

INTERNATIONAL
STANDARD

ISO
9244

Second edition
2008-06-15

**Earth-moving machinery — Machine
safety labels — General principles**

*Engins de terrassement — Étiquetage de sécurité de la machine —
Principes généraux*



Reference number
ISO 9244:2008(E)

© ISO 2008

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2008

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

	Page
Foreword.....	viii
Introduction	ix
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	1
4 Machine safety labels — Application, presentation and general requirements	4
4.1 Objectives	4
4.2 Location	4
4.3 Effective use	4
4.4 Operator's manuals	4
4.5 Formats	4
4.6 Hazard severity panel	7
4.7 Pictorials	7
4.8 Text in supplementary safety panel.....	9
4.9 Languages, translations and multi-language machine safety labels.....	9
5 Colours	10
5.1 Colour specifications	10
5.2 Hazard severity panels	11
5.3 Pictorials and safety signs	11
5.4 Supplementary safety information panels	11
5.5 Borders and panel separation lines.....	12
6 Dimensions.....	12
7 Examples of machine safety labels	16
7.1 With text.....	16
7.2 Without text	16
8 Graphical design of hazard pictorials.....	16
Annex A (informative) Examples of hazard description pictorials	17
Annex B (informative) Examples of hazard avoidance pictorials	30
Annex C (informative) Examples of machine safety labels without text	37
Annex D (informative) Principles and guidelines for graphic design of hazard and avoidance pictorials	55
Bibliography	71

Figure 1 — Two-panel combination machine safety label — With signal word	5
Figure 2 — Three-panel combination machine safety label — With signal word	6
Figure 3 — Two-panel combination machine safety label — Without signal word	6
Figure 4 — Meaning of hazard severity panels	7
Figure 5 — General prohibition sign.....	8
Figure 6 — STOP instruction	8
Figure 7 — Combined pictorial in single panel	8

Figure 8 — Safety shape for warning signs	9
Figure 9 — General warning sign.....	9
Figure 10 — Machine safety label without text — Read operator's manual	10
Figure 11 — Safety sign borders	12
Figure 12 — Recommended dimensions — Two-panel format.....	13
Figure 13 — Recommended dimensions — Three-panel format	14
Figure 14 — Recommended dimensions — Two-panel format.....	15
Figure A.1 — Poisonous fumes or toxic gases — Asphyxiation	17
Figure A.2 — Electrical shock/electrocution — General.....	17
Figure A.3 — Electrical shock/electrocution — Hand	18
Figure A.4 — Electrical shock/electrocution — Body	18
Figure A.5 — Electrical shock/electrocution — Loader	18
Figure A.6 — Electrical shock/electrocution — Excavator.....	18
Figure A.7 — Fall from high place	19
Figure A.8 — Fall from raised loader bucket.....	19
Figure A.9 — High pressure fluid — Injection into flesh	19
Figure A.10 — High pressure spray — Erosion of flesh	20
Figure A.11 — Hot surface — Burn to finger or hand	20
Figure A.12 — Hot fluid under pressure	20
Figure A.13 — Crushing of whole body — Force applied from above	21
Figure A.14 — Crushing of whole body — Force applied from behind.....	21
Figure A.15 — Crushing of whole body — Force applied from side	21
Figure A.16 — Crushing of whole body — Bidirectional force applied.....	21
Figure A.17 — Crushing of whole body — Loader bucket or lift arm	22
Figure A.18 — Crushing of whole body — Single directional pinned	22
Figure A.19 — Crushing of whole body — Excavator	22
Figure A.20 — Crushing of foot.....	22
Figure A.21 — Crushing of fingers or hand — Force applied from side	23
Figure A.22 — Crushing of fingers or hand — Force applied from above	23
Figure A.23 — Severing of fingers or hand — Impeller blade	23
Figure A.24 — Severing of fingers or hand — Engine fan.....	23
Figure A.25 — Severing of fingers or hand — Sharp object	24
Figure A.26 — Severing of foot.....	24
Figure A.27 — Severing of leg	24
Figure A.28 — Severing of head — Tool on rotating shaft	24
Figure A.29 — Hand and arm entanglement — Chain or toothed belt drive.....	25
Figure A.30 — Hand and arm entanglement — Belt drive	25
Figure A.31 — Hand and arm entanglement — Rotating gears	25
Figure A.32 — Hand and arm entanglement — Machinery	25
Figure A.33 — Hand and arm entanglement — Auger	26

