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Posted by Anonymous on Fri, 2015-10-16 10:10

Storing magnesium ribbon: Hi, Could you please let me know the safest place to store our rolls of magnesium ribbon? They are DG 4.1 flammable solids—should they be stored with the flammable liquids on a separate shelf in our flammables cupboard, or with other flammable solids such as sulfur, iron filings and naphthalene in our chem storeroom?

?Thanks a lot, great resource.

Voting:



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Year Level:

7

8

9

10

Senior Secondary

Laboratory Technicians:

Laboratory Technicians

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Storing Magnesium ribbon

Submitted by sat on 23 October 2015

Answer reviewed 8 March 2023

In Brief

The safest place to store your roll of magnesium ribbon is with other Dangerous Goods (DG) Class 4.1 flammable solids, such as Sulfur and naphthalene. They should be stored in a secure, non-combustible container in a locked chemical storeroom, segregated from incompatible substances.

Iron filings are classed as a non-hazardous and a non-dangerous good. However, storage with Dangerous Goods Class 4.1 is appropriate as the substance is compatible and could be liable to spontaneously heat and ignite under favouring conditions.

From Australian Standard 2243.2:2021 Safety in Laboratories, Part 2,¹ Note 5 from Table 2 refers to AS 3383.5.10.1 and makes allowance for the storage of Class 4.1 chemicals with flammable liquids:

‘...each class shall be kept in a separate cabinet except that Class 3 and 4.1 and combustible liquids may be store [sic] in the same cabinet.’¹

Your suggestion that Class 4.1 Flammable solids be stored on a shelf above the flammable and/or combustible liquids in the Flammables cabinet is in accord with the above specifications. However it is not the preferred storage location.

The preferred and safest place is to store the magnesium and other flammable solids in a separate, dedicated storage cabinet or cupboard.

Magnesium is listed as a category 2 illicit drug precursor/reagent.² This chemical may only be available for purchase by account customers and a Permit/Licence/End User Declaration may be required.²

Storage of magnesium should be in a locked area, and only minimum quantities made available for practical activities. Teachers should dispense a small amount of the product to students.

Additional information

Class 4 Dangerous Goods:

There are a number of key considerations for controlling the fire risks from storing and handling Class 4 dangerous goods. These include:

- ensuring non-combustible materials are used in the construction of buildings and storage areas;
- installing and maintaining appropriate fire protection systems;
- utilising separation distances (or barriers such as fire resistant screen walls);
- ensuring ignition and heating sources are controlled within the storage and handling areas, for example, electrical equipment used in these areas must be intrinsically safe;
- ensuring adequate ventilation and/or extraction is provided to avoid creation of a hazardous atmosphere or hazardous area;
- ensuring that the storage area is moisture free and protected from the elements;
- ensuring that measures are taken to protect light or temperature sensitive materials (e.g. by installing temperature controls or protecting from direct sunlight).

Class 3 Dangerous Goods:

Flammable solvents (Dangerous Goods Class 3) must be stored in an Australian standard approved flammable solvents cabinet.

General Considerations for Storage of Flammable and Combustible Chemicals

When planning or restocking a chemical store, a risk assessment should be conducted in conjunction with a current Safety Data Sheet (SDS) to check for the DG class, subsidiary class, packing group (PG) and advice on compatibility with other chemicals.

Wherever possible, dangerous goods and hazardous substances must be stored in original containers and labelled appropriately in accordance with legislation.

Segregation: Chemicals must be stored in their respective classes, taking into account incompatibilities within and between classes. Strategies such as the use of distance, impervious physical barriers or storage in separate areas should be used to prevent contact between incompatible dangerous goods classes.³

Ignition Sources: Proper storage and use of flammable or combustible dangerous goods is absolutely critical in maintaining a safe workplace. All ignition sources should be eliminated or controlled. Ignition sources include heat (e.g., direct sunlight), naked flames, and electrical fittings (sparks or static discharge). Flammable liquid vapours are heavier than air, can pool in low-lying areas and travel substantial distances to a source of ignition.⁴

Ventilation: Suitable ventilation is required to prevent the build-up of hazardous vapours, gases or fumes.

Security: We recommend that all chemical storage areas be locked, with access restricted to authorised members of staff only. See our information sheet, [AIS: School science area security](#).⁵

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 Chemistry Australia Website, *Code of Practice for Supply Diversion into Illicit Drug Manufacture*, 2008, https://chemistryaustralia.org.au/safety-environment/code_of_practice_for_supply_diversion_into_illicit_drug_manufacture

³ 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-australian-schools-edition-3>

⁴ The MSDS Hyperglossary. *Flammable*, Interactive Learning Paradigms Inc. website, <http://www.ilpi.com/msds/ref/flammable.html> (Accessed February 2023)

⁵ Science ASSIST, 2015, ASSIST Information Sheet: School science area security, Science ASSIST website, [AIS: School science area security](#)

Victoria Department of Education, *Guidance Sheet 1: Chemical storage*, Victoria Department of Education website, <https://www.education.vic.gov.au/hrweb/safetyhw/Pages/chemicalmgt.aspx>

Queensland Department of Education website, *Chemical Management Procedure, 2022*, <https://ppr.qed.qld.gov.au/pp/chemical-management-procedure>

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