Refrigerator

Posted by Anonymous on Wed, 2015-10-14 08:54

Refrigerator: Is it safe to have a small refrigerator for keeping Bromine water and Iodine in a chem store.

Voting:
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Year Level:
7
8
9
10
Senior Secondary
Laboratory Technicians:
Laboratory Technicians

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refrigerator

Submitted by on 28 October 2015

Answer reviewed 27 February 2023

Storage of bromine and iodine

Bromine and iodine are both classified as Class 8 (Corrosive) dangerous goods. Bromine water and iodine should be stored in their own tightly sealed containers within a secondary container, either in a corrosives cabinet or in the corrosives section of the chemical store, and segregated from combustible material, organic substances, reducing agents and metals. Refer to the Safety Data Sheets (SDSs) for guidance on handling and storing chemicals.

For more specific information for Bromine and Iodine in the school setting, see the Chemical Management Handbook for Australian Schools - Edition 3[2]

Corrosive chemicals such as bromine water and iodine should not be stored in a refrigerator due to the lack of ventilation, and the ability of the vapours/fumes to corrode the metal components of the fridge. It is also important to check the lids periodically for cracks. Dilute iodine solution (iodine/potassium iodide) goes off very quickly, so it is best practice to prepare dilute iodine solutions as required.

Location of refrigerators

'There must be no sources of ignition within the chemical store. Switching devices for light fittings or ventilation fans must be outside the storeroom, e.g., a light switch just outside the entrance door. Gas-fired or electric element heaters and other electrical equipment including refrigerators must not be installed within a chemical store.'[1]

For further information, see our Information sheet AIS: Refrigerators and freezers in science

Science ASSIST recommends:

- a risk assessment be conducted prior to the use of any chemicals, and all appropriate control measures be identified and implemented. Science ASSIST has developed a one-page risk assessment template, see Risk Assessment Template.
- Refrigerators should be located in the science preparation area away from the chemical store and flammable cabinet.
- Highly corrosive chemicals that produce vapours/fumes should not be stored in refrigerators due to the lack of ventilation and their ability to corrode metal.
- Chemicals stored in refrigerators should be in sealed containers and properly labelled with the contents, GHS label, date of acquisition or preparation and nature of any potential hazard. The labels used should be water resistant.
- Plastic trays can be used as secondary containment for all containers to capture spills and leaks.
- Containers stored in the refrigerator should be checked regularly for cracked caps and blurred labels.
- When handling bromine water or iodine it is important that engineering controls, such as a fume cupboard, is used and that relevant PPE, such as gloves, safety glasses, lab coat and closed in shoes are worn.
- A bottle of dilute sodium thiosulfate (0.2M) should be kept nearby when handling bromine water or iodine. Small spills of either halogen can be reduced to the halide (bromide, iodide) by addition of thiosulfate solution and disposed of down the sink with dilution.

References

1 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-...

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...

Chem-Supply. (2021). *Bromine water*, Safety Data Sheet. Search https://shop.chemsupply.com.au/ to source the latest Safety Data Sheet via the product information page.

Chem-Supply. (2020). *Iodine*, Safety Data Sheet. Search https://shop.chemsupply.com.au/ to source the latest Safety Data Sheet via the product information page.

The University of Queensland Occupational Health and Safety Unit. (2022). *Storage of Chemicals in Fridges, Freezers and Cold Rooms - Guidelines.* Retrieved from The University of Queensland website https://ppl.app.uq.edu.au/content/2.70.07-storage-chemicals-fridges-free...