Figure A.34 — Leg or foot entanglement — Auger	26
Figure A.35 — Full body entanglement — Machinery.....	26
Figure A.36 — Leg or foot entanglement or severing — Trencher.....	26
Figure A.37 — Thrown or flying objects — Face exposure.....	27
Figure A.38 — Thrown or flying objects — Full body exposure	27
Figure A.39 — Run-over	27
Figure A.40 — Machine rollover — Crush	28
Figure A.41 — Machine tip-over — Overload — Backhoe loader	28
Figure A.42 — Machine tip-over — Overload — Skid steer loader	28
Figure A.43 — Explosion (used, for example, with starter fluid)	29
Figure A.44 — Explosion of battery	29
Figure A.45 — Explosion of battery — Jump start.....	29
Figure B.1 — Read operator's manual.....	30
Figure B.2 — Read technical manual for proper service procedures	30
Figure B.3 — Stay safe distance from hazard — General	30
Figure B.4 — Stay safe distance from raised loader lift arm and bucket	31
Figure B.5 — Stay safe distance from electrical power lines.....	31
Figure B.6 — Stay safe distance from articulation area	31
Figure B.7 — Keep hands safe distance from hazard.....	31
Figure B.8 — Secure lifting cylinder with locking device before entering hazardous area.....	32
Figure B.9 — Attach support before entering hazardous area	32
Figure B.10 — Secure locking device before entering hazardous area. Read operator's manual.....	32
Figure B.11 — Insert safety lock before entering hazardous area	32
Figure B.12 — Wait until all machine components have completely stopped before touching them....	33
Figure B.13 — Do not jump start the engine.....	33
Figure B.14 — Shut off engine and remove key before performing maintenance or repair work	33
Figure B.15 — Do not ride on fender	34
Figure B.16 — Do not reach into crushing area	34
Figure B.17 — Do not stand under bucket.....	34
Figure B.18 — Do not loosen cap until cool	35
Figure B.19 — Do not step.....	35
Figure B.20 — No hands	35
Figure B.21 — No feet.....	35
Figure B.22 — No ether — Low temperature starting aid.....	36
Figure B.23 — Eye protection required	36
Figure B.24 — Face protection required	36
Figure B.25 — Wear seat belt	36
Figure C.1 — Stay safe distance from hazard — General	37
Figure C.2 — Crushing of whole body — Stay safe distance from raised loader lift arm and bucket	38

Figure C.3 — Crushing of whole body — Stay safe distance from articulation area.....	38
Figure C.4 — Crushing or pinning of whole body — Stay safe distance from hazard	39
Figure C.5 — Crushing of whole body — Stay safe distance from hazard	39
Figure C.6 — Thrown or flying objects — Stay safe distance from hazard	40
Figure C.7 — Crushing of whole body — Secure lift cylinder with locking device before entering hazardous area.....	40
Figure C.8 — Crushing of whole body — Attach support before entering hazardous area.....	41
Figure C.9 — Crushing of whole body — Insert safety lock before entering hazardous area.....	41
Figure C.10 — Crushing of whole body — Secure locking device before entering hazardous area — Read operator's manual	42
Figure C.11 — Crushing hazard — Run-over — Do not jump start engine.....	42
Figure C.12 — General safety alert — Shut off engine and remove key before performing maintenance or repair work.....	43
Figure C.13 — Electrical shock or electrocution — Stay safe distance from electrical power lines	43
Figure C.14 — Electrical shock or electrocution — Stay safe distance from electrical power source.....	44
Figure C.15 — Electrical shock or electrocution — Keep hands safe distance from electrical power source	44
Figure C.16 — Hot surface — Burn to finger or hand — Keep hands safe distance from hazard	45
Figure C.17 — High pressure fluid — Avoid fluid escaping under pressure — Read technical manual for proper service procedures	45
Figure C.18 — Explosion of battery — Read operator's manual.....	46
Figure C.19 — Explosion of battery — Jump start — Read operator's manual	46
Figure C.20 — Explosion hazard — No ether — Low temperature starting aid	47
Figure C.21 — Severing of fingers or hand — Keep hands safe distance from hazard	47
Figure C.22 — Severing of foot or leg — Keep feet and legs safe distance from hazard	48
Figure C.23 — Severing of foot — Keep feet safe distance from hazard	48
Figure C.24 — Severing of head — Read operator's manual	49
Figure C.25 — Arm or hand entanglement in auger — Keep hands and arms safe distance from hazard.....	49
Figure C.26 — Whole body entanglement in machinery — Stay safe distance from hazard	50
Figure C.27 — Leg or foot entanglement or severing — Stay safe distance from hazard	50
Figure C.28 — Crushing of feet — Keep feet safe distance from hazard.....	51
Figure C.29 — Crushing of fingers or hands — Keep hands safe distance from hazard	51
Figure C.30 — Crushing of whole body — Stay safe distance from raised loader lift arm and bucket.....	52
Figure C.31 — Crushing hazard due to machine rollover — Wear seat belt	52
Figure C.32 — Machine tip-over or overload — Read operator's manual.....	53
Figure C.33 — Tip-over or overload of skid steer loader — Read operator's manual	53
Figure C.34 — Avoid being run over — Do not ride on fender.....	54
Figure D.1 — Human figure unit system.....	56
Figure D.2 — Examples of human figure animation.....	57

