



SLOVENSKI STANDARD

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Steel static storage systems - Specification of storage equipment

Ortsfeste Regalsysteme aus Stahl - Spezifikation von Lagereinrichtungen

Systèmes de stockage en acier - Spécification du système de stockage

Ta slovenski standard je istoveten z: EN 15629:2008

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Storage equipment

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

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**Steel static storage systems - Specification of storage
equipment**

Systèmes de stockage en acier - Spécification du système
de stockage

Ortsfeste Regalsysteme aus Stahl - Spezifikation von
Lagereinrichtungen

This European Standard was approved by CEN on 5 October 2008.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (EN 15629:2008) has been prepared by Technical Committee CEN/TC 344 "Steel static storage systems", the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2009, and conflicting national standards shall be withdrawn at the latest by May 2009.

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

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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0 Introduction

0.1 Racking and Shelving as work equipment

When specifying the design requirements for racking and shelving, there should be an awareness of national legislation regarding work equipment. This legislation is based upon the European Directives:

- a) 89/391/EEC: "Concerning measurements to promote the improvement of safety and health for the use of work equipment by workers at work";
- b) 89/655/EEC: "Concerning the minimum safety and health requirements for the use of work equipment by workers at work"

This European Standard should be considered in conjunction with the application and maintenance of storage equipment (See EN 15635).

0.2 Structural Eurocodes for load bearing structures and buildings

The determination of the safe load bearing capacity of racking and shelving is a structural engineering task and therefore the Eurocodes are relevant, particularly EN 1993-1-1 and EN 1993-1-3, for the design. The codes and guidelines worked out by CEN/TC 344 are intended to amplify and clarify the requirements of the Eurocodes, since they particularly apply to design, while specification, installation, application and maintenance are considered as special requirements for racking and shelving products. This European Standard covers specification.

0.3 Additional European standards for racking and shelving

Due to the differences in the shape of structural components, detailing and connection types, additional technical information to the Eurocodes is required in order to provide state of the art guidance. This guidance is for the client or the consultant specifying the requirement, the practising engineer involved in the design, the installer building the structure and the user who maintains the structure in a sound condition suitable for safe use throughout its working life.

This, together with the need to provide harmonized design rules, is the reason why the European Racking Federation (ERF) has taken the initiative with the CEN/TC 344. This Technical Committee is preparing a number of European standards for specific types of racking and shelving used in specific applications as follows:

prEN 15512, Steel static storage systems — Adjustable pallet racking systems — Principles for structural design

EN 15620, Steel static storage systems — Adjustable pallet racking — Tolerances, deformations and clearances

EN 15635, Steel static storage systems — The application and maintenance of storage equipment

In drafting these documents, a liaison with other CEN TC's has been carried out as appropriate.

EN 15629:2008 (E)**0.4 Additional information specific to this document**

CEN/TC 344 documents may be useful for design cases not covered by the Eurocodes (other structures, other actions, other materials) and to serve as a reference document for other CEN TC's concerning design matters.

This European standard is applicable to:

- a) specifiers of storage equipment;
- b) committees drafting design-related product, testing and execution standards;
- c) clients (e.g. for the formulation of their specific requirements);
- d) designers and constructors;
- e) relevant authorities.

As part of the specification process, reference to prEN 15512, EN 15620 and EN 15635 ensures that both the user and the designer are aware of the constraints in each other's area and allows an effective design to be produced.

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1 Scope

This European Standard supplies guidelines for the technical specification to allow the design of racking and shelving in its various forms such as adjustable pallet racking (APR), crane serviced racking, drive-in racking (DIR), cantilever racking and shelving systems, including their various forms of construction, using manually operated and controlled mechanical handling systems. Some other forms of storage equipments are only partially covered and further consideration, beyond the scope of this document, may be required.

This European Standard gives guidance for the specifier of storage systems to coordinate suppliers of all equipment including individual responsibilities.

This European Standard does not cover storage equipments manufactured from materials other than steel (except for certain accessories) and equipment intended to be used for domestic storage purposes.

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.

prEN 15512, *Steel static storage systems — Adjustable pallet racking systems — Principles for structural design*

EN 15620, *Steel static storage systems — Adjustable pallet racking — Tolerances, deformations and clearances*

EN 15635, *Steel static storage systems — The application and maintenance of storage equipment*
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3 Terms and definitions

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

3.1

adjustable pallet racking

APR

steelwork structure consisting of frames and beams adjustable in height, specifically designed to support pallets and unit loads

3.2

bay load

total allowable weight of all the unit loads in a bay of racking not including any unit loads that may be stored on the floor of the bay

3.3

compartment load

load which can be loaded into one compartment of a racking or shelving structure from one side

3.4

counterbalanced forklift truck

rider-operated type of forklift truck that carries its load cantilevered forward of its front main wheel axle and is stabilized with a counter weight at the rear of the truck

NOTE This type of truck is a general-purpose truck and may be used in wide-aisle pallet racking systems.

EN 15629:2008 (E)**3.5****design clearances**

nominal dimension between items used in the design

NOTE These clearances enable input and output of the load to take place without contact of the load with any other loads or any part of the storage system structure other than normal contact when the load is placed on the beams or other members provided for its support in storage.

