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Posted by Anonymous on Thu, 2014-07-31 09:50

Chemical Storage Cabinets: Can you please provide information on chemical storage cabinets suitable for storage of corrosive substances, including concentrated nitric, sulfuric and hydrochloric acids.

Voting:



Average: 5 (1 vote)

Year Level:

7

8

9

10

Senior Secondary

Laboratory Technicians:

Laboratory Technicians

Showing 1-1 of 1 Responses

Answer by labsupport on question Answer by ritasteffe on question Chemical Storage Cabinets

Submitted by on 23 August 2014

Answer reviewed 27 February 2023

Generally, the amounts of corrosive chemicals stored in schools are below the quantities required to be stored in a chemical storage cabinet. In addition, there are a range of incompatibilities within this Dangerous Goods class, which must be considered in their storage, particularly in the school setting where there are small quantities of a wide range of chemicals. This needs to be considered before the purchase of a corrosives cabinet.

Corrosives cabinets

Cabinets for the storage of corrosive substances need to comply with AS 3780-2008: The Storage and Handling of Corrosive Substances. These cabinets are designed to protect the contents from damage, provide segregation between incompatible chemicals, contain small spills and protect in the event of a fire. These cabinets are required to have a self-closing door with at least 2 latch points, a 150mm deep liquid tight sump capable of containing 25% of storage capacity, and contain shelves which allow free movement of air. They should be constructed of corrosion resistant materials or have a corrosion resistant coating.

There are generally two types of corrosive storage cabinets. Those made out of metal, usually powder coated steel, and those manufactured from high-density Polyethylene plastic.

- Metal cabinets are more suited to slightly corrosive substances, however they do corrode over time.
- The Polyethylene cabinets provide superior resistance for the storage of highly corrosive substances which are aggressive to metal e.g., sulphuric, hydrochloric and nitric acids.

Cabinets come in different sizes and capacities with adjustable shelves and deep sumps. Some are lockable and others have sealed dual compartments to store incompatible substances safely within the one cabinet. There are numerous companies that manufacture both types, please see our list of [School science suppliers](#).¹

Science ASSIST recommends that schools assess their individual situation with regard to quantities and types of corrosive substances they have and the configuration and capacity of their chemical store to determine the suitability of corrosive storage cabinets.

See the [Chemical Management Handbook for Australian Schools – Edition 3](#)² and the [GUIDELINES for the design and planning of secondary school science facilities in Australian schools](#)³ for further information regarding chemical storage.

Segregation of Class 8 dangerous goods

The Australian Standard sets out the following information regarding segregation in storage for Class 8 dangerous goods (corrosive substances)

‘Class 8 dangerous goods shall be stored in a manner that will prevent reactions between

1. Acids and alkalis;
2. Acids and hypochlorites;
3. Acids and cyanides
4. Acids and Class 4.3 dangerous goods;
5. Oxidising and combustible materials; and
6. Incompatible acids’⁴

Schools generally store minor quantities of corrosive chemicals, and do not require an approved corrosives cabinet and may be stored in a suitably ventilated chemical store taking into account segregation from other dangerous goods classes and subclasses, packing groups, compatibilities, spill control, ventilation and emergency procedures.

Concentrated corrosives can be stored segregated and in secondary containment, also known as bunding, in the chemical store, corrosive storage cabinet or in containment trays on the bottom shelf in a chemical store. The bunding should be of sufficient volume to contain all of the corrosive liquid if the bottle breaks. Liquids should be stored close to the floor and below solids.

It is important to consider any incompatibilities between dangerous goods when considering storage. For example, with corrosive substances this means checking the incompatibilities as listed on the Safety Data Sheet (SDS). i.e., segregating acids from incompatible chemicals. Ideally all concentrated acids should also be segregated from each other, however, this is very difficult to achieve in a school chemical store.

Concentrated acids should be kept separate in secondary containment trays, which act as bunds. Nitric acid is best stored on its own in a secondary container near floor level and should be kept away from other acids, and in particular acetic acid. When a subsidiary risk is listed for a chemical, the storage requirements of both the relevant dangerous goods class and the subsidiary risk must be followed.

References and resources

1 Science ASSIST. (2023). *School science suppliers*. Retrieved from the Science ASSIST website.
<https://assist.asta.edu.au/resource/664/school-science-suppliers>

2 Science ASSIST. (2018). *Chemical Management Handbook for Australian Schools – Edition 3*, Retrieved from the Science ASSIST website: <https://assist.asta.edu.au/resource/4193/chemical-management-handbook-au...>

3 Science ASSIST. (2017). GUIDELINES for the design and planning of secondary school science facilities in Australian schools. Retrieved from the Science ASSIST website:
<https://assist.asta.edu.au/resource/4175/guidelines-design-and-planning-...>

4 Standards Australia. (2021). *AS 2243:2 2022, Safety in Laboratories, Part 2: Chemical aspects and storage*. Sydney, Australia. This excerpt has been reproduced by ASTA with the permission of Standards Australia Limited under licence CLF1222asta. Copyright in AS 2243:2 2022, *Safety in Laboratories, Chemical aspects and storage* vests in Standards Australia. Users must not copy or reuse this work without the permission of Standards Australia or the copyright owner.

Department of Education and Training Victoria, (2018). *Guidance Sheet 1: Chemical Storage*, Department of Education and Training Victoria website,
<https://www.education.vic.gov.au/hrweb/Documents/OHS/guid1chemst.docx> (Accessed via <https://www.education.vic.gov.au/hrweb/safetyhw/Pages/chemicalmgt.aspx>)

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