Australian Standard®

Safety in laboratories

Part 9: Recirculating fume cabinets

This Australian Standard was prepared by Committee CH/26, Safety in Laboratories. It was approved on behalf of the Council of Standards Australia on 8 October 1990 and published on 11 February 1991.

The following interests are represented on Committee CH/26:

Australian Government Analytical Laboratories

Australian Institute of Petroleum

Chemical Confederation of Australia

National Association of Testing Authorities, Australia

Additional interests participating in preparation of Standard:

Australian Nuclear Science and Technology Organization

Commonwealth Fire Board

Consulting engineers

Department of Health, W.A.

Department of Industrial Relations and Employment, N.S.W.

Fume cabinet manufacturers

Fume cabinet testing organizations

Manufacturers of fume cabinet filters

National Library of Australia

N.S.W. Public Works Department

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PREFACE

This Standard was prepared by the Standards Australia Committee on Safety in Laboratories, under the direction of the Chemical Standards Board, as a further part of AS 2243. It has been prepared as a result of a request from the Royal Australian Chemical Institute and other organizations for a Standard covering minimum safety requirements for recirculating fume cabinets.

Other Standards in the AS 2243 series are as follows:

AS	
2243	Safety in laboratories
2243.1	Part 1: General
2243.2	Part 2: Chemical aspects
2243.3	Part 3: Microbiology
2243.4	Part 4: Ionizing radiations
2243.5	Part 5: Non-ionizing radiations
2243.6	Part 6: Mechanical aspects
2243.7	Part 7: Electrical aspects
2243.8	Part 8: Fume cupboards

The term ‘normative’ used in Appendices of this Standard indicates that the Appendix is an integral part of the Standard. The term ‘informative’ also used in the Appendices indicates that the Appendix is for additional information only.

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FOREWORD

Recirculating fume cabinets rely on filtration or absorption to remove airborne contaminants released in the cabinet, so that the exhaust air may be safely discharged back into the laboratory atmosphere. Recirculating fume cabinets are suitable for light to moderate use with a limited range of substances. The range of substances for which each cabinet can be used is limited by the need for compatibility with the particular type of absorber or filter fitted to the cabinet.

Small quantities of some radioactive substances can be used in recirculating fume cabinets provided that a reliable system is installed to monitor the cabinet exhaust, and that a qualified health physicist is consulted on the safety aspects of radioactive substances.

STANDARDS AUSTRALIA

Australian Standard
Safety in laboratories

Part 9: Recirculating fume cabinets

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies safety requirements and recommendations for the design, manufacture, use and maintenance of recirculating fume cabinets, sometimes incorrectly referred to as 'ductless fume cupboards', and the test methods to determine their performance.

1.2 LIMITATIONS OF USE The recirculating fume cabinet shall not be used in the following circumstances (see also Clauses 6.1 and 6.4.2.4):

(a) For work with organic solvents which are only physically absorbed on the absorber and the solvents—

(i) have boiling points less than 75°C; and

(ii) are evaporated in quantities of more than 50 mL per day.

NOTE: Vapours from these organic solvents may be insufficiently delayed on the filter unless chemisorption takes place, i.e. a chemical reaction between the absorbent and the solvent vapour.

(b) Where more than 50 mL of acid gases are generated.

(c) Where perchloric acid digestions are carried out.

(d) Where pathogenic organisms are handled (see AS 2252).

(e) Where Category 1 and Category 2 carcinogens (see Reference 1), except those which are chemisorbed by the charcoal filter, are used.

(f) Where radioisotopes exceeding ten times the annual limit of intake for inhalation (see Reference 2), are used.

(g) Where laboratory temperatures are in excess of 37°C (dry bulb measurement of the laboratory air temperature).

(h) Where the relative humidity of the laboratory air is greater than 90%.

1.3 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS
1259 Sound level meters
1345 Identification of the contents of piping, conduits and ducts
1680 Code of practice for interior lighting and the visual environment
1807 Cleanrooms, workstations and safety cabinets
1807.16 Part 16: Determination of sound level in cleanrooms
1826 Electrical equipment for explosive atmospheres—Special protection—Type of protection s
1886 Glossary of terms relating to plastics
2161 Industrial safety gloves and mittens (excluding electrical and medical gloves)
2208 Safety glazing materials for use in buildings (human impact considerations)
2252 Biological safety cabinets
2444 Portable fire extinguishers—Selection and location
3000 SAA Wiring Rules
DIN
12920 Colour code for fluids on handlevers and handwheels of laboratory taps

1.4 DEFINITIONS For the purpose of this Standard, the definitions below apply.

1.4.1 Access window—a transparent safety screen which during use is positioned between the working chamber and the operator for personal protection; the access window can be temporarily moved out of the way to permit bulky equipment to be loaded into the fume cabinet (see also definition for sash, Clause 1.4.12).

Ref. 1 WORKSAFE AUSTRALIA. WX7, *Guidance note for the labelling of chemicals used at work*. Canberra: Australian Government Publishing Services, 1990.

Ref. 2 INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION. ICRP-30, *Limit for intakes of radionuclides by workers*. Oxford: 1979.