EN 14122-2

1 - Introduction

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0 - Premessa ITA

La norma definisce i requisiti per l'accesso sicuro alle macchine indicate nella UNI EN ISO 12100-2.

Essa si applica a tutti i macchinari (fissi e mobili) in cui sono necessari mezzi fissi di accesso.

La norma si applica alle piattaforme di lavoro e ai corridoi di passaggio che fanno parte della macchina e può essere applicata anche alle piattaforme di lavoro e ai corridoi di passaggio di quella parte dell'edificio in cui è installata la macchina, a condizione che la funzione principale di tale parte dell'edificio sia di fornire i mezzi di accesso alla macchina.

La norma si applica anche alle piattaforme di lavoro e ai corridoi di passaggio specifici della macchina che non sono fissati permanentemente alla macchina e che possono essere rimossi o mossi su un lato per alcune operazioni della macchina.

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1 - Introduction

EN ISO 14122 consists of the following parts, under the general title "Safety of machinery - Permanent means of access to machinery" :
Part 1 : Choice of a fixed means of access between two levels
Part 2 : Working platforms and walkways
Part 3 : Stairs, stepladders and guard-rails
Part 4 : Fixed ladders.

This part of EN ISO 14122 is a type B standard as stated in EN 1070.

This document is to be read in conjunction with clause 1.6.2 "Access to operating position and servicing points" and 1.5.15 "Risk of slipping, tripping or falling" of the essential safety requirements expressed in annex A of EN 292-2:1991/A1:1995. See also 6.2.4 "Provision for safe access to machinery" of EN 292-2:1991.

For the significant hazards covered by this standard, see clause 4 of EN ISO 14122-1.

The provisions of this document may be supplemented or modified by a type C standard.

NOTE 1
For machines which are covered by the scope of a type C standard and which have been designed and built according to the provisions of that standard, the provisions of that type C standard take precedence over the provisions of this type B standard.
The dimensions specified are consistent with established ergonomic data given in EN 547-3 "Safety of machinery - Human body dimensions - Part 3 : Anthropometric data".

NOTE 2
The use of materials other than metals (composite materials, so-called "advanced" materials, etc.) does not alter the application of the present standard.
Annexes A and ZA are for information only.

This part of EN ISO 14122 contains a Bibliography.

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2 - Scope

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2.1 -

EN ISO 14122 defines the general requirements for safe access to machines mentioned in EN 292-2. Part 1 of EN ISO 14122 gives advice about the correct choice of access means when the necessary access to the machine is not possible directly from the

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ground level or from a floor.

This part of EN ISO 14122 applies to all machinery (stationary and mobile) where fixed means of access are necessary.

This part of EN ISO 14122 applies to working platforms and walkways which are a part of a machine.

This part of EN ISO 14122 may also apply to working platforms and walkways to that part of the building where the machine is installed, providing the main function of that part of the building is to provide a means of access to the machine.

NOTE
This part of EN ISO 14122 may be used also for means of access which are outside the scope of this standard. In those cases the possible relevant national or other regulations should be taken into account.

This part of EN ISO 14122 applies also to working platforms and walkways specific to the machine which are not permanently fixed to the machine and which may be removed or moved to the side for some operations of the machine (e.g. changing tools in a large press).

This part of EN ISO 14122 does not apply to lifts, to moveable elevating platforms or other devices specially designed to lift persons between two levels.

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3 - Terms and definitions

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3.1 - flooring

assembly of elements making up the floor of a walkway or a working platform and being in direct contact with footwear

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Norme:

3.2 - walkway

level surface used for moving from one point to another

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3.3 - working platform

level surface used for the operation, maintenance, inspection, repair, sampling and other phases of work in connection with the machinery

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3.4 - slip resistant surface

flooring surface designed for improving the grip of footwear

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4 - General requirements

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4 - General requirements

Walkways and working platforms shall comply with the following general safety requirements:

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4.1 - General

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4.1 - General

The working platforms and walkways shall be designed, constructed, located and where necessary protected so that the operators are safe when having access to the working platforms and when they are on them for the operation, setting, monitoring, repairing or any other work involved with the machinery.

