Singapore Standards Council

SS 508:Part 4:2013+A1:2016
ISO 3864-4 : 2011

(ICS 01.080.10; 01.080.20)

SINGAPORE STANDARD

Graphical symbols – Safety colours and safety signs

– Part 4 : Colorimetric and photometric properties of safety sign materials

Incorporating Amendment No. 1

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This Singapore Standard was approved by the General Engineering and Safety Standards Committee on behalf of the Singapore Standards Council on 15 March 2013.

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First revision, 2013

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*
Deputy Chairman	:	Mr Seet Choh San	*Singapore Institution of Safety Officers*
Secretary	:	Ms Kong Wai Yee	*Singapore Manufacturing Federation – Standards Development Organisation*
Members	:	Dr Kenneth Choy	*Ministry of Manpower*
		Assoc Prof Foo Swee Cheng	*National University of Singapore*
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		Mr Tan Chong Lin	*Building and Construction Authority*
		Mr Tan Kai Hong	*Institution of Engineers, Singapore*
		Mr Tay Cheng Pheng	*Society of Loss Prevention in the Process Industries*
		Mr Wong Choon Kin	*Singapore Manufacturing Federation*
		Mr Victor Yeow	*Association of Small and Medium Enterprises*
		Assoc Prof Zhou Wei	*Singapore Welding Society*

The Technical Committee on Workplace 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:

		Name	Capacity
Chairman	:	Mr Seet Choh San	*Member, General Engineering and Safety Standards Committee*
Secretary	:	Mr Chen Lian Sze	*Singapore Manufacturing Federation – Standards Development Organisation*
Members	:	Mr Ang Boon Tian	*Occupational and Environmental Health Society*
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		Mr Andrew Tan Hock Seng	*Land Transport Authority*
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		Dr Teo Ai Lin	*National University of Singapore*
		Mr Yeo Kim Hock	*Singapore Contractors Association Limited*
		Er. Yeong Chark Sung	*Ministry of Manpower*

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	:	Er. Chui Heng Tak
Members	:	Ms Veronica Chow Li Yee
		Assoc Prof Foo Swee Cheng
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		Mr Alan Ong
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		Ms Alice Sam Wye Ein
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The organisations in which the experts of the Working Group involved are:

Foster Wheeler Asia Pacific Pte Ltd
Institution of Engineers, Singapore
Ministry of Manpower
National University of Singapore
Pratt & Whitney Services Pte Ltd
Society of Loss Prevention in the Process Industries

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Contents

National Foreword

This Singapore Standard was prepared by the Technical Committee on Workplace Safety and Health under the direction of the General Engineering and Safety Standards Committee.

The review of the SS 508 series of standards (Parts 1 to 4) resulted in the following:

— Confirmation with amendments of Part 2.

— Revision of Parts 1, 3 and 4: these parts have been renumbered, rearranged and retitled to be aligned with the ISO 3864 Parts 1, 3 and 4 as well as ISO 7010. The part on 'Safety signs used in workplaces and public areas' has been retitled to 'Registered safety signs'. A new part on colorimetric and photometric properties of safety sign materials was also added to the series.

The revised SS 508 now consists of the following five parts, under the general title 'Graphical symbols — Safety colours and safety signs':

— Part 1: Design principles for safety signs and safety markings (Identical adoption of ISO 3864-1:2011)

— Part 2: Design principles for product safety labels (Identical adoption of ISO 3864-2:2004 and ISO 3864-2:2004/Amd 1:2011)

— Part 3: Design principles for graphical symbols for use in safety signs (Identical adoption of ISO 3864-3:2012)

— Part 4: Colorimetric and photometric properties of safety sign materials (Identical adoption of ISO 3864-4:2011)

— Part 5: Registered safety signs (Identical adoption of ISO 7010:2011, ISO 7010:2011/Amd 1:2012, ISO 7010:2011/Amd 2:2012 and ISO 7010:2011/Amd 3:2012)

With this standard, there is harmonisation of all safety signs used in workplaces and public areas which will result in better understanding and communication of safety information.