Figure D.3 — Example of pictorial using both line and bold drawing human forms.....	58
Figure D.4 — Stationary, free-standing human figure	58
Figure D.5 — Examples of pictorials using head profile	59
Figure D.6 — Examples of pictorials showing upper torso.....	59
Figure D.7 — Full palm view hand	59
Figure D.8 — Adding hands to the human figure	60
Figure D.9 — Examples of pictorials using a human figure with hands.....	60
Figure D.10 — Examples of pictorials using hand profiles	61
Figure D.11 — Foot development.....	61
Figure D.12 — Adding feet to the human figure	62
Figure D.13 — Example of pictorial showing the human figure with feet.....	62
Figure D.14 — Examples of pictorials showing machine hazard	62
Figure D.15 — Examples of pictorials showing individual hazard-creating components	63
Figure D.16 — Arrow representing falling or flying objects and their direction of motion.....	64
Figure D.17 — Examples of pictorials with arrows representing falling or flying objects and their direction of motion	64
Figure D.18 — Arrow representing direction of motion of machine components.....	65
Figure D.19 — Example of pictorial with arrow representing direction of motion of machine components.....	65
Figure D.20 — Arrow representing direction of motion of entire machines.....	66
Figure D.21 — Example of pictorial representing direction of motion of entire machines.....	67
Figure D.22 — Arrow representing exertion of pressure or force	68
Figure D.23 — Examples of pictorials with arrows representing exertion of pressure or force	69
Figure D.24 — Arrow representing the idea of keeping a safe distance away from hazard	69
Figure D.25 — Examples of pictorials with arrows representing keeping a safe distance from a hazard	70
Figure D.26 — Example of pictorial using general prohibition sign to communicate prohibited action.....	70

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.

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

ISO 9244 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 2, *Safety requirements and human factors*.

This second edition cancels and replaces the first edition (ISO 9244:1995), which has been technically revised.

Introduction

The purpose of this International Standard is to provide, for earth-moving machinery, general principles for the design and application of machine safety labels to alert persons to a hazard, describe the nature of that hazard, describe the consequences of potential injury from it, and instruct persons on how to avoid it. The continued growth in international trade and commerce has made it necessary to establish a universal communication method for conveying safety information.

This International Standard satisfies the global need to harmonize the system for conveying safety information using graphical means so that it relies as little as possible on the use of text messages. Machine safety labels that include text can be used when some of the necessary safety information cannot be communicated in graphical form.

Education is an essential part of any system that provides safety information. Although safety colours and signs are essential to any safety information system, they can be used only to supplement job site management practices such as proper working methods, instructions, accident prevention measures and training.

This document is a preview generated by EVS

Earth-moving machinery — Machine safety labels — General principles

1 Scope

This International Standard establishes general principles and gives requirements for the design and application of machine safety labels to be permanently affixed to earth-moving machinery as defined in ISO 6165. It outlines the objectives of signage, describes basic formats, specifies colours and provides guidance on developing the various panels that together constitute a label.

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 6165, *Earth-moving machinery — Basic types — Identification and terms and definitions*

ISO 6750, *Earth-moving machinery — Operator's manual — Content and format*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

border

area between the edge of a sign and the panel

3.2

CAUTION

signal word used to indicate a potentially hazardous situation which, if not avoided, may result in minor or moderate injury

[ISO 3864-2]

3.3

combination machine safety label

combination of machine safety sign and/or supplementary safety information and/or hazard severity panel on one rectangular label

NOTE A combination machine safety label conveys one safety message.

NOTE Adapted from ISO 3864-2:2004, definition 3.2.