

This is a preview of "ISO 14122-4:2016". [Click here to purchase the full version from the ANSI store.](#)

Second edition
2016-06-01

Safety of machinery — Permanent means of access to machinery —

Part 4: Fixed ladders

*Sécurité des machines — Moyens d'accès permanents aux
machines —*

Partie 4: Échelles fixes



Reference number
ISO 14122-4:2016(E)

© ISO 2016



COPYRIGHT PROTECTED DOCUMENT

© ISO 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

This is a preview of "ISO 14122-4:2016". Click here to purchase the full version from the ANSI store.

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Selection and design of ladder systems	6
4.1 General.....	6
4.1.1 Design and construction.....	6
4.1.2 Choice depending on available space.....	6
4.1.3 Spacing between the ladder and any permanent obstruction.....	6
4.2 Choice of a type fall protection device.....	7
4.2.1 Necessity of a fall protection device.....	7
4.2.2 Types of fall protection devices.....	7
4.2.3 Guidance for a risk assessment.....	8
4.3 Height of ladder flights and fall protection device.....	8
4.3.1 Limits of space.....	8
4.3.2 Ladder systems >3 000 mm and ≤10 000 mm total height, <i>H</i>	8
4.3.3 Ladder systems >10 000 mm total height, <i>H</i>	9
4.4 Platforms and landings.....	9
4.4.1 Installation of platforms at arrival and departure areas.....	9
4.4.2 Arrangement of platforms and landings for ladders with a total height, <i>H</i> >10 000 mm.....	9
5 Specific requirements of ladder systems	10
5.1 General requirements.....	10
5.1.1 Permanent action (dead load).....	10
5.1.2 Variable action (rated load).....	11
5.1.3 Additional loading.....	13
5.1.4 Design.....	14
5.2 Ladder with two stiles.....	14
5.2.1 Strength.....	14
5.2.2 Rungs.....	14
5.2.3 Connection of ladder and guard-rail.....	17
5.3 Ladder with one stile.....	17
5.3.1 Strength.....	17
5.3.2 Rungs.....	18
5.4 Departure and arrival areas.....	19
5.4.1 General requirements.....	19
5.4.2 Departure area (entrance).....	19
5.4.3 Arrival area (exit).....	19
5.4.4 Access opening.....	19
5.4.5 Trap doors.....	21
5.5 Fall protection device.....	22
5.5.1 Safety cage.....	22
5.5.2 Fall arrester.....	26
5.6 Platforms and landings.....	26
5.6.1 Access platforms.....	26
5.6.2 Intermediate and rest platforms.....	26
5.6.3 Intermediate landings.....	27
5.6.4 Moveable rest landings.....	29
5.7 Requirements on moveable parts of fixed ladders.....	30
6 Verification of safety requirements	30
6.1 General.....	30

This is a preview of "ISO 14122-4:2016". Click here to purchase the full version from the ANSI store.

6.1.1	General requirements.....	30
6.1.2	Verification of stability by calculation.....	31
6.1.3	Verification of stability by testing.....	31
6.2	Tests of fixed ladders with two stiles.....	31
6.2.1	Strength and bending of a ladder element.....	31
6.2.2	Test for safety cage.....	32
6.3	Test of ladders with one stile.....	33
6.3.1	Test of ladder elements.....	33
6.4	Test of extensions of guard-rails.....	35
7	Information for use for fixed ladders.....	36
7.1	Instruction handbook.....	36
7.1.1	General.....	36
7.1.2	Ladder systems with fall arrester.....	36
7.2	Marking of ladder systems with fall arrester.....	37
Annex A (normative) Requirements for the design of anti-climb devices.....		38
Annex B (informative) Summary of main dimensions of a fixed ladder equipped with a safety cage.....		42
Annex C (informative) Significant technical changes between this part of ISO 14122 and the previous edition.....		44
Bibliography.....		47

This is a preview of "ISO 14122-4:2016". [Click here to purchase the full version from the ANSI store.](#)

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 199, *Safety of machinery*.

This second edition cancels and replaces the first edition (ISO 14122-4:2004), which has been technically revised. It also incorporates the Amendment ISO 14122-4:2004/Amd 1:2010.

ISO 14122 consists of the following parts, under the general title *Safety of machinery — Permanent means of access to machinery*:

- *Part 1: Choice of fixed means and general requirements of access*
- *Part 2: Working platforms and walkways*
- *Part 3: Stairs, stepladders and guard-rails*
- *Part 4: Fixed ladders*

An additional part, dealing with mobile machinery, is under preparation.

Introduction

This International Standard is a type-B standard as stated in ISO 12100.

This International Standard is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium, and large enterprises);
- health and safety bodies (regulators, accident prevention organizations, market surveillance, etc.);

Others can be affected by the level of machinery safety achieved with the means of the International Standard by the above-mentioned stakeholder groups:

- machine users/employers (small, medium, and large enterprises);
- machine users/employees (e.g. trade unions, organizations for peoples with special needs);
- service providers, e.g. for maintenance (small, medium, and large enterprises);
- consumers (in case of machinery intended for use by consumers).

The above mentioned stakeholder groups have been given the possibility to participate at the drafting process of this International Standard.

In addition, this International Standard is intended for standardization bodies elaborating type-C standards.

The requirements of this International Standard can be supplemented or modified by a type-C standard.

For machines which are covered by the scope of a type-C standard and which have been designed and built according to the requirements of that standard, the requirements of that type-C standard take precedence.

The purpose of this International Standard is to define the general requirements for safe access to machines. ISO 14122-1 gives guidance about the correct choice of access means when the necessary access to the machine is not possible directly from the ground level or from a floor or platform.

The dimensions specified are consistent with established ergonomic data given in ISO 15534-3.