WORKSAFE
Mahi Haumaru Aotearoa

HSWA

REGULATORY CLARIFICATION

RC–25–04

February 2026

The use of hardwood for chlorine drum cradle feet

This regulatory clarification explains that hardwood is compatible with chlorine (a class 5.1.2 substance) for the purpose of regulation 12.1 of the Health and Safety at Work (Hazardous Substances) Regulations 2017 (HS Regulations).

It confirms that hardwood can be used for the feet of chlorine drum cradles.

Liquefied chlorine gas (a class 5.1.2 substance) is commonly supplied in 920kg chlorine drums, which sit on cradles that use hardwood feet at the base.

Regulation 12.5 of the HS Regulations requires a class 5.1.2 substance to be kept separate from other substances or materials with which it is incompatible.

Regulation 12.1 defines compatible and incompatible in relation to a class 5.1.2 substance.

In determining that hardwood is compatible with chlorine, we have considered:

- trials conducted in the United States which involved controlled liquified chlorine gas releases (Jack Rabbit Project)
- Australian and New Zealand Standards, and
- the use of hardwood in situations involving chlorine, both domestically and internationally.

The Jack Rabbit Project

In 2015 and 2016, the United States Department of Homeland Security led trials in which common urban surfaces and materials were exposed to up to 20 tonnes of chlorine. Surfaces tested included a telegraph pole, a railroad tie (sleeper) and bare wood.

The trials reported that 'common urban surfaces and materials were not greatly affected, even by direct liquid exposure to chlorine.'

They showed that whilst there was a chemical reaction that resulted in a bleaching of the exposed wood, there was no evidence that this caused combustion or the expulsion of steam and hot vapours or generated an explosion or generated a class 6, 8 or 9 substance.

Australian and New Zealand Standards

Clause 3.3.2.2. of the *AS/NZS 2927:2001 The Storage and Handling of Liquefied Chlorine Gas* states that 'cylinder or drums shall be placed on a firm, stable, non-combustible surface', and then goes on to state that 'For the purpose of this Standard, hardwood is deemed to be non-combustible.'

AS 2927:2019 superseded the 2001 version in Australia, and whilst not a New Zealand standard, is still relevant for consideration. Clause 6.3.2.2 of *AS 2927:2019* contains the same provision that hardwood is deemed to be non-combustible on contact with chlorine.

Whilst neither *AS/NZS 2927:2001* or *AS 2927:2019* are cited in the HS Regulations, they can be used as documents of good practice to provide guidance when applying the HS Regulations.

WSNZ_5015_JAN 26

Domestic and international use and practice

Further, practical evidence supports the compatibility of hardwood and chlorine:

a. cradles with hardwood feet have been used for decades in Australia and New Zealand, with no record of the hardwood combusting with chlorine
b. hardwood 'plugs' are a standard part of emergency response kits in Australasia and North America. They are used to seal holes in chlorine drums that cannot be immediately sealed by other means, and
c. trucks with timber decks are commonly used to transport chlorine cylinders and drums, without issue.

The evidence shows that hardwood can be exposed to chlorine, including in large quantities, without causing or contributing to combustion or the expulsion of steam or hot vapors or generating an explosion or generating a class 6 or 9 substance.

Whilst chlorine can theoretically react with moisture present in the hardwood to create acidic substances, these would not be generated in sufficient concentration to assign a corrosivity (class 8) classification using the GHS classification criteria.

Accordingly, hardwood can be considered compatible with chlorine under regulation 12.1.

As the definition of compatible is met, hardwood is therefore excluded from being incompatible.

This means that hardwood is a suitable material to be used for the feet of chlorine drum cradles. The feet should be maintained in good condition.

Definitions

Compatible

In relation to a 5.1.1 or 5.1.2 substance and its relationship with any other substance or material means that:

a. the other substance or material is chemically inert in relation to the class 5.1.1 or 5.1.2 substance for the range of temperatures and pressures at which it is brought into contact with the class 5.1.1 or 5.1.2 substance, or
b. if the other substance or material does react chemically with the class 5.1.1 or 5.1.2 substance, it does so in a way that does not cause or contribute to combustion or the expulsion of steam and hot vapours or generate an explosion or generate a class 6, 8, or 9 substance.

Incompatible

In relation to a class 5.1.1 or 5.1.2 substance:

a. means a substance or material that is not compatible with the class 5.1.1 or 5.1.2 substance; and
b. includes:
    i. a substance that is not a class 5.1.1 or 5.1.2 substance but that is classified in class 5.2, or in any of classes 1, 2, 3, 4, 6.1A, 6.1B, 6.1C, or 8
    ii. any organic matter, or substance that contains carbon, in a form that will combust with the class 5.1.1 or 5.1.2 substance
    iii. zinc or magnesium in any form, and any other metal in powdered form
    iv. any substance or material that will combust with air, or will combust with or catalyse the decomposition of a class 5.1.1 or 5.1.2 substance.