

SS 537: Part 2: 2009

(ICS 13.110; 79.120.10)

# SINGAPORE STANDARD Code of practice for safe use of machinery

– Part 2 : Woodworking machinery



Published by



**SS 537 : Part 2 : 2009** (ICS 13.110; 79.120.10)

### SINGAPORE STANDARD

# Code of practice for safe use of machinery

- Part 2: Woodworking machinery

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 Enterprise Singapore. Request for permission can be sent to: standards@enterprisesg.gov.sg.

This Singapore Standard was approved by the General Engineering and Safety Standards Committee on behalf of the Standards Council of Singapore on 10 December 2009.

First published, 2010

The General Engineering and Safety Standards Committee appointed by the Standards Council consists of the following members:

		Name	Capacity
Chairman	:	Mr Chan Yew Kwong	Member, Standards Council
Secretary	:	Ms Shareen Chan	SPRING Singapore
Members	:	Mr Joseph Ang Dr Kenneth Choy Mr Fang Koh Look Assoc Prof Foo Swee Cheng Assoc Prof Hoon Kay Hiang Mr Lim Meng Ann Mr Lim Poo Yam Mr Lim Tee Yoke Mr Ng Chun Tat Mr P K Raveendran Mr Seet Choh San Mr Jacob Soh Chong Seng Mr Wong Choon Kin Mr Eugene Yong Kon Yoon	Association of Small and Medium Enterprises Occupational Medicine Branch, Ministry of Manpower Institution of Engineers Singapore National University of Singapore Nanyang Technological University Workplace Safety and Health Council Land Transport Authority Building and Construction Authority Housing & Development Board Association of Singapore Marine Industries Singapore Institution of Safety Officers Society of Loss Prevention in the Process Industries Singapore Manufacturers' Federation Singapore Contractors Association Limited
		J J	<b>5</b> ,

The Technical Committee on Safety and Health Involving the Use of Equipment appointed by the General Engineering and Safety Standards Committee and responsible for the preparation of this standard consists of representatives from the following organisations:

		Name	Capacity
Chairman	:	Assoc Prof Hoon Kay Hiang	Member, General Engineering and Standards Committee
Secretary	:	Ms Shareen Chan	SPRING Singapore
Members	:	Mr S Damodaran	Singapore Institution of Safety Officers
		Mr Hashim Mansoor	Ministry of Manpower
		Mr Idilfitri Bin Mohammed Yatim	Singapore Manufacturers' Federation
		Mr Lau Huat Poh	Singapore Contractors Association Ltd
		Mr Seah Chong An	TÜV SÜD PSB Pte Ltd
		Mr Harsen Tan	Institution of Engineers Singapore
		Mr Tan Liong Kiat	Singapore Polytechnic
		Mr Alex Teo	Association for Singapore Marine Industries
		Mr Paul Yap	Building and Construction Authority
Co-opted Member	:	Er. Roland Tan Juay Pah	Individual Capacity

SS 537 : Part 2 : 2009

The Working Group appointed by the Technical Committee to assist in the preparation of this standard comprises the following experts who contribute in their *individual capacity*:

### Name

Convenor : Mr Tan Liong Kiat

Members : Mr Riccardo Chee

Mr Idilfitri Bin Mohammed Yatim

Er. Theresa Liew Mr Lim Kim Seng Mr Hermann Merkle

Mr Mohd Zailani Bin Mohd Rashed

The organisations in which the experts of the Working Group are involved are:

Golden World Machinery (S) Pte Ltd Michael Weinig ASIA Ministry of Manpower Singapore Institution of Safety Officers Singapore Manufacturers' Federation Singapore Polytechnic Workplace Safety and Health Council

## Contents

		Page
Forev	word	7
CLA	USES	
1	General	8
2	Description of woodworking machines	9
3	Definitions	15
4	General requirements for construction, reconstruction and modification of a woodworking machine	21
5	Requirements for specific machines	39
6	Care	55
7	Requirements for the use of woodworking machinery	58
FIGU	RES	
1	Band saw	61
2a	Overhead – Wing cut-off saw	
2b	Inverted swing cut-off saw	
3a	Compound miter saw	62
3b	Miter saw	63
4	Vertical panel saw	63
5a	Radial arm saw	64
5b	Radial arm saw – Cross cutting operation	64
5c	Radial arm saw – Ripping operation	65
6a	Straight line rip saw – Under cutting	65
6b	Straight line rip saw – Over cutting	66
7a	Industrial table saw	66
7b	Auxiliary fence	67
7c	Push blocks	67
7d	Feather boards	68
7e	Anti kickback devices	68
8a	Jointer	69
8b	Jointer rear cutterhead guard	69
9	Moulder	70
10	Planer/surfacer	70
11a	Overarm router – Shown without guard	71
11b	Adjustable guard for overarm router	71
11c	Brush guard for overarm router	71