This part of SS 508 is identical with ISO 3864-4 : 2011 – 'Graphical symbols – Safety colours and safety signs – Part 4: Colorimetric and photometric properties of safety sign materials', published by the International Organization for Standardization. It is applicable to all locations where safety issues related to people need to be addressed. However, it is not applicable to the signalling used for guiding rail, road, river, maritime and air traffic and, generally speaking, to those sectors subject to a regulation which may differ. Symbols, labels and safety signs for chemicals and dangerous goods can be found in the following documents:

As amended, Dec 16

a) SS 586 Specification for hazard communication for hazardous chemicals and dangerous goods

   Part 1: Transport and storage of dangerous goods

   Part 2: Globally harmonized system of classification and labelling of chemicals – Singapore's adaptations

   Part 3: Preparation of safety data sheets (SDS)

b) The Globally Harmonised System of Classification and Labelling of Chemicals (http://www.unece.org/trans/danger/publi/ghs/ghs_pubdet.html)

c) The UN Recommendations on the Transport Of Dangerous Goods Model Regulations (http://www.unece.org/trans/danger/publi/unrec/rev19/19files_e.html)

Attention is drawn to the following:

1. Where the words 'this part of ISO 3864' appear, they should be interpreted as 'this part of SS 508'.

2. The comma has been used throughout as a decimal marker in ISO 3864-4, whereas in Singapore Standards it is a practice to use a full-point on the baseline as the decimal marker.

3. The reference to International Standards shall be replaced by the following Singapore Standards:

International Standard	Corresponding Singapore Standard
ISO 3864-1	SS 508 : Part 1 : 2013
ISO 3864-2	SS 508 : Part 2 : 2008 (2013)
ISO 3864-3	SS 508 : Part 3 : 2013
ISO 7010	SS 508 : Part 5 : 2013

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.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

ISO 3864-4 was prepared by Technical Committee ISO/TC 145, *Graphical symbols*, Subcommittee SC 2, *Safety identification, signs, shapes, symbols and colours*.

This part of ISO 3864, together with ISO 3864-1:—, cancels and replaces ISO 3864-1:2002, which has been technically revised.

ISO 3864 consists of the following parts, under the general title *Graphical symbols — Safety colours and safety signs*:

— *Part 1: Design principles for safety signs and safety markings*

— *Part 2: Design principles for product safety labels*

— *Part 3: Design principles for graphical symbols for use in safety signs*

— *Part 4: Colorimetric and photometric properties of safety sign materials*

Introduction

This part of ISO 3864 has been prepared to provide manufacturers/suppliers of safety signs and test laboratories and instrument manufacturers with specifications of the colorimetric and photometric properties of safety signs comprising different types of material and with test methods.

Consistent use of this part of ISO 3864 will assist in improving knowledge of safety-sign requirements and in furthering understanding of the performance of various types of safety signs in everyday use.

This part of ISO 3864 is intended to be used by all Technical Committees within ISO charged with developing specific safety signing for their industry, to ensure that there is only one set of colorimetric and photometric requirements and test methods for safety signs.

Note that some countries' statutory regulations may differ in some respect from those given in this part of ISO 3864.

Graphical symbols — Safety colours and safety signs —

Part 4:
Colorimetric and photometric properties of safety sign materials

IMPORTANT — The electronic file of this document contains colours which are considered to be useful for the correct understanding of the document. Users should therefore consider printing this document using a colour printer.

1 Scope

This part of ISO 3864 establishes the colorimetric and photometric requirements and test methods for the colours of safety signs to be used in workplaces and public areas. It provides the colorimetric and photometric specifications for the named safety and contrast colours prescribed in ISO 3864-1.

The physical requirements that safety signs have to meet are primarily related to daytime colour and normally lit environments. This part of ISO 3864 also includes the colorimetric requirements and test methods for safety signs and phosphorescent material which also operate in unlit environments.

This part of ISO 3864 is applicable to all locations where safety issues related to people need to be addressed. However, it is not applicable to signalling used for guiding rail, road, river, maritime and air traffic and, generally speaking, to those sectors subject to a regulation that may differ.

The colorimetric and photometric properties of retroreflective safety signs, retroreflective materials combined with fluorescent or phosphorescent materials, or luminous safety signs activated by a radioactive source are not specified in this part of ISO 3864.

2 Normative references

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

ISO 3864-1: —[1)], *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings*

ISO 17724:2003, *Graphical symbols — Vocabulary*

CIE 15, *Colorimetry*

CIE 69, *Methods of characterizing illuminance meters and luminance meters: Performance, characteristics and specifications*

1) To be published. (Revision of ISO 3864-1:2002)