

Seadmete ohutus. Ohutusnõuded torutäite ja vormimise pöörlevatele veskitele ning lõppviimistlusliinidele

Safety of machinery - Safety requirements for tube forming and rolling mills and finishing line equipment

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 13675:2004 sisaldab Euroopa standardi EN 13675:2004 ingliskeelset teksti. Käesolev dokument on jõustatud 23.09.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 13675:2004 consists of the English text of the European standard EN 13675:2004. This document is endorsed on 23.09.2004 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.
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Käsitlusala: This European Standard describes the health and safety requirements of fully automated plant used in the process of tube forming, rolling and finishing (hereafter referred to as "plant"). It describes the foreseeable, significant hazards, hazardous situations, and events arising from plants and from particular machines integrated to form the plant; it does not describe the full health and safety requirements for each particular machine. It indicates preventive measures for avoiding the hazards and reducing the risks. It deals not only with circumstances where the machinery is used as intended, but also includes other conditions foreseen by the manufacturer, such as foreseeable faults, malfunctions or misuse.	Scope: This European Standard describes the health and safety requirements of fully automated plant used in the process of tube forming, rolling and finishing (hereafter referred to as "plant"). It describes the foreseeable, significant hazards, hazardous situations, and events arising from plants and from particular machines integrated to form the plant; it does not describe the full health and safety requirements for each particular machine. It indicates preventive measures for avoiding the hazards and reducing the risks. It deals not only with circumstances where the machinery is used as intended, but also includes other conditions foreseen by the manufacturer, such as foreseeable faults, malfunctions or misuse.
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ICS 77.080

Võtmesõnad:

ICS 77.080

English version

Safety of machinery - Safety requirements for tube forming and rolling mills and their finishing line equipment

Sécurité des machines - Prescriptions de sécurité pour
formeuses et laminoirs à tubes et de lignes de
parachèvement

Sicherheit von Maschinen - Sicherheitsanforderungen an
Rohrform- und -walzwerke und Adjustageanlagen

This European Standard was approved by CEN on 1 April 2004.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This document (EN 13675:2004) has been prepared by Technical Committee CEN/TC 322 "Rolling Mills and Smelting Plants", the secretariat of which is held by DIN.

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 December 2004, and conflicting national standards shall be withdrawn at the latest by December 2004.

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 Directives, see informative Annex ZA, which is an integral part of this document.

Annexes A and B are normative. Annexes C and D are informative.

An assessment of the foreseeable risks arising from the use of the plant/machinery was carried out when this standard was drafted by CEN/TC 322/WG 3, comprising experts from the following countries: Denmark, Germany, Italy, Sweden and the United Kingdom.

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

0 Introduction

This document is a type C standard as stated in EN 1070.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this document. Where a significant hazard has been identified it is listed in this standard, but if no technical requirement is included the manufacturer should carry out his own risk assessment and evolve a means for reducing the risks from the hazard.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of this type C standard.

Where examples are given in the text of solutions for achieving safety requirements and/or measures, they have been included for clarification purpose only. The examples should not be considered as the only possible solutions but do demonstrate the levels of safety to be achieved.

1 Scope

This European Standard describes the health and safety requirements of fully automated plant used in the process of tube forming, rolling and finishing (hereafter referred to as "plant"). It describes the foreseeable, significant hazards, hazardous situations, and events arising from plants and from particular machines integrated to form the plant; it does not describe the full health and safety requirements for each particular machine. It indicates preventive measures for avoiding the hazards and reducing the risks. It deals not only with circumstances where the machinery is used as intended, but also includes other conditions foreseen by the manufacturer, such as foreseeable faults, malfunctions or misuse.

This European Standard specifies the requirements to ensure the safety of persons which are to be met during the design, assembly, transport, commissioning, operation, maintenance and decommissioning of the equipment.

This standard assumes that installations are operated and maintained by adequately trained and competent personnel. Manual intervention for setting, adjustment and maintenance is accepted as part of the normal use of these machines.

This standard assumes that the machinery is used with adequate workplace lighting conforming to prEN 12464-1 or to local regulations.

This standard applies to:

Automated plant and equipment operated for the production of metal seamless hot and cold finished tubes and welded tubes. A list of machines which could make up different plants is shown in Annex D (informative).

This standard covers:

For seamless hot-finished tubes: from material charging downstream of the heating furnace through the rolling process and up to, but not including any intermediate storage equipment or the downstream finishing lines.

For seamless cold-finished tubes: from material charging through the rolling process to the discharging equipment but not including any storage equipment.

For welded tubes: from coil charging through strip preparation, forming and welding equipment up to, but not including any intermediate storage equipment or the downstream finishing lines.

For the tube finishing line: from tube charging to the discharging equipment to the storage.

The following items are outside the scope of this standard:

- complete risk assessment of single machines which are used to form a plant
- furnaces;
- quenching equipment;
- spiral tube manufacture;
- large diameter tube welding manufacture using three-roll bending machines, U-ing and O-ing press lines and their finishing lines;
- butt welding machinery for the manufacture of endless strips;
- irradiation units (material testing by e. g., ultrasonic and X-ray testing units);
- centrifugal casting machines;
- machine tools used for e. g., threading, chamfering, stamping and marking machines;

— storage equipment.

This standard does not establish any requirements concerning electromagnetic disturbances.

This standard is not applicable to tube rolling and forming mills and finishing line equipment, manufactured before the date of publication of this standard by CEN.

NOTE: The words "Tube" and "Pipe" are synonymous in this standard.

