

**SINGAPORE STANDARD**

# Specification for restraint belts

Incorporating Amendment No. 1



Published by

**Enterprise**  
**Singapore**

**SS 541 : 2008**

(ICS 13.340.01; 13.340.60)

---

SINGAPORE STANDARD

**Specification for restraint belts**

---

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](mailto:standards@enterprisesg.gov.sg).

ISBN 981-4154-88-1

This Singapore Standard was approved by the General Engineering and Safety Standards Committee on behalf of the Standards Council of Singapore on 13 November 2008.

First published, 2009

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

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

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

	<b>Name</b>	<b>Capacity</b>
<b>Chairman</b>	: Assoc Prof Foo Swee Cheng	<i>Member, General Engineering and Safety Standards Committee</i>
<b>Secretary</b>	: Ms Barbara Bok	<i>SPRING Singapore</i>
<b>Members</b>	: Mr Chan Chee Cheong	<i>Singapore Manufacturers' Federation</i>
	Assoc Prof Chew Chye Heng	<i>National University of Singapore</i>
	Ms Veronica Chow	<i>Ministry of Manpower</i>
	Mr Patrick Ker	<i>Singapore Association of Occupational Therapists</i>
	Mr Frederick Khoo	<i>Singapore Contractors Association Limited</i>
	Mr Seah Chong An	<i>TÜV SÜD PSB Pte Ltd</i>
	Mr Seah Liang Bing	<i>Singapore Institution of Safety Officers</i>
	Mr Derek Sim	<i>Association of Singapore Marine Industries</i>
	Mr Bhupendra Singh Baliyan	<i>Institution of Engineers Singapore</i>
	Mr Sundara Vadivel	<i>Ergonomics Society of Singapore</i>
	Mr Yusooof Aynuddin	<i>SETSCO Services Pte Ltd</i>

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

	<b>Name</b>
<b>Convenor</b>	: Mr Winston Yew
<b>Members</b>	: Assoc Prof Chew Chye Heng
	Mr Chin Sze Kiong
	Mr Kelvin Lee
	Mr Francis Ng
	Mr Rezal Bin Ramli
	Mr Seah Chong An
	Mr Bobby Tan
	Mr Tan Kai Hong
	Mr Ronnie Tan

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

*Association of Singapore Marine Industries*  
*Institution of Engineers Singapore*  
*Jubilant International Pte Ltd*  
*Ministry of Manpower*  
*National University of Singapore*  
*PDS International Pte Ltd*  
*QMT Industrial and Safety Pte Ltd*  
*QSS Safety Products (S) Pte Ltd*  
*Singapore Contractors Association Limited*  
*TÜV SÜD PSB Pte Ltd*

(blank page)

---

---

**Contents**

	<b>Page</b>
Foreword _____	6

---

---

**CLAUSES**

1	General _____	8
2	Normative references _____	8
3	Definitions _____	8
4	Materials and construction _____	11
5	Strength and tests _____	13
6	Performance test _____	13
7	Instructions for use _____	14
8	Marking _____	14
9	Packaging _____	14

---

---

**ANNEXES**

A	Performance test _____	15
B	Storage, inspection and maintenance of restraint belts _____	16
C	Maintenance of fibre ropes _____	17

---

---

**FIGURES**

1	Restraint belt _____	9
2	Limiting reach _____	9
3	Performance test _____	15

## Foreword

This Singapore Standard was prepared by the Technical Committee on Personal Safety and Health under the purview of the General Engineering and Safety Standards Committee. It replaces the requirements for safety (restraint) belts described in SS 402 'Industrial safety belts and harnesses – Part 1 : 1997 – General requirements and Part 2 : 1997 – Permanent anchors'.

This revision brings the standard up-to-date and makes it clearer by incorporating recommendations made in the latest relevant international and overseas standards. The term 'restraint belts' is also used instead of 'safety belts' to better reflect that these belts are used as positioning devices and not for fall arrest.

Permission to reproduce Figure 2 from BS 8437 : 2005 is granted by BSI. British Standards can be obtained in PDF or hard copy formats from the BSI online shop: [www.bsigroup.com/Shop](http://www.bsigroup.com/Shop) or by contacting BSI Customer Services for hardcopies only: Tel: +44 (0)20 8996 9001, Email: [cservices@bsigroup.com](mailto:cservices@bsigroup.com).

In preparing this standard, reference was made to the following publications:

- 1) ANSI/ASSE A10.14 : 1991 Construction and demolition operations – Requirements for safety belts, harnesses, lanyards and lifelines for construction and demolition use
- 2) ANSI/ASSE Z359.0 : 2007 Definitions and nomenclature used for fall protection and fall arrest
- 3) BS EN 354 : 2002 Personal protective equipment against fall from a height – Lanyards
- 4) BS EN 358 : 2000 Personal protective equipment for work positioning and prevention of falls from a height – Belts for work positioning and restraint and work positioning lanyards
- 5) BS EN 362 : 1993 Personal protective equipment against fall from a height – Connectors
- 6) BS EN 364 : 1992 Personal protective equipment against falls from a height – Test methods
- 7) BS EN 365 : 1993 Personal protective equipment against falls from a height – General requirements for instructions for use and for marking
- 8) ISO 9227 : 2006 Corrosion tests in artificial atmospheres – Salt spray tests
- 9) ISO 14567 : 1999 Personal protective equipment for protection against falls from a height – Single-point anchor devices
- 10) ISO 16024 : 2005 Personal protective equipment for protection against falls from a height – Flexible horizontal lifeline systems
- 11) ISO 22846-1 : 2003 Personal equipment for protection against falls – Rope access systems – Part 1 : Fundamental principles for a system of work
- 12) SABS 809 : 2000 Industrial restraint belts

Acknowledgement is made for the reproduction of Figure 2 from BS 8437 : 2005 and the use of information from the above publications.

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**

1. *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.*
3. *Compliance with a SS or TR does not exempt users from any legal obligations.*

## Specification for restraint belts

### 1 General

#### 1.1 Scope

This Singapore Standard describes the essential characteristics of restraint belts. It gives guidance for the maintenance, inspection and storage of restraint belts and prescribes a performance test. Recommendations for fixtures for the attachment of belts are included.

#### 1.2 Purpose of restraint belts

The purpose of a restraint belt is to aid in the prevention of falls and not intended for fall arrest. It prevents a worker from free falling by prohibiting access to leading edges and other points at which a fall may occur.

NOTE – Restraint belts can be used as positioning devices, not for fall arrest.

Restraint belts consist basically of waist belts fitted with 'D' rings (or equivalent) and lanyards for attachment to anchorage points. They are suitable for general use.

NOTE – The restraint belt should be worn with care to ensure adequate tension. It should not be loose-fitting.

### 2 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.

ISO 2307, *Fibre ropes – Determination of certain physical and mechanical properties*

ISO 9227, *Corrosion tests in artificial atmospheres – Salt spray tests*