Irish Standard
I.S. EN 16774:2016

Safety of machinery - Safety requirements for steel converter and associated equipment

I.S. EN 16774:2016

Incorporating amendments/corrigenda/National Annexes issued since publication:

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I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

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This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

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NSAI	T +353 1 807 3800	Sales:
1 Swift Square,	F +353 1 807 3838	T +353 1 857 6730
Northwood, Santry	E standards@nsai.ie	F +353 1 857 6729
Dublin 9	W NSAI.ie	W standards.ie

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National Foreword

I.S. EN 16774:2016 is the adopted Irish version of the European Document EN 16774:2016, Safety of machinery - Safety requirements for steel converter and associated equipment

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16774

April 2016

ICS 77.180

English Version

Safety of machinery - Safety requirements for steel converter and associated equipment

Sécurité des machines - Prescriptions de sécurité pour les convertisseurs d'acier et les équipements associés

Sicherheit von Maschinen - Sicherheitsanforderungen an Stahlkonverter und zugehörige Einrichtungen

This European Standard was approved by CEN on 27 February 2016.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 16774:2016) has been prepared by Technical Committee CEN/TC 322 “Equipments for making and shaping of metals - Safety requirements”, 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 October 2016, and conflicting national standards shall be withdrawn at the latest by October 2016.

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 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 an integral part of this document.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (regulators, accident prevention organizations, market surveillance, etc.)

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e.g. for maintenance (small, medium and large enterprises);

— consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This European Standard is a type C standard as stated in EN ISO 12100.

The machines and equipment concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this standard.

This document assumes that

— the converter plant is operated and maintained by adequately trained and competent personnel (see 7.5);

— manual intervention for setting, adjustment and maintenance is accepted as part of the intended use of the plant;

— the plant is used with adequate workplace lighting conforming to EN 12464-1.

This document assumes that the input materials do not contain the following hazardous components:

— radioactive scrap;

— explosives;

— entrapped water/ice;

— closed containers;

— oversized scrap which can lead to water leakage due to collision with lances (see 7.3.5).

The charging should be done to avoid/minimize risk of explosion.

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

1 Scope

This European Standard applies for steel converter and its associated equipment (hereinafter referred to as converter plant) used in the process of carbon or stainless steel making as defined in 3.1 and illustrated in Annex B.

This European Standard deals with significant hazards, hazardous situations and events relevant to the converter plant. It covers the intended use and foreseeable misuse.

This European Standard specifies the safety requirements to be met during transport, assembly, commissioning, operation, maintenance (as described in Clause 5) and decommissioning/disassembly of the equipment.

This European Standard applies to:

Steel converter and its associated equipment for the oxygen steelmaking process

— from hot metal/liquid steel and scrap charging;

— via oxygen refining and stirring;

— temperature measurement and sampling equipment;

— up to tapping including slag retaining device;

— cooling systems;

— maintenance devices (e.g. relining device, tap hole repair device);

— process related interfaces/interactions (e.g. according to design, controls) to

  — media,

  — primary and secondary gas cleaning plant,

  — material feeding systems and ladle alloying systems,

  — transfer cars for steel ladle and slag pot, and

  — charging/tapping equipment, e.g. crane, scrap chute, ladles and slag pots.

This European Standard does not cover safety requirements for:

— usage of process media other than oxygen, nitrogen, argon and compressed air;

— primary and secondary gas cleaning plants;

— measuring devices with radioactive sources;

— material feeding systems and ladle alloying systems;

— transfer cars for steel ladle and slag pot;

— charging/tapping and de-slagging equipment, e.g. crane, scrap chutes, ladles and slag pots;

— auxiliary winches and hoists.

NOTE 1 For variations of converter process where other gases and media, e.g. hydrocarbons, fuels, steam, etc. are used, additional safety measures have to be considered which are not covered in this safety standard

This European Standard is not applicable to converter plant, manufactured before the date of publication of this standard in the Official Journal (OJ).

NOTE 2 In case of revamping, this European Standard can be used as a guideline for the specific parts to be revamped.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

EN 614-2, *Safety of machinery — Ergonomic design principles — Part 2: Interactions between the design of machinery and work tasks*

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

EN 981, *Safety of machinery — System of auditory and visual danger and information signals*

EN 1037, *Safety of machinery — Prevention of unexpected start-up*

EN 1299, *Mechanical vibration and shock — Vibration isolation of machines — Information for the application of source isolation*

EN 12094-1, *Fixed firefighting systems — Components for gas extinguishing systems — Part 1: Requirements and test methods for electrical automatic control and delay devices*

EN 12464-1, *Light and lighting — Lighting of work places — Part 1: Indoor work places*

EN 14253, *Mechanical vibration — Measurement and calculation of occupational exposure to whole-body vibration with reference to health — Practical guidance*

EN 15004-1, *Fixed firefighting systems — Gas extinguishing systems — Part 1: Design, installation and maintenance (ISO 14520-1:2006, modified)*

EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005)*

EN 61310-1, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, acoustic and tactile signals (IEC 61310-1)*

EN 61310-2, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking (IEC 61310-2)*

EN 61310-3, *Safety of machinery — Indication, marking and actuation — Part 3: Requirements for the location and operation of actuators (IEC 61310-3)*