Aerosol storage

Posted by Anonymous on Wed, 2014-06-18 13:57

Aerosol storage: Q1 Where can I find the standards and requirements for safe aerosol storage in the lab prep area?

Q2 I have joined my schools OSH team and we have aerosols all over the school. What Australian Standards cover the storage of aerosols in a school or on a commercial building? We have no outside storage as we are an inner city school in a multistorey building.

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Laboratory Technicians

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Answer by labsupport on question Answer by ASTA_admin on question Answer by labsupport on question Answer by labsupport on question Answer by labsupport on question Answer by ritasteffe on question aerosol storage

Submitted by sat on 15 August 2014

Answer reviewed 8 March 2023

Aerosols are often metal dispensers from 50 mL up to 1000 mL maximum net capacity. They are pressurised by liquefied, dissolved or compressed propellant gases. The pressure within the can increases with temperature and so storage in hot areas can potentially cause the can to burst or rupture explosively. The contents of aerosols may be flammable, toxic, corrosive, or a combination of these. They may also present other physical or health hazards.

The Australian Standards generally refer to storage of large quantities of aerosols. There is no specific Australian Standard that covers the storage of aerosols in a school or public building. The main intent of the legislation is to prevent aerosols from becoming missiles or projectiles in the event of a fire. In a laboratory setting, if there are only one or two aerosol containers, they could be stored throughout the laboratory.

Australian Standard **2243.2:2021 Safety in Laboratories, Part 2: Chemical Aspects and Storage**[1] specifies the maximum quantities of chemicals which can be stored within a laboratory and states that in general,

> "The quantities of chemicals should be restricted to the minimum levels consistent with the operations of the laboratory. Following use, chemicals should be returned to storage."[1]

For chemicals which are stored "within a laboratory other in chemical storage cabinets",[1] the Standard specifies the following maximum quantities for Class 9 Dangerous Goods and aerosols:[1]

> **'Maximum per 50m^2 kg or L** – 50 for PG I or II, 100 for PG III'

You can see that the requirement for a dedicated storage cabinet depends upon the quantity of aerosol containers, as well as the floor area of a laboratory. Therefore, it is necessary to conduct a site-specific risk assessment to determine if a dedicated storage cabinet is required.

The Dangerous Goods Class for the aerosols you have in stock can be determined by consulting Section 14 Transport Information of the Safety Data Sheet. Where an aerosol is classified as Dangerous Goods Class 3 Flammable Liquid, it is appropriate to store it in the Flammable Liquids cabinet. Where it is classified as Dangerous Goods Class 2.1 Flammable Gas, then storage recommendations are not so clear.

Small amounts of general-use aerosol cans throughout a building should not be a cause of concern. However, in the event of a fire, there may be a risk of aerosol cans becoming projectiles. Therefore, it is important to **keep quantities to a minimum** and, if there are moderate to large quantities, to consider storage in a suitable metal cabinet/cage, which will aid in the prevention of aerosol cans becoming projectiles in the event of a fire. Storage cabinets for aerosols are available in a range of styles and size; small cabinets are available which can accommodate a maximum of 12 aerosol cans. Another alternative could be a metal cabinet that will remain closed in the event of a fire, subject to it being of a robust construction with locks and hinges that would last longer in a fire than the aerosols.

In addition, consider the people who may have access to places where aerosols are held and determine if the aerosols need to be kept secure. For example, aerosol cans that contain paint should be kept secure so that they are not taken by unauthorised persons and used for inappropriate activities like graffiti.

General principles for storage of aerosols

The following general principles for flammable gas storage are relevant to the storage of aerosols:

- Keep away from any sources of heat or ignition, such as heat, sparks, open flames and hot surfaces.
- Provide adequate ventilation.
- Store in a cool and dry area.
- Keep away from combustible and incompatible goods.
- Do not expose to temperatures exceeding 50 $^{\circ}$C. Protect from sunlight.
- Do not keep in cars.
- Do not allow to freeze.
- Do not store near acids where the cans could corrode.
- Do not store where they are likely to suffer mechanical damage.
- Piercing a can even when empty may cause it to explode.

Science ASSIST recommends the following

- a review of the number and type of aerosols be conducted to ensure that minimum required quantities are stored;
- a risk assessment be conducted to determine if a dedicated storage cabinet is required for your specific site according to Table 1 in AS 2243.10:2020
- a means of projectile containment is provided where several aerosols are kept, but quantities are less than that required for a dedicated cabinet;
- aerosols are kept securely out of the reach/access of students except when required for use.

For further information, the Pratt document[2] and the information from the aerosol association of Australia[3] are very good sources of information for general storage of aerosols.

Oher Australian Standards which relate to aerosols

The following Australian Standards make reference to aerosol storage:

- AS 1940:2004 The storage and handling of flammable and combustible liquids.
- AS/NZS 3833:2007 The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers.

Two other related Standards are not relevant to storage of aerosol cans ? 1L:

- **AS 2278.1—2008** Aerosol containers Part 1: Metal aerosol dispensers of capacity 50 mL to 1000 mL inclusive

Note: this deals with the requirements for the construction and testing of, rather than the storage of aerosols.

- **AS 4332—2004** The storage and handling of gases in cylinders

Note: This applies to storage of Class 2 substances in the ADG Code in relation to aerosols having a capacity of greater than 1 L (i.e., this does not apply to aerosols of capacity ? 1L).

References

[1] Standards Australia, 2021, *AS 2243 Safety in Laboratories, Part 2: 2021 Chemical aspects and storage* , Sydney, Australia. Reproduced by ASTA with the permission of Standards Australia Limited under licence CLF1222asta. Copyright in AS [2243.2:2021] vests in Standards Australia. Users must not copy or reuse this work without the permission of Standards Australia or the copyright owner.

[2] Pratt Safety systems (2013, October 22). The Storage and Handling of Small Quantities of Aerosol Cans, Retrieved from https://pp.one/

[3] Aerosol Association of Australia, *Aerosol Safety in the Home*, https://www.aerosol.com.au/about-aerosols/safety-home (Accessed March 2023)

Ecospill. (2021, April 16), Safe storage of aerosols: what you need to know, Retrieved from the Eco spill website: https://www.ecospill.com.au/safe-storage-of-aerosols-what-you-need-to-know/
