



ASSIST

AUSTRALIAN SCHOOL SCIENCE
INFORMATION SUPPORT FOR
TEACHERS AND TECHNICIANS

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

[Home](#) > Potassium metal

Potassium metal

Posted by Anonymous on Tue, 2019-05-21 12:45

Potassium metal: Is potassium metal permitted for demonstrations?

Voting:



No votes yet

Year Level:

Senior Secondary

Laboratory Technicians:

Showing 1-1 of 1 Responses

Answer by labsupport on question Potassium metal

Submitted by sat on 21 May 2019

Firstly, it is important to follow directions from your jurisdiction regarding the use of chemicals.

Potassium metal is banned from NSW Department of Education schools¹ and is considered high risk in Queensland².

Science ASSIST has developed a '*List of recommended chemicals for Australian Schools*'³ with the aim to satisfy the requirements of all jurisdictions across Australia. In keeping with this, we have not included potassium in the List and hence, it is also not included in the *Chemical management handbook for Australian Schools – Edition 3*⁴.

Potassium metal is a high-risk chemical. If you are permitted to use potassium in your jurisdiction, it is important to be aware of the hazards regarding the storage and handling of potassium metal and to conduct your own risk assessment to inform your decision as to whether to purchase it.

Therefore, while it may be permissible to store and use potassium metal, please carefully consider whether your school can manage the risks associated with it.

Long term storage and formation of oxides

The major concern about the use and storage of potassium metal is regarding the hazards of long-term storage. The Chem-Supply SDS for potassium⁵ says that the metal 'will form the peroxide and the superoxide at room temperature even when stored under mineral oil'. There is the risk that the oxidised metal 'may explode violently when handled or cut'.⁵ Whilst this may be a rare occurrence, the consequences are significant. There is an account of an experienced teacher in Switzerland who received severe burns as a result of a small piece of potassium exploding⁶.

Schools that may have potassium are advised to inspect their potassium to ensure that it is covered with liquid paraffin oil. The oxide is grey and the peroxide is yellow in colour, while the superoxide is a deeper yellow, or 'canary yellow'⁷. If the potassium is coated with a yellow crust, it may have developed the superoxide and may be explosive⁸. If this is the case, do not attempt to handle or cut it but arrange for its disposal by a licenced chemical waste disposal contractor.

Security

Potassium is listed as a Category II - illicit drug precursor/reagent⁹, therefore may need an End User Declaration (EUD) for purchase and it is required to be stored securely.

References and further reading:

¹ NSW Department of Education and Training. 1999. *Chemical Safety in Schools (CSIS) resource package*. Sydney: NSW (Log in required)

² Queensland Department of Education. 2019. Appendix 4b Prohibited Chemicals and High Risk Chemicals in Departmental Workplaces of *Guideline for managing risks with chemicals in DoE workplaces*, Queensland Department of Education website, <https://education.qld.gov.au/initiativesstrategies/Documents/guideline-managing-chemicals.PDF>

³ Science ASSIST. 2016. *List of recommended chemicals for science in Australian schools*, Science ASSIST website, <https://assist.asta.edu.au/resource/3052/list-recommended-chemicals-science-australian-schools?search-id=beb48ac>

⁴ Science ASSIST. 2018. *Chemical Management Handbook for Australian Schools - Edition 3*, Science ASSIST website, <https://assist.asta.edu.au/resource/4193/chemical-management-handbook-australian-schools-edition-3>

⁵ Chem-Supply. 2017. *Potassium metal*, Safety Data Sheet, Chem-supply website, <https://www.chemsupply.com.au/documents/PL0921CH5M.pdf>

⁶ Grubelnik, A., Meyer, V.R., Bützer, P. and U. W. Schönenberger. 2008. 'Potassium Metal Is Explosive—Do Not Use It!' *Journal of Chemical Education* 2008 85 (5), 634 DOI: 10.1021/ed085p634.2. <https://pubs.acs.org/doi/pdf/10.1021/ed085p634.2>

⁷ DeLaHunt J.S. and T.G. Lindeman. 2007. 'Review of the safety of potassium and potassium oxides, including deactivation by introduction into water'. *Journal of Chemical Health and Safety Volume 14, Issue 2, March–April 2007, Pages 21-32.* <https://doi.org/10.1016/j.jchas.2006.09.010>

⁸ CLEAPSS. 2016. *Hazcard 76 Potassium*, CLEAPSS website. (Login required)

⁹ Australian Crime Commission. 2008. Appendix 1: Categories of Illicit Drug Precursors/Reagents/Equipment of *Code of Practice for Supply Diversion into Illicit Drug Manufacture*, Chemistry Australia website, <https://chemistryaustralia.org.au/Content/drugs.aspx>

Bailey, J., Blair, D., Boada-Clista, L., Marsick, D., Quigley, D., Simmons, F. and H. Whyte. 2004. *Management of time-sensitive chemicals (II): Their identification, chemistry and management.* <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.561.8711&rep=rep1&type=pdf>

'Chemical Management', Department of Education and Training Victoria website, <https://www.education.vic.gov.au/hrweb/safetyhw/Pages/chemicalmgt.aspx> (October 2018)

CLEAPSS. 2018. *Alkali metals*, Student safety sheet, CLEAPSS website, <http://science.cleapss.org.uk/Resource/SSS080-Alkali-metals.pdf>

Department of Education and Training Victoria, 2018. *Guidance Sheet 3: Prohibited and Restricted Chemicals*, Department of Education and Training Victoria website, <https://www.education.vic.gov.au/hrweb/Documents/OHS/guid3prohib.docx> (Accessed via <https://www.education.vic.gov.au/hrweb/safetyhw/Pages/chemicalmgt.aspx>)

'Potassium', Princeton University Office of Environmental Health and Safety website, <https://ehs.princeton.edu/laboratory-research/chemical-safety/chemical-specific-protocols/potassium> (Accessed May 2019)

Queensland Department of Education. 2018. *Safety Alert: Dangers of prolonged storage of 'time sensitive' chemicals*, Queensland Department of Education website, <https://education.qld.gov.au/initiativesstrategies/Documents/dangers-time-sensitive-chemicals.PDF#search=time%20sensitive%20chemicals>

Source URL: <https://assist.asta.edu.au/question/4442/potassium-metal>