Australian Standard®

Cleanrooms and clean workstations

Part 3: Non-laminar flow cleanrooms—Class 350 and cleaner

This Australian Standard was prepared by Committee ME/60, Controlled Environments. It was approved on behalf of the Council of Standards Australia on 7 April 1989 and published on 19 June 1989.

The following interests are represented on Committee ME/60:

Australian Institute of Refrigeration, Air Conditioning and Heating
Australian Medical Association
Australian Pharmaceutical Manufacturers Association
Commonwealth Serum Laboratories
Confederation of Australian Industry
CSIRO, Australian Animal Health Laboratory
Department of Administrative Services
Department of Community Services and Health
Department of Health, N.S.W
Health Department, Vic.
National Association of Testing Authorities, Australia
National Council of Chemical and Pharmaceutical Industries
Public Works Department, N.S.W.
Society of Hospital Pharmacists of Australia
State Chamber of Commerce and Industry, N.S.W.

This Standard was issued in draft form for comment as DR 87168.

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First published as part of AS 1386–1976 and
AS 1387—1976.
Parts of AS 1386—1976 and AS 1387–1976 revised,
amalgamated and redesignated AS 1386.3—1989.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 5691 9

PREFACE

This Standard was prepared by Standards Australia's Committee on Controlled Environments.

It is Part 3 of a series of seven Standards published simultaneously as a revision and amalgamation of—

AS 1386—1976 *Cleanrooms and work-stations*; and

AS 1387—1976 *Code of practice for cleanrooms and work-stations.*

The series consists of the following Standards:

AS 1386 *Cleanrooms and clean workstations*
- *Part 1: Principles of clean space control* (AS 1386.1)
- *Part 2: Laminar flow cleanrooms* (AS 1386.2)
- *Part 3: Non-laminar flow cleanrooms—Class 350 and cleaner* (this Standard, AS 1386.3)
- *Part 4: Non-laminar flow cleanrooms—Class 3500* (AS 1386.4)
- *Part 5: Clean workstations* (AS 1386.5)
- *Part 6: Operation and inspection of cleanrooms* (AS 1386.6)
- *Part 7: Installation and use of clean workstations* (AS 1386.7)

The above seven Standards supersede both AS 1386—1976 and AS 1387—1976.

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STANDARDS AUSTRALIA

Australian Standard

Cleanrooms and clean workstations

Part 3: Non-laminar flow cleanrooms–Class 350 and cleaner

1 SCOPE. This Standard specifies requirements for non-laminar flow cleanrooms with a minimum air cleanness of Class 350 in accordance with AS 1386.1.

NOTES:

1. Requirements for Class 3500 non-laminar flow cleanrooms are specified in AS 1386.4.
2. AS 1386.6 provides requirements for operation and inspection of cleanrooms. Separate specifications and related documents cater for certain vital components, e.g. air filters.

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

AS

1324 Air filters for use in air conditioning and general ventilation

1386 Cleanrooms and clean workstations

1386.1 Part 1: Principles of clean space control

1386.4 Part 4: Non-laminar flow cleanrooms—Class 3500

1386.6 Part 6: Operation and inspection of cleanrooms

1668 SAA Mechanical Ventilation and Air-conditioning Code

1668.1 Part 1: Fire precautions in buildings with air-handling systems

1668.2 Part 2: Ventilation requirements

1680 Code of practice for interior lighting and the visual environment

1807 Cleanrooms, workstations, and safety cabinets—Methods of test

1807.6 Method 6: Determination of integrity of terminally mounted HEPA filter installations

1807.8 Method 8: Particle counting in work zone by automatic particle counter

1807.9 Method 9: Particle counting in cleanrooms by microscopic sizing and counting

1807.10 Method 10: Determination of air pressure of cleanrooms

1807.12 Method 12: Determination of temperature in work zones

1807.13 Method 13: Determination of relative humidity in cleanrooms

1807.15 Method 15: Determination of illuminance

1807.16 Method 16: Determination of sound level in cleanrooms

1807.24 Method 24: Determination of recovery times of cleanrooms

2013 Cleanroom garments

2013.1 Part 1: Product requirements

2013.2 Part 2: Processing and use

3 DEFINITIONS. For the purpose of this Standard, the definitions given in AS 1386.1 apply.

4 DESIGN AND CONSTRUCTION.

NOTE: General principles and design criteria for clean spaces are outlined in AS 1386.1.

4.1 Room integrity. The cleanroom shall be constructed so that only HEPA-filtered air enters the room at all times. To achieve this, strict attention shall be paid to sealing of windows, light fittings, power outlets, and all other possible sources of air leaks.

Compressed gases supplied to the cleanroom shall be filtered through a non-shedding filter of adequate efficiency in the particle size ranges specified in AS 1386.1, as applicable for the relevant air cleanness class.

4.2 HEPA filters. In all cases, the terminal filters positioned at the point of air entry to the cleanroom shall be HEPA filters and provision for testing the integrity of the filter shall be made.

HEPA filters may be protected with a removable, metal, washable screen. No air diffusers shall be installed on HEPA filter discharges.

NOTES:

1. HEPA filters are defined in AS 1386.1.
2. HEPA filters may be repaired provided that the performance requirements in Clause 5 are complied with.

4.3 Prefilters. Prefilters complying with AS 1324 should be used to prolong the life of the HEPA filters.

The efficiency and dust-holding capacity of the prefilters should be chosen to handle the expected contamination load with due consideration to the desired life of prefilters and HEPA filters. (See also the general principles and criteria for management of filters outlined in AS 1386.1.)

4.4 Filter pressure drop indicator. Suitable warning device(s) to indicate the condition of prefilters and operation of motor blower(s) are recommended.

4.5 Inlet HEPA filter banks. It is recommended that the area of the inlet HEPA filter bank(s) is designed to provide a maximum average outlet velocity not greater than 0.6 m/s.

4.6 Airflow characteristics. Air supply shall be on a high level, air discharge on a low level in the room at points remote from the air inlets. Particular care shall be taken to ensure that discharge also occurs at or near the entrance to the cleanroom.

NOTE: A typical installation is illustrated in Figure 1.