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4.1.1 - Construction and materials

4.1.1 Construction and materials

Working platforms and walkways shall be designed and constructed and the materials selected so that they withstand the foreseeable conditions of use. In particular, at least the following details shall be considered:

a) dimensioning and selection of components (including fixings, connections, supports and foundations) to ensure sufficient rigidity and stability;

b) resistance of all parts to environmental effects (such as climate, chemical agents, corrosive gases) e.g. by the use of a corrosion resistant material or with the aid of a suitable protective coating;

c) positioning of constructional elements so that water cannot be accumulated e.g. in the joints;

d) use of compatible materials e.g. to minimise galvanic action or differential thermal expansion;

e) dimension of walkways and working platforms shall be according to available anthropometric data (see 4.2.2 of this standard, see also EN 547-1 and EN 547-3); this standard, see also EN 547-1 and EN 547-3);

f) walkways and working platforms shall be designed and constructed to prevent the hazards due to falling objects. For guard-rails and toe plates, see clause 7 of EN ISO 14122-3:2001 and for openings in the flooring, see 4.2.4.4 of this standard;

g) the removal of any part of the machine shall, as far as practicable, be possible without removing guard-rails, pieces of flooring or other permanent protective barriers.

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4.1.2 - Safety of operators

Walkways and working platforms shall be designed and constructed so that they are safe to use. In particular, the following details shall at least be considered:

a) all parts likely to be in contact with operators shall be designed and built in such a way that the operator is safe-guarded against injuries;

b) walkways and working platforms shall be designed and built in such a way that the walking surfaces have durable slip resistant properties;

c) the parts of machinery which operators have to walk or stand on shall be designed and fitted out to prevent persons falling from them (see EN ISO 14122-3);

d) working platforms and access to working platforms shall be laid out in such a way that operators can quickly leave their workplace in the event of a hazard or can be quickly helped and easily evacuated when necessary;

e) handrails and other supports shall be designed, built and laid out in such a way that they are used instinctively.

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4.2 - Specific requirements

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4.2.1 - Location

As far as possible, walkways and working platforms shall be located away from the emission of harmful materials or substances. The walkways and walking platforms shall also be located away from the accumulation of material, such as earth, which is likely to cause slipping.

Where there are moving objects, non protected hot surfaces, unprotected live electrical equipment, etc., safety distances shall be applied in accordance with EN 294.

Working platforms shall be located in such a way as to allow people to work in an ergonomic position, if possible, between 500 mm and 1700 mm, above the surface of the working platform.

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4.2.2 - Dimensions

The clear length and width of walkways and working platforms intended for operation and maintenance shall be determined by:

a) the demands of the task e.g. positions, nature and speed of movement, application of force, etc.;
b) whether or not tools, spare parts etc. are being carried;
c) frequency and duration of task and use;
d) number of operators on walkways or working platforms at the same time ;
e) possibility of operators meeting ;
f) whether or not additional equipment such as safety clothing is being worn or personal protective equipment is being carried ;
g) the presence of isolated obstacles ;
h) the evacuation of an injured person ;
i) walkway ending in a dead end ;
j) walls likely to damage or mark operators' clothing ;
k) the need for unrestricted work-movements, and the need for space when using foreseeable tools.

In accordance with the values mentioned in EN 547-1 and EN 547-3 standards, unless exceptional circumstances exist the minimum headroom over working platforms and walkways shall be 2100 mm.

NOTE 1
When justified by the risk assessment and restrictions due to the machinery or environment, the clear height may be reduced to no less than 1900 mm if:

- the working platform or walkway is used only occasionally, or
- the reduction is made only for a short distance.

Unless there are exceptional circumstances, the clear width of a walkway shall be minimum 600 mm but preferably 800 mm. When the walkway is usually subject to passage or crossing of several persons simultaneously, the width shall be increased to 1000 mm.

The width of the walkway, when designated as an escape way shall meet the requirements of appropriate regulations.

NOTE 2
When justified by the risk assessment and restrictions due to the machinery or environment, the free width may be reduc ed to no less than 500 mm if:

- the working platform or walkway is used only occasionally, and
- the reduction is made only for a short distance.

If there are isolated obstacles on a wall or under a ceiling that restrict the required width or height, guarding shall be provided. Moreover, safety measures, e.g. padding, shall be fitted to prevent injuries. Warning signs should also be considered.

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4.2.2 - Dimensions

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4.2.3 - Facilities or equipment

Guard-rails in accordance with EN ISO 14122-3 shall be provided if there is a risk of falling from walkways or working platforms from a height of 500 mm or more.