3.6**double-deep racking**

racking in which pallets can be stored two deep from one aisle into the installation and accessed by a specially adapted long reach fork mechanism

3.7**drive-in racking****DIR**

system of racking that provides blocks of storage where pallets are stored two or more deep and access is gained by driving a lift truck into a lane with pallets supported along their sides on beam rails supported from the uprights

3.8**drive-through racking**

system of racking that provides blocks of storage where pallets are stored two or more deep similar to DIR except that the truck can be driven into a lane on one side of the block and out of the other if there are no obstructions

3.9**frame load**

total allowable weight of all the unit loads transmitted to the frame by the members attached to the frame

3.10**hand pallet truck**

small hand-operated truck used for moving pallets around on level floors and the pallet is lifted clear of the floor by raising and lowering a tiller bar that operates a hydraulic lifting device

3.11**intrusive stacking**

placement or retrieval of a pallet where the turning radius or length of a lift truck is greater than the aisle width and part of the pallet storage location concerned is used by the truck forks and load when turning to place or retrieve a pallet

3.12**mechanical handling equipment****MHE**

mechanical equipment used to transport the unit load to be stored

3.13**mezzanine floors****RSA**

additional floor above the ground floor slab level used for storage which can be free standing or attached to the building structure

3.14**narrow-aisle racking**

pallet racking arranged in a similar way to wide aisle racking but having aisles of a reduced width for use with more specialist types of lift truck

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3.15**pallet**

portable platform, with or without superstructure, for the assembly of a quantity of goods to form a unit load for handling and storage by mechanical appliances

3.16**pallet buffer back stop**

buffering back stop, which is specified as an aid for use by forklift truck drivers to deposit a unit load in the correct position in the racking

3.17**pallet safety back stop**

safety back stop to prevent accidental collision of a pallet or its load with other unit loads or equipment, when that load is placed in the storage compartment

type (a) safety device, which protects against unintentional load movement within the racking and prevents loads from protruding or from falling into an aisle or into an area accessible to people

type (b) backstop to prevent accidental damage, usually placed at the back of a storage compartment, to prevent the accidental collision of a pallet or its load with other equipment, such as sprinklers, when a load is placed in the storage compartment

3.18**pick up and deposit stations****P and D stations**

storage locations at the end of an aisle used as an interface between different types of mechanical handling equipment

NOTE The P and D stations can be used as an interface between the unit load and handling equipment that is dedicated to the rack aisle (such as very narrow aisle (VNA) trucks or cranes) and the conveyors or free movement trucks which service the installation. The P and D stations can also be used to accurately fix the location of the unit load relative to the racking. This is often used by trucks or cranes having a fixed length of fork stroke and ensures accuracy in the X and Z directions when placing the unit load onto the racking beams.

3.19**powered hand pallet truck**

small hand-operated truck used for moving pallets around on level floors where the power for lifting and moving the pallet loads is provided by a battery and electric motor.

3.20**reach truck**

stacking lift truck with outriggers where the load can be repositioned by moving the mast or fork arm carriage

NOTE These trucks are generally used in narrow aisle racking because their overall length is less than a counterbalanced lift truck of the same lifting capacity.

3.21**shelving**

hand-loaded supporting surfaces supported by upright frames

3.22**specified allowable unit load**

unit load allowed in the storage equipment

3.23**specifier**

person or company that provides the supplier with a specification based on the user's requirements

NOTE The specifier can be a consultant or other specialist, the end user or the equipment supplier acting as the specifier.

EN 15629:2008 (E)**3.24****storage equipment**

structure used to store the unit loads

3.25**straddle-type stacker trucks**

manually or electrically operated pallet trucks with straddle legs

3.26**supplier**

company that supplies the storage equipment

NOTE The company may be the original manufacturer or an intermediate company acting as a distributor.

3.27**total racking or shelving load**

total allowable load supported by all the primary load supporting members

NOTE This may be the total load from beams or shelves in a defined area of racking or shelving.

3.28**unit load**

weight of an individual stored item that can be placed or retrieved in one operation

3.29**user**

company or person who manages and operates the installation on a daily basis and is responsible for the continuing safety of the installation

3.30**very narrow aisle racking****VNA racking**

pallet racking arranged with aisles of a width to cater only for the truck and the unit load width plus an operational clearance where the truck cannot make 90° turns into the rack face for loading and off loading

3.31**very narrow aisle truck****VNA truck**

rider operated fork lift truck which can work in aisles only slightly wider than the truck or the unit load carried and is fitted with a fork mechanism permitting access on either side of the aisle without turning the main body of the truck.

NOTE 1 VNA trucks are normally guided within the aisles. Because of the accuracy required in placing pallets into the racking, these trucks usually pick the pallet loads up from a specially designed P&D station at the entrance to each aisle.

NOTE 2 A VNA truck is sometimes known as a Turret Truck.

3.32**wide-aisle racking**

pallet racking arranged to leave aisles of sufficient width to allow the forklift truck equipment to traverse the length of the aisle and to make 90° turns into the rack face for loading and off loading.

3.33**90° stacking**

placement or retrieval of a pallet where the forklift truck makes a 90° turn to face the rack during the placement or retrieval process.

NOTE In making this turn no part of the truck or load intrudes into the racking.