## SS 537 : Part 2 : 2009

		Page
12a	Shaper with guard fence	72
12b	Shaper for contour cuts	
12c	Shaper with alternate guards	
13	Double end tenoner	
14	Drill press	74
15	Chain mortiser	
16	Manual lathe	
17	Back knife lathe	
18	Swing-head lathe	
19	Manual belt sander	
20	Dado	
21	Point of operation	
22	Push sticks	
23a	Splitter and splitter mounted guard	
23b	Riving knife and overarm guard (anti-kickback device not shown)	78

SS 537 : Part 2 : 2009

### **Foreword**

This Singapore Standard was prepared by Technical Committee on Safety and Health Involving the Use of Equipment under the purview of the General Engineering and Safety Standards Committee. It resulted from the review of SS CP 42: 1988(1999) – Code of practice for guarding and safe use of woodworking machinery.

This Code covers hazard identification and control, and to enable the users to prepare for risk assessment specified in SS 537: Part 1. Although some methods of control are better than others in a given situation and some risks require more than one control method to achieve optimum results, the aim of risk assessment is to reduce the likelihood of occurrence and the severity of the accident or ill health. Ultimately, the risk must be reduced to an acceptable level before commencement of work. Therefore, it is important for every workplace, including factories using woodworking machinery, to conduct risk assessments for all routine and non-routine work undertaken. The Code also provides more illustrations as well as includes more details on safety features, installation, operation and maintenance of woodworking machinery.

This Code is based on ANSI O1.1 : 2004 – Woodworking machinery safety requirements. It is adapted with permission of the Wood Machinery Manufacturers of America.

In revising this Code, references were made to the following publications:

- 1. AS 1473.1 series on Wood-processing machinery Safety
- BS EN 1218 series on Safety of woodworking machines Tenoning machines
- 3. BS EN 1870 series on Safety of woodworking machines Circular sawing machines

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

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

### NOTE

- Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions.
- 2. An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR.
- Compliance with a SS or TR does not exempt users from any legal obligations.

# Code of practice for safe use of machinery – Part 2 : Safe use of woodworking machinery

#### 1 General

### 1.1 Scope

This standard provides comprehensive guidelines on the safety requirements for the procurement, installation, operation and maintenance of woodworking machinery and accessories used in industrial and commercial applications.

Power tools intended to be handheld when in use, assembly machines, finish application equipment, primary panel product manufacturing machinery, cooperage machinery and sawmills are excluded from this standard.

NOTE – Primary panel product manufacturing machines are referred to as panel mills or board mills. Panel products as identified in this standard are plywood, particle board, medium density fiberboard, chip board, straw board, oriented strand board, pressed board, and similar products made from wood, wood chips or wood fiber.

### 1.2 Applications

This Code is intended for those who use woodworking machinery guarding or safety devices. It is intended to be used in industrial, commercial and training institutions.

The aim is to promote a high standard of woodworking machine safety. It describes and illustrates a variety of safety measures and explains methods by which it is reasonable to adopt in particular circumstances. It will, however, be necessary to consult specific legislation in applying the stipulated principles. Although reference is made to specific types of machines, specific recommendations are not given for every type of machine.

### 1.3 References

### 1.3.1 Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

SS 508 series, Graphical symbols – Safety colours and safety signs

SS 537 : Part 1, Safe use of machinery – Part 1: General requirements

SS CP 53, Safe use of industrial robots

SS CP 92, Manual handling

SS CP 99, Industrial noise control

IEC 60204-1, Safety of machinery - General requirements

ISO 14120, Safety of machinery – Guards – General requirements for the design and construction of fixed and movable guards

### 1.3.2 Other references

Machine components not addressed by this standard shall comply with any applicable nationally recognised standards.