper alloy tube C122 manufactured to AS1572
- Brass alloy end fittings 385 manufactured to AS1567
- Brazing procedure certified to AS/NZS ISO 9001:2016
- Length of 1.8m
- Replaced 12 monthly as a minimum or sooner if a visual inspection suggests that replacement is warranted

Additional Information

- Each pig-tail is fitted with an expansion chamber and rupture disc, designed to allow expansion of any trapped chlorine when a pressure of ~2600kPa is reached (it also takes some time, depending on ambient temperature, for any chlorine trapped to heat up enough to reach ~2600kPa). Pipework and pig-tails in good working order are designed for pressures well in excess of 2600kPa.
- Expansion chambers are recognised by AS2927 as devices that prevent over-pressure and possible hydrostatic rupture (due to the thermal expansion of liquid chlorine that is trapped between two closed valves).
- Should a rupture disc fail in such a way as to cause external leakage, the quantity of chlorine in a pig-tail is limited to less than 250mL of liquid, which should be significantly contained within the chlorine store – limiting the impact on WC personnel, as well as the environment.
- Isolation of pig-tails by ESDs should not be a frequent event, with the exception of controlled ESD testing, which is conducted over a very short period.

Document Revision History	
7 Jan 2011	Specification created by SZ
10 Aug 2012	Specification reviewed by NH and submitted to Manager, Service Delivery for Approval
10 Oct 2013	Document reviewed by SZ & NH
04 Oct 2016	Document reviewed by SZ & NH
14 Sept 2017	Revision table updated to remove names
02 Oct 2020	Document reviewed by SZ & NH
14 Nov 2023	Document reviewed by SZ & NH