



# ASSIST

AUSTRALIAN SCHOOL SCIENCE  
INFORMATION SUPPORT FOR  
TEACHERS AND TECHNICIANS

Published on ASSIST (<https://assist.asta.edu.au>)

[Home](#) > Storage of nitrates

---

## Storage of nitrates

Posted by Anonymous on Tue, 2016-03-01 13:10

Storage of nitrates: Hi, I'm upgrading the storage of my chemicals. Is it okay to store nitrates in clear glass bottles?

**Voting:**



No votes yet

**Year Level:**

7

8

9

10

Senior Secondary

**Laboratory Technicians:**

Laboratory Technicians

---

Showing 1-1 of 1 Responses

## storage of nitrates

Submitted by sat on 10 March 2016

Answer reviewed 2 March 2023

**In brief**

Where possible, it is recommended to keep chemicals in the original container in which the chemical was supplied. If it is necessary to transfer to a new container, Science ASSIST recommends that you consult the relevant SDS for each nitrate that you wish to transfer to confirm specific storage instructions. Clear glass bottles are not the best option for the storage of light-sensitive chemicals, such as many of the nitrates. We suggest amber glass or opaque high-density polyethylene (HDPE) jars as the best alternatives.

The AS 2243.2.2021 Safety in Laboratories, Part 2: Chemical aspects and storage specifies:

### 10.3 Transferring and repackaging

*'Where an empty container is to be filled with a chemical for storage and use at another time, it*

—

- a. *Shall be suitable for the product, particularly in relation to its compatibility with the intended contents and the vapour pressure that can be generated'*<sup>1</sup>

The following aspects should be taken into consideration regarding the storage of, and storage containers for, nitrates.

- **Chemical incompatibilities:** Most nitrates are classed as oxidisers and should be stored away from organic compounds, flammable or combustible materials and reducing agents.
- **Many nitrates are light sensitive.** The nitrate ion can be photolysed on exposure to UV light.<sup>2</sup> This process is indicated by the formation of a yellow colour in the solid nitrate.<sup>2</sup> The product/s of photolysis can decompose further to form the more toxic nitrite ion, when dissolved in water.<sup>2</sup> It is therefore important to protect these substances from sunlight. They are best stored in the original container or in an amber glass or compatible opaque plastic container; clear glass bottles are not suitable.
- **Many nitrates are hygroscopic,** which means that they absorb water from the air. Therefore, it is important to ensure that containers have a good seal and are stored in cool, dry locations. It is often advised to store the chemical in its container within a desiccator.
- **Nitrates are often supplied in plastic jars.** High-density polyethylene (HDPE) is compatible with nitrates, however many other plastics are not.
- **Decanting nitrates from the original container:** It is important that nitrates are not stored in contact with any incompatible substances (flammable or combustible substances or reducing agents). If the storage containers into which the nitrate is to be decanted are not new, ensure that the containers and their lids are not contaminated with any of these substances.

### Additional information

In a laboratory, there are a variety of containers available for the storage of chemicals. It is important that the container chosen is in sound condition and is compatible with the chemical being stored. Choosing the incorrect container can lead to a chemical's deterioration, the escape of hazardous fumes, or a build-up of pressure. Knowing the physical and chemical properties of a chemical is important in determining the best type of storage container. Therefore, before using any chemical, it is recommended to consult its safety data sheet and chemical label for specific storage instructions. It is also important to regularly check that the existing containers are still in good condition.

### Selection of suitable containers for the storage of chemicals

- Chemical containers can be made from glass or particular plastics.
  - **Glass containers** are generally chemically inert, some types are recyclable, and some are available with an amber tint for light-sensitive chemicals.

- **Plastic containers** are more lightweight and not easily breakable. They are available in clear, translucent or opaque. A chemical compatibility chart needs to be consulted for the compatibility of chemicals with different types of plastics. Some plastics may degrade after extended contact with a particular chemical or may become brittle with exposure to sunlight.
- The chemical needs to be compatible with the container material and its lid.
- Ensure that containers are in good condition and leak proof.
- Where possible, keep to the original container that the chemical was supplied in.<sup>1</sup>
- Never use a food or household container to store a chemical.<sup>1</sup>
- **Light-sensitive chemicals** should be stored in opaque or amber-coloured containers to protect from visible and UV radiation. Clear glass bottles/jars are not suitable for these chemicals.
- **Solid chemicals** and powders are best stored in wide-mouthed jars with screw caps so that the contents can be easily accessed and removed with a spatula.
- **Liquid chemicals** are best stored in narrow-mouthed bottles so they can be easily dispensed or poured. Some bottles are fitted with pouring rings to assist in this process.
- If decanting into another container:
  - select a container of the same material as the original container, or ensure the container is compatible with the chemical;
  - ensure that the labelling is current;
  - ensure that the lid used fits so that vapours are contained and spills prevented.
- The type of lid must also be compatible with the chemical being stored, for example:
  - ground glass stoppers are not recommended for storing alkali solutions such as aqueous sodium hydroxide. Hydroxide solution can react with the glass, causing the ground-glass joints to freeze;
  - if chemicals have the potential to decompose with the generation of gases, such as with hydrogen peroxide, the container should have a vented lid.

## References

<sup>1</sup> 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.

<sup>2</sup> Plumb, R. C., Edwards, J. O., 'Color centers in UV-irradiated nitrates'. *Journal of Physical Chemistry*, 96, (1992), p 3245.

'Nitrates and nitrites', IPCS INCHEM website, <https://inchem.org/documents/pims/chemical/pimg016.htm> (Accessed March 2023)

'Plastic bottle', Wikipedia website, [https://en.wikipedia.org/wiki/Plastic\\_bottle](https://en.wikipedia.org/wiki/Plastic_bottle) (Accessed March 2023)

'Plastic Container Styles', Qorpak website, <https://www.qorpak.com/pages/ContainersandClosuresPlasticStyles> (Accessed March 2023)

'Reagent bottle' Wikipedia website, [https://en.wikipedia.org/wiki/Reagent\\_bottle](https://en.wikipedia.org/wiki/Reagent_bottle) (Accessed March 2023)

'Safety Fact sheet – oxidisers' Nanyang Technological University, School of Physical and Mathematical Sciences website. <https://web.archive.org/web/20160222031526/http://www.spms.ntu.edu.sg/cb...>

ChemSupply Australia, 2023, *Safety Data Sheet: Silver nitrate*, *Chemsupply website*. Please search the product information page on the website for the current SDS for Silver nitrate <https://shop.chemsupply.com.au/>

Sigma Aldrich, 2023, Safety Data Sheet: 'Ammonium nitrate', Sigma Aldrich website, Please search the product information page on the website for the current SDS for Ammonium nitrate  
<https://www.sigmaaldrich.com/AU/en>

Sigma Aldrich, 2023, Safety Data Sheet: 'Sodium nitrate', Sigma Aldrich website, Please search the product information page on the website for the current SDS for Sodium nitrate <https://www.sigmaaldrich.com/AU/en>

---

---

**Source URL:**<https://assist.asta.edu.au/question/3619/storage-nitrates>