

Containing the dichromate volcano

Education in Chemistry

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Technician notes

Kit

- Ammonium dichromate(VI), 5 g, (toxic, causes severe skin burns and eye damage, may cause breathing difficulties by inhalation, may cause genetic defects, may cause cancer, damage fertility or the unborn child. See [CLEAPSS Hazcard 7](#))
- Conical or round-bottomed flask $\geq 1 \text{ dm}^3$
- Glass tube or similar for delivering the powder into a small pile
- Tripod and gauze or clamp stand
- Bunsen burner
- Mineral wool

Preparation

Wear gloves and splash-proof goggles. Working in a fume cupboard which is not switched on and with the sash partially lowered, weigh out no more than 5 g of the ammonium dichromate(VI) and use a glass tube or paper cone to transfer the solid into a small conical pile in the centre of the base of a 1 dm^3 conical or round-bottomed flask. Place the flask above a Bunsen using a clamp, or a tripod and gauze, then use a piece of mineral wool to loosely plug the neck of the flask to prevent powder from being ejected during the reaction. With the mineral wool in place the demonstration can be performed in the open lab. A metal spatula can be rested on top of the neck of the flask to help prevent the plug being blown out by the gases from the reaction.

In front of the class

The audience should wear eye protection. Hold the tip of the Bunsen flame under the centre of the pile of powder. Do not use other ignition methods as these can result in powder being ejected before the mineral wool plug can be re-inserted. After a few seconds the powder will begin to thermally decompose, sparks will be ejected from the centre and the powder will turn green and expand, forming an impressive volcano-like effect.

Health and safety

- Wear splash-proof goggles.
- Protect the face.
- Wear gloves to transfer or dispense the solid.
- Use a mineral wool plug to prevent loss of solid/dust particles from the vessel.
- Avoid raising dust and wipe up spills immediately with a damp cloth / paper towel.
- Do not mix ammonium dichromate(VI) with other substances.

Disposal

Allow the apparatus to cool then, wearing gloves (in case there is unreacted ammonium dichromate(VI) present), use tongs or forceps to remove the mineral wool plug and place it with the solid residue straight into a suitable plastic bag, which can be sealed and placed in the normal solid waste.

For more spectacular demonstrations, take a look at the *Exhibition Chemistry archive on the Education in Chemistry website*: <https://eic.rsc.org/exhibition-chemistry>