Guard-rails are also required at places where there is a risk of sinking or collapsing (e.g. walkway to access to an extraction machine on a roof).

Appropriate facilities shall be provided for handling heavy objects without rolling or placing them on working platforms.

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4.2.4 - Floorings

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4.2.4.1 - Hazards due to stagnation and/or accumulation of liquid

Floorings shall be designed such that any liquids spilled on them are drained away. If this requirement is not possible to fulfil for some special reasons, slipping and other hazards caused by the liquid shall be prevented or minimized in some other suitable way.

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4.2.4.2 - Hazards due to accumulated substances

Floorings shall be made in such a way that neither dirt, snow, ice, etc. nor other substances may accumulate.

Therefore, permeable floorings such as gratings or cold formed planks are an advantage. If this is not possible and permeable floorings are not used, facilities for removing the accumulated substances shall be provided where necessary.

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4.2.4.3 - Trip hazards

To avoid trip hazards, the greatest difference between the tops of neighbouring flooring surfaces shall not exceed 4 mm in height.

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4.2.4.4 - Hazards generated by falling objects

a) Flooring

Generally, the risk assessment effects the choice of open floorings to working platforms or walkways:

- the flooring of a working platform or walkway shall only have such maximum openings that a ball with a diameter of 35 mm cannot fall through;
- floorings above a place where people are working, as opposed to occasional passage, shall have such maximum openings that a ball with a diameter of 20 mm cannot fall through unless the same safety is guaranteed by other suitable means.

In cases where the risk assessment concludes that hazards caused by objects or other materials falling or passing through the flooring are more significant than the slipping, falling, etc. hazards, the flooring shall have no opening.

b) Joints

Between the edges of floorings and adjacent construction elements or opening edges required to suit elements fitted in the openings e.g. piping, bins or supports, a toe plate is necessary if the distance between flooring and element exceeds 30 mm.

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4.2.4.4 - Hazards generated by falling objects

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4.2.4.5 - Falling through flooring hazard

If flooring is made of detachable elements, i.e. removable, e.g. where required for maintenance of auxiliary equipment mounted below flooring:

- any hazardous movement of these elements shall be prevented e.g. by fasteners;
- it shall be possible to inspect fixings in order to detect any corrosion or any hazardous loosening or change of position of clamps.

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4.2.4.6 - Slip hazards

Floorings shall have a surface finish which is designed to reduce the risk of slipping. Whilst waiting for the European standards on enhanced slip resistance, see informative annex A.

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4.2.5 - Design loads

The schedule of specifications for the working platforms and walkways shall state the load for which it is designed.

The minimum operating loads to take into account for the landing, walkways and working platforms are:

- 2 kN/m2 under distributed load for the structure;
- 1,5 kN concentrated load applied in the most unfavourable position over a concentrated load area of 200 mm x 200 mm for the flooring.

When loaded with the design load, the deflection of the flooring shall not exceed 1/200th of the span and the difference between the loaded and a neighbouring unloaded flooring shall not exceed 4 mm in height.

The safe strength design of the walkways and working platforms shall be verified either by calculation or by tests.

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5 - Assembly instructions

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5.1 - Assembly instructions

All information on the proper assembly shall be contained in the assembly instructions. In particular, information on the method of fixing shall be included.

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Annex A - Different methods of determining levels of slip-resistance

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Annex A.1 -

No European Standards exist for the moment, but in the meantime, any of the following national documents are available for consultation:

Annex A.1 -

France
Exigences pour une norme de mesure de la glissance des sols - Étude documentaire et discussion - ND 1987-159-95 - INRS

Sols anti-dérapants - Critère d'évaluation de la résistance au glissement - Application aux sols des industries de l'alimentation - ND 1853-145-91
Normalisation de la glissance des sols et des chaussures - ND 1936-152-93

Glissance des sols et coefficients de frottement - Cahier 2484 (avril 1991) - CSTB

Germany
Merkblatt für Fußböden in Arbeitsräumen und Arbeitsbereichen mit Rutschgefahr - ZH 1/571 - (Oktober 1993) - HVBG.

United Kingdom
BS 7188:1998 - Impact absorbing playground surfacing Performance requirements and test methods - - Clause 5 "Slip resistance"

BS 8204-3 : 1993 - In-situ floorings Part 3. Code of practice for polymer modified cementitious wearing surfaces Annex C "Determination of slip resistance value SRV".

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Annex A.2 -

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