SLOVENSKI STANDARD
SIST EN 1175-2:1998+A1:2011

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Nadomešča:
SIST EN 1175-2:1998

Varnost vozil za talni transport - Električne zahteve - 2. del: Splošne zahteve za vozila za talni transport z motorjem z notranjim zgorevanjem (vključno z dopolnilom A1)

Safety of industrial trucks - Electrical requirements - Part 2: General requirements of internal combustion engine powered trucks

Sicherheit von Flurförderzeugen - Elektrische Anforderungen - Teil 2: Allgemeine Anforderungen für Flurförderzeuge mit Verbrennungsmotoren

Sécurité des chariots de manutention - Prescriptions électriques - Partie 2: Prescriptions générales des chariots équipés d'un moteur thermique

Ta slovenski standard je istoveten z: **EN 1175-2:1998+A1:2010**

ICS:

43.060.01	Motorji z notranjim zgorevanjem za cestna vozila na splošno	Internal combustion engines for road vehicles in general
53.060	Industrijski tovornjaki	Industrial trucks

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English Version

Safety of industrial trucks - Electrical requirements - Part 2: General requirements of internal combustion engine powered trucks

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Foreword

This document (EN 1175-2:1998+A1:2010) has been prepared by Technical Committee CEN/TC 150 "Industrial trucks - Safety", the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by May 2011, and conflicting national standards shall be withdrawn at the latest by May 2011.

A1⟩ This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is and integral part of this document. ⟨A1

A1⟩ *deleted text* ⟨A1

A1⟩ The main changes compared to the previous version are:

— modification of Annex ZA;

— minor technical changes in 5.3;

— requirements for radiation and software parameters;

— reference to EN 292-1 be replaced with EN ISO 12100-1:2003, EN 292-2 be replaced with EN ISO 12100-2:2003 and EN 954-1 be replaced with EN ISO 13849-1:2008. ⟨A1

This document includes Amendment 1, approved by CEN on 2010-09-26.

This document supersedes EN 1175-2:1998.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1⟩ ⟨A1.

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.

This European Standard is one of a package of standards for the safety of industrial trucks:

A1⟩ prEN ISO 3691-1, *Industrial trucks — Safety requirements and verification — Part 1: Self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier trucks (ISO/DIS 3691-1:2008)* ⟨A1

A1⟩ EN 1726-2 ⟨A1	Safety of industrial trucks - Self propelled trucks up to and including 10 000 kg capacity and tractors with a drawbar pull up to and including 20 000 N - Part 2: Additional requirements for trucks with elevating operator position andtrucks specially designed to travel with elevated load
A1⟩ EN 1551 ⟨A1	Safety of industrial trucks - Self propelled trucks over 10 000 kg capacity
A1⟩ EN 1459 ⟨A1	Safety of industrial trucks - A1⟩ Self propelled variable ⟨A1 reach trucks

[A1] EN ISO 3691-5, *Industrial trucks — Safety requirements and verification — Part 5: Pedestrian-propelled trucks (ISO 3691-5:2009)* [A1]

[A1] *deleted text* [A1]

[A1] EN 1757-3 [A1]	Safety of industrial trucks; pedestrial controlled manual and semi manual trucks - Part 3 - Platform trucks

[A1] *deleted text* [A1]

EN 1525	Safety of industrial trucks - Driverless trucks and their systems
EN 1175-1	Safety of industrial trucks - Electrical requirements -
	Part 1 - General requirements for battery powered trucks
EN 1175-2	Safety of industrial trucks - Electrical requirements -
	Part 2: General requirements for internal combustion engine powered trucks
EN 1175-3	Safety of industrial trucks - Electrical requirements - Part 3 - Specific requirments for the electric power transmission systems of internal combustion engine powered trucks
EN 1526	Safety of industrial trucks - Automated functions of trucks
[A1] EN 1755 [A1]	Safety of industrial trucks - Operation in potentially explosive atmospheres; Use in flammable gas, vapour, mist and dust
[A1] EN 12053 [A1]	Safety of industrial trucks - Test methods for measuring noise [A1] emissions [A1]
prEN ISO/DIS 13564	Test method for measuring visibility from self-propelled trucks
[A1] EN 13059 [A1]	Safety of industrial trucks - Test methods for measuring vibration
[A1] EN 12895 [A1]	Industrial trucks - Electromagnetic compatibility

[A1] *deleted text* [A1]

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, Croatia, 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 United Kingdom.