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 (including amendments).

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 294:1992, *Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs.*

EN 349:1993, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body.*

EN 418:1992, *Safety of machinery — Emergency stop equipment, functional aspects - Principles for design.*

EN 457, *Safety of machinery — Auditory danger signals - General requirements, design and testing (ISO 7731:1986, modified).*

EN 563:1994, *Safety of machinery — Temperatures of touchable surfaces — Ergonomics data to establish temperature limit values for hot surfaces*

EN 614-1:1995, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles.*

EN 626-1:1994, *Safety of machinery — Reduction of risks to health from hazardous substances emitted by machinery — Part 1: Principles and specifications for machinery manufacturers.*

EN 811, *Safety of machinery — Safety distances to prevent danger zones being reached by the lower limbs.*

EN 842, *Safety of machinery — Visual danger signals - General requirements, design and testing.*

EN 853:1996, *Rubber hoses and hose assemblies — Wire braid reinforced hydraulic type — Specification.*

EN 854:1996, *Rubber hoses and hose assemblies — Textile reinforced hydraulic type — Specification.*

EN 856:1996, *Rubber hoses and hose assemblies — Rubber-covered spiral wire reinforced hydraulic type — Specification.*

EN 857:1996, *Rubber hoses and hose assemblies — Wire braid reinforced compact type for hydraulic applications — Specification.*

EN 953:1997, *Safety of machinery — Guards - General requirements for the design and construction of fixed and movable guards.*

EN 954-1, *Safety of machinery — Safety related parts of control systems — Part 1: General principles for design.*

- EN 981:1996, *Safety of machinery — System of auditory and visual danger and information signals.*
- EN 982:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Hydraulics.*
- EN 983:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Pneumatics.*
- EN 999:1998, *Safety of machinery — The positioning of protective equipment in respect of approach speeds of parts of the human body.*
- EN 1037:1995, *Safety of machinery — Prevention of unexpected start-up.*
- EN 1050, *Safety of machinery — Principles for risk assessment.*
- EN 1063:1999, *Glass in building — Security glazing — Testing and classification of resistance against bullet attack.*
- EN 1070:1998, *Safety of machinery — Terminology*
- EN 1088:1995, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection.*
- EN 1299, *Mechanical vibration and shock — Vibration isolation of machines — Information for the application of source isolation.*
- EN 1837, *Safety of machinery — Integral lighting of machines.*
- EN 12198-1, *Safety of machinery — Assessment and reduction of risks arising from radiation emitted by machinery - Part 1: General principles.*
- EN 12254, *Screens for laser working places — Safety requirements and testing.*
- EN 60204-1:1997, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:1997).*
- EN 60825-1:1994, *Safety of laser products — Part 1: Equipment classification, requirements and user's guide (IEC 60825-1:1993)*
- EN 61310-1, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, auditory and tactile signals (IEC 61310-1:1995).*
- EN 61310-2, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking (IEC 61310-2:1995).*
- EN 61496-1, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:1997)*
- EN ISO 3740:2000, *Acoustics — Determination of sound power levels of noise sources — Guidelines for the use of basic standards (ISO 3740:2000).*
- EN ISO 3744:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essential free field over a reflecting plane (ISO 3744:1994).*
- EN ISO 3746:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:1995).*
- EN ISO 3747:2000, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Comparison method for use in situ (ISO 3747:2000).*

EN ISO 4871:1996, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996).*

EN ISO 9614-1:1995, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 1: Measurements at discrete points (ISO 9614-1:1993).*

EN ISO 9614-2:1996, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 2: Measurement by scanning (ISO 9614-2:1996).*

EN ISO 11064-1, *Ergonomic design of control centres — Part 1: Principles for the design of control centres (ISO 11064-1:2000).*

EN ISO 11200, *Acoustics — Noise emitted by machinery and equipment — Guidelines for the use of basic standards for the determination of emission sound pressure levels at a work station and at other specified positions (ISO 11200:1995).*

EN ISO 11202, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions - Survey method in situ (ISO 11202:1995); Amendment AC.*

EN ISO 11203, *Acoustics — Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions from the sound power level (ISO 11203:1995).*

EN ISO 11546-1:1995, *Acoustics — Determination of sound insulation performances of enclosures — Part 1: Measurements under laboratory conditions (for declaration purposes) (ISO 11546-1:1995).*

EN ISO 11546-2:1995, *Acoustics — Determination of sound insulation performances of enclosures — Part 2: Measurements in situ (for acceptance and verification purposes) (ISO 11546-2:1995).*

EN ISO 11688-1, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995).*

EN ISO 11691, *Acoustics — Measurement of insertion loss of ducted silencers without flow — Laboratory survey method (ISO 11691:1995).*

EN ISO 11820, *Acoustics — Measurements on silencers in situ (ISO 11820:1996).*

EN ISO 11821:1997, *Acoustics — Measurement of the in situ sound attenuation of a removable screen (ISO 11821:1997).*

EN ISO 14122-1, *Safety of machinery — Permanent means of access to machinery — Part 1: Choice of a fixed means of access between two levels (ISO 14122-1:2001).*

EN ISO 14122-2, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways (ISO 14122-2:2001).*

EN ISO 14122-3, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails (ISO 14122-3:2001).*

ISO 7000, *Graphical symbols for use on equipment — Index and synopsis.*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1070:1998 and the following apply.

3.1

Product/material

metal being in forming or rolling process (e.g., billets, hollow blooms, tubes and pipes)