



SAFETY BULLETIN

Hydrofluoric and Perchloric acids use in fume cupboards.

Who needs to read this?

All Curtin University staff and students who use Perchloric and Hydrofluoric acids.

Background Details

Curtin University has over 200 ducted fume cupboards across Bentley, Technology Park and Kalgoorlie campuses. Of these, 24 are fitted with scrubber units that may be utilised for Perchloric and Hydrofluoric acid usage.

During 2013, there has been 3 serious incidents involving Hydrofluoric acid, these incidents indicated that a high degree of diligence is required when using these types of acids.

Information – Hydrofluoric Acid

The handling and use of hydrofluoric acid must be in a fume cupboard preferably fitted with a scrubber, identified by posting a HF area sign and located in a low traffic area of the laboratory to prevent spills or accidents from contact.

The main hazard associated with this acid is skin contamination. The interior of the fume cupboard should be crevice-free with smooth surfaces for easy decontamination during wash-down. Since hydrofluoric acid etches glass and ceramics, the selection of suitable materials for the sash and bench top of the cupboard needs to be considered. The fume cupboards are typically constructed of polypropylene in order to resist the corrosive effects of acids at high concentrations and with the front sash constructed of polycarbonate to resist etching.

Note: *Scrubber units must run continuously during perchloric and hydrofluoric acid operations. On completion the wash down facility must be run for at least 15 minutes and the work area flushed with water to ensure complete decontamination.*



Information – Perchloric Acid – *see Appendix J of AS/NZS 2243.2:2006*

Operations that involve heating perchloric acid such as acid digestions must only be done in a designated fume cupboard, clearly labelled as such, fitted with a wash down facility and a scrubber unit. The construction of the fume cupboard must include interior liners made of materials compatible with concentrated perchloric acid as per *AS/NZS 2243.8:2006*.

Fume cupboards that are designated suitable for perchloric acid work are normally reserved for operations that are chemically compatible, so as to minimise the risk of formation of metal perchlorates or organic perchlorates which in certain circumstances may explode. Use of a designated perchloric acid fume cupboard for other incompatible chemistry should be avoided as it requires total decontamination of the fume cupboard system including the cupboard, ductwork, fan and housing.

Prior to the use of perchlorates or perchloric acid a risk assessment must be performed and the work cleared by a responsible officer.

Recommendations:

- Be a designated fume cupboard for perchloric and hydrofluoric acids
- Routine maintenance of fume cupboards
- Perchloric and hydrofluoric acid containers clearly labelled
- Be chemically compatible
- Be fit for purpose
- Have wash down facility and a scrubber unit
- Be made of acid resistant materials
- Have appropriate signage on fume cupboards, e.g. "Fume cupboard for use with Perchloric acid".

For staff requiring additional information and advice on the safe use of ducted fume cupboards at Curtin University, please refer to the Health and Safety website guideline or contact health and safety for advice for specific concerns.

Who do we call with questions?

If you have any **queries**, please contact Health and Safety on 9266 4900 or healthandsafety@curtin.edu.au.

Safety and Health Representatives – please print the Safety Bulletin and place a copy on relevant noticeboards.

References



Australian/New Zealand Standard AS/NZS 2243.8:2006

Safe Use of Ducted Fume Cupboards, Information Sheet 01-2011 – Curtin University

HF Information sheet