0 Introduction

〈A1〉 This European Standard is a type C standard as stated in EN ISO 12100-1:2003. 〈A1〉.This standard has been prepared to be a harmonized standard to provide one means of conforming with the electrical aspects of the Essential Safety Requirements of the Machinery Directive and associated EFTA Regulations. Electrical installations complying with this standard are deemed to satisfy these requirements.

The extent to which hazards are covered is indicated in the scope of this standard. 〈A1〉 In addition, machinery should comply as appropriate with EN ISO 12100-2:2003 for hazards which are not covered by this European Standard. 〈A1〉

1 Scope

1.1 This standard specifies the electrical and related mechanical safety requirements for the design and construction of the electrical installation in internal combustion engine powered trucks (hereinafter referred to as "trucks") with starter battery nominal voltages up to and including 24 V.

NOTE 1 Part 3 of this standard details specific electrical requirements for electrical power transmission systems of internal combustion engine powered trucks.

NOTE 2 Reference is made to this standard in other standards which cover the non-electrical requirements of the various industrial truck types.

〈A1〉 *deleted text* 〈A1〉

〈A1〉 NOTE 3 The special requirements for operation in potentially explosive atmospheres are not covered in this European Standard. 〈A1〉

1.2 The requirements of this standard are applicable, when trucks are operated under the following climatic conditions:

— Maximum ambient temperature, continuous duty: +40°C;

— Lowest ambient temperature: -20 °C;

— Service altitude: up to 2000 m;

— Relative humidity: in the range 30 % to 95 % (non condensing).

1.3 This standard covers specific hazards which could occur during the intended use of trucks. 〈A1〉 For hazards occurring during construction, transportation, commissioning, decommissioning and disposal, reference should be made to EN ISO 12100-2:2003. 〈A1〉

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of, any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

〈A1〉 *deleted text* 〈A1〉

EN 1050:1996 Safety of machinery - Principles for risk assessment

[A1] EN 12895:2000, *Industrial trucks — Electromagnetic compatibility* [A1]

EN 60947-5-1:1991 Low-voltage switchgear and controlgear
Part 5: Control circuit devices and switching elements
Section one: Electromechanical control circuit devices (IEC 947-5-1:1990)

[A1] EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*

EN ISO 13849-1:2008, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)* [A1]

ISO 5053:1987 Powered industrial trucks - Terminology

3 Definitions

For the purposes of this standard, definitions given in ISO 5053:1987 apply together with the following:

3.1
nominal battery voltage
the total number of battery cells connected in series multiplied by 2 V for conventional lead acid batteries and by 1,2 V for alkaline batteries. For other types of batteries corresponding definitions apply

4 [A1] List of significant hazards [A1]

The following significant hazards from Annex A of EN 1050:1996 (within brackets) are applicable in the situations described and could involve risks to persons if not reduced or eliminated. The corresponding requirements are designed to limit the risk or remove the hazard in each situation.

Hazard		Corresponding requirements	
4.1	Mechanical hazards (1)		
4.1.1	Crushing hazard (1.1)	5.1.2	Battery constrain
4.1.2	Impact by collision (1.6)	5.3.4	Speed limitation
4.1.2.1	- when driven by the operator	5.3.5	Steering control
4.1.3	Loss of stability (1.11)		
	- from excess speed		
	- from faulty battery mass		
4.2	Electrical hazards (2)	5.1.1	Battery insulation
4.2.1	Electric shock (2.1)	5.2	Protection of circuits
4.2.2	Short circuit		

4.2.3 Overloading	5.4.1 Protection 5.4.2 Cross-sectional area 5.4.3 Specification 5.4.5 Mechanical protection 5.4.6 Wiring that flexes 5.5 Protection against electric shock
4.3 Hazards generated by substances (7)	5.1.2 Battery constraint 5.4.4 Fuel leakage
4.4 Ergonomic hazards (8) 4.4.1 Human error (8.6) 4.4.1.1 - when the truck is serviced	5.4.7 Identification 6 Information for use [A1] 5.3.6 Parameter 5.6.1 Non ionising radiation 6.3 Non ionising radiation [A1]
4.5 Hazards due to functional disorders (10)	5.1.3 Battery disconnection 5.2 Protection of circuits 5.3.1 Low voltage 5.3.2 Frame faults 5.3.3 Load handling control 5.3.4 Speed limitation 5.3.5 Steering control [A1] 5.3.6 Parameter [A1] 5.4.3 Specification 5.4.4 Fuel leakage 5.4.5 Mechanical protection 5.4.6 Wiring that flexes
[A1] Programming errors	5.3.6 Parameter [A1]