

SINGAPORE STANDARD

CP 13 : 1999

(ICS 91.140)

CODE OF PRACTICE FOR

**Mechanical ventilation and
air-conditioning in buildings**

(Incorporating Amendment No. 1, February 2000 and Erratum
No. 1, June 2001)

Published by
SPRING Singapore
2 Bukit Merah Central
Singapore 159835
SPRING Singapore Website: www.spring.gov.sg
Standards Website: www.standards.org.sg



SINGAPORE STANDARD

CP 13 : 1999

(ICS 91.140)

CODE OF PRACTICE FOR

Mechanical ventilation and air-conditioning in buildings

(Incorporating Amendment No. 1, February 2000 and Erratum
No. 1, June 2001)

All rights reserved. Unless otherwise specified, no part of this Singapore Standard may be reproduced or utilised in any form or by any means, electronic or mechanical, including photocopying and microfilming, without permission in writing from the SPRING Singapore at the address below:

Programme Director
Standardisation Department
SPRING Singapore
2 Bukit Merah Central
Singapore 159835
Telephone: 62786666 Telefax: 62786667
Email: stn@spring.gov.sg

ISBN 9971-67-697-4

Contents

	Page
Foreword _____	6

CODE OF PRACTICE

1	Scope _____	7
2	Definitions _____	7
3	Exchange of information _____	11
4	Rules and regulations _____	13
5	Ventilation rates _____	13
6	Mechanical ventilation systems _____	15
7	Air-conditioning design _____	27
8	Ductwork and other air passages _____	33
9	Pipework _____	38
10	Electrical work _____	39
11	Equipment installation _____	42
12	Testing and commissioning _____	44
13	Maintenance _____	45

ANNEXES

A	Symbols _____	48
B	Identification of pipelines (colour code) _____	50
C	Installation of fire damper in wall _____	51
D	Schematic for audit monitoring facility _____	52

TABLES

1	Outdoor air supply requirement for comfort air-conditioning _____	14
2	Outdoor air supply for mechanical ventilation in non air-conditioned buildings _____	15
3	Mode of ventilation for aboveground car park _____	16
4	Mode of ventilation for basement car park _____	17
5	Recommended ambient sound level _____	33

Foreword

This code of practice was revised by the Technical Committee on Building Services under the direction of the Construction Industry Practice Committee.

The code represents a standard of good practices for mechanical ventilation and air-conditioning systems with particular emphasis on indoor air quality, energy conservation, fire safety and maintainability.

This code helps to establish a broad standard for engineers, architects, contractors and owners to comply with in matters relating to mechanical ventilation and air-conditioning. It also directs them to references on the various topics of concern. However, due attention must be given to the requirements of relevant statutory regulations or by-laws of the regulatory authorities or other government departments.

This code does not cover industrial ventilation in control of specific air contaminants inside work places as such requirements are separately covered by a different set of regulations.

In preparing this code, reference was made to the following documents:

ASHRAE Standard 15-1994 Safety code for mechanical refrigeration

CP10 : 1993 Installation and servicing of electrical fire alarm systems

ENV Guidelines for good indoor air quality for office premises 1996

Code of practice for fire precautions in buildings 1997

Acknowledgement is made for the use of information from the above references.

NOTE

1. *Singapore Standards are subject to periodic review to keep abreast of technological changes and new technical developments. The revisions of Singapore Standards are announced through the issue of either amendment slips or revised editions.*
2. *Compliance with a Singapore Standard does not exempt users from legal obligations.*

Code of practice for mechanical ventilation and air-conditioning in buildings

1 Scope

1.1 This code of practice provides general guidance in the design, construction, installation, testing and commissioning, maintenance and operation of mechanical ventilation and air-conditioning systems. It does not confer immunity from statutory requirements in government by-laws nor from relevant regulations of government departments. This code does not apply to industrial ventilation in control of air contaminants inside work place.

NOTE – The installation of mechanical ventilation and air-conditioning systems may effect fire risks; it is therefore necessary for the architect or the responsible engineer to obtain the approval of the building authority to the proposed scheme. It is desirable that the architect should indicate any special risk before the design engineer proceeds.

1.2 The majority of mechanical ventilation and air-conditioning systems in Singapore do not require any form of heating and hence heating installations are not covered in this code.

1.3 The purpose of this code of practice is to establish the minimum requirements in mechanical ventilation and air-conditioning engineering practice such that an acceptable indoor thermal environment can be attained in an energy conserving way with due consideration of indoor air quality, fire safety, and maintainability of the equipment.

NOTE – It is not intended that this code should impose unnecessary restrictions on design and installations of systems, nor on the development and use of new improved or unusual materials, design or methods of constructions or installation not covered by this code. However, in the event that this code is applied as a requirement by regulations of regulatory authorities, any departure from this code will require the specific approval of the regulatory authority.

2 Definitions

For the purpose of this code, the following definitions and general trade terminology shall apply:

2.1 Access door

Door provided in an air-handling plant, duct or plenum to permit inspection of the interior.

2.2 Activated carbon

A form of carbon made porous by special treatment by which it is capable of adsorbing various odours, anesthetics and other vapours.

2.3 Air, ambient

Generally speaking, the air surrounding an object.

2.4 Air changes

A method of expressing the rate of air entering or leaving a space by natural or mechanical means in terms of the number of volumes of the space.