

DIN EN ISO 14122-4:2016-10 (E)

Safety of machinery - Permanent means of access to machinery - Part 4: Fixed ladders (ISO 14122-4:2016)

Contents		Page
European foreword		4
Foreword		5
Introduction		6
1	Scope	7
2	Normative references	7
3	Terms and definitions	8
4	Selection and design of ladder systems	12
4.1	General.....	12
4.1.1	Design and construction.....	12
4.1.2	Choice depending on available space.....	12
4.1.3	Spacing between the ladder and any permanent obstruction.....	12
4.2	Choice of a type fall protection device.....	13
4.2.1	Necessity of a fall protection device.....	13
4.2.2	Types of fall protection devices.....	13
4.2.3	Guidance for a risk assessment.....	14
4.3	Height of ladder flights and fall protection device.....	14
4.3.1	Limits of space.....	14
4.3.2	Ladder systems >3 000 mm and ≤10 000 mm total height, <i>H</i>	14
4.3.3	Ladder systems >10 000 mm total height, <i>H</i>	15
4.4	Platforms and landings.....	15
4.4.1	Installation of platforms at arrival and departure areas.....	15
4.4.2	Arrangement of platforms and landings for ladders with a total height, <i>H</i> >10 000 mm.....	15
5	Specific requirements of ladder systems	16
5.1	General requirements.....	16
5.1.1	Permanent action (dead load).....	16
5.1.2	Variable action (rated load).....	17
5.1.3	Additional loading.....	19
5.1.4	Design.....	20
5.2	Ladder with two stiles.....	20
5.2.1	Strength.....	20
5.2.2	Rungs.....	20
5.2.3	Connection of ladder and guard-rail.....	23
5.3	Ladder with one stile.....	23
5.3.1	Strength.....	23
5.3.2	Rungs.....	24
5.4	Departure and arrival areas.....	25
5.4.1	General requirements.....	25
5.4.2	Departure area (entrance).....	25
5.4.3	Arrival area (exit).....	25
5.4.4	Access opening.....	25
5.4.5	Trap doors.....	27
5.5	Fall protection device.....	28
5.5.1	Safety cage.....	28
5.5.2	Fall arrester.....	32

5.6	Platforms and landings	32
5.6.1	Access platforms	32
5.6.2	Intermediate and rest platforms	32
5.6.3	Intermediate landings	33
5.6.4	Moveable rest landings	35
5.7	Requirements on moveable parts of fixed ladders	36
6	Verification of safety requirements	36
6.1	General	36
6.1.1	General requirements	36
6.1.2	Verification of stability by calculation	37
6.1.3	Verification of stability by testing	37
6.2	Tests of fixed ladders with two stiles	37
6.2.1	Strength and bending of a ladder element	37
6.2.2	Test for safety cage	38
6.3	Test of ladders with one stile	39
6.3.1	Test of ladder elements	39
6.4	Test of extensions of guard-rails	41
7	Information for use for fixed ladders	42
7.1	Instruction handbook	42
7.1.1	General	42
7.1.2	Ladder systems with fall arrester	42
7.2	Marking of ladder systems with fall arrester	43
	Annex A (normative) Requirements for the design of anti-climb devices	44
	Annex B (informative) Summary of main dimensions of a fixed ladder equipped with a safety cage	48
	Annex C (informative) Significant technical changes between this part of ISO 14122 and the previous edition	50
	Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC machinery, and amending Directive 95/16/EC (recast) [2006 L157] aimed to be covered	53
	Bibliography	54