

ILNAS

Institut luxembourgeois de la normalisation
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ILNAS-EN 61029-1:2009

Safety of transportable motor- operated electric tools - Part 1: General requirements

Sécurité des machines-outils électriques
semi-fixes - Partie 1: Règles générales

Sicherheit transportabler
motorbetriebener Elektrowerkzeuge -
Teil 1: Allgemeine Anforderungen

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National Foreword

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English version

**Safety of transportable motor-operated electric tools -
Part 1: General requirements
(IEC 61029-1:1990, modified)**

Sécurité des machines-outils électriques
semi-fixes -
Partie 1: Règles générales
(CEI 61029-1:1990, modifiée)

Sicherheit transportabler motorbetriebener
Elektrowerkzeuge -
Teil 1: Allgemeine Anforderungen
(IEC 61029-1:1990, modifiziert)

This European Standard was approved by CENELEC on 2009-03-01. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of the International Standard IEC 61029-1:1990 with common modifications prepared by CENELEC TC 61F, Hand-held and transportable motor-operated electric tools, was approved by CENELEC as EN 61029-1 on 1998-09-01.

Two amendments to EN 61029-1, that had been submitted to the Unique Acceptance, were approved during 2002 and published as amendments A11:2003 and A12:2003.

Two further draft amendments (prAA and prAB), prepared by the Technical Committee CENELEC TC 61F (transformed into CENELEC TC 116, Safety of hand-held motor-operated electric tools), were submitted to the Unique Acceptance Procedure in August 2007 and March 2008.

The text of EN 61029-1:2000 together with its amendments A11:2003 and A12:2003 and the text of the draft amendments prAA and prAB were approved by CENELEC as a new edition of EN 61029-1 on 2009-03-01.

This European Standard supersedes EN 61029-1:2000 + A11:2003 + A12:2003.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2009-12-29
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) -

In this European Standard the common modifications to the International Standard are indicated by a vertical line in the left margin of the text.

This European Standard has been prepared under a mandate given to CEN/CENELEC by the European Commission and the European Free Trade Association and supports the essential health and safety requirements of the Machinery Directive 2006/42/EC.

Compliance with the relevant clauses of Part 1 together with a relevant Part 2 of this standard provides one means of conforming with the essential health and safety requirements of the Directive concerned.

A relevant Part 2 is one in which the type of tool or an accessory which is to be used with such a tool is within the scope of that Part 2.

When a relevant Part 2 does not exist, Part 1 can help to establish the requirements for the tool, but will not by itself provide a means of conforming with the relevant essential health and safety requirements of the Machinery Directive.

Warning: Other Requirements arising from other EC Directives can be applicable to the products falling within the scope of this standard.

CEN has proposed standards for industrial machines, which may extend to transportable machines. Although CEN and CENELEC have, where appropriate, used common solutions to provide uniform levels of protection, persons using this standard should check the scope of both this and CEN standards to ensure that a correct standard is used. Where necessary normative reference is made to these standards in the relevant Part 2.

This European Standard follows the overall requirements of EN ISO 12100-1 and EN ISO 12100-2.

Subclauses, tables and figures which are prefixed "Z" are additional to those in IEC 61029-1.

NOTE In this standard the following print types are used:

- requirements proper; in roman type
- *test specifications: in italic type;*
- explanatory matter: in smaller roman type.

The contents of the corrigendum of December 2009 have been included in this copy

Introduction

This European Standard is divided into two parts:

Part 1: General requirements, comprising clauses of a general character.

Part 2: Particular requirements, dealing with particular types of tools.

The requirements in a clause in a Part 2 supplement or modify the corresponding clauses in Part 1.

Where the text of Part 2 indicates an "addition" to or a "replacement" of the relevant requirement, test specification or explanation of Part 1, these changes are made to the relevant text of Part 1, which then becomes part of the standard. Where no change is necessary, the words "This clause of Part 1 is applicable" are used in Part 2.

1 Scope

1.1 This standard consists of Part 1 and Part 2 and applies to electric motor-operated or magnetically-driven tools, intended for indoor and for outdoor use, which have all the following characteristics:

- a) easily moved by one person, simple devices to facilitate transportation may be incorporated, e.g. handles, wheels and the like;
- b) used in a safe stationary position with or without fixing, e.g. fast clamping devices, bolting and the like;
- c) used under the control of an operator;
- d) not intended for continuous production or production line use;
- e) intended to be connected to electric supply by a flexible cord and a plug;
- f) maximum rated voltage not exceeding 250 V single-phase, a.c. or d.c., or 440 V three-phase, a.c.;
- g) maximum rated input not exceeding 2500 W, for single-phase a.c. or d.c., and 4000 W for three-phase a.c.

These tools are commonly known as "transportable motor-operated electric tools", hereinafter referred to, in the text, as tools.

Examples of these tools are: Circular saws, band saws, planers, thicknessers, radial arm saws, spindle moulders, fret saws, jig saws, mitre/chop saws, wood lathes, belt sanders, disc sanders, thicknessers-planers, chain mortisers, multipurpose machines, combing machines, metal lathes, bench grinders, bench drilling machines, pipe threaders, pipe benders, pipe saws, key cutting machines, sharpening machines, sheet metal shears, concrete drills, concrete saws, wood shredders, pipe cleaners.

This European Standard applies also to transportable motor operated tools intended to be connected to a water supply such as mains, tank or vat.

1.2 This standard does not apply to

- electric motor-operated household and similar electrical appliances according to EN 60335-1;
- hand-held electric motor-operated tools according to EN 50144-1 or EN 60745-1;
- small low voltage transformer operated bench tools intended for model making;
- machines for preparing or processing food;
- tools intended to be used in the presence of explosive atmosphere (dust, vapour or gas);
- tools intended to be used with cosmetics or pharmaceutical products;
- auxiliary equipment such as external cooling and dust extraction/collection systems.

2 Definitions

For the purpose of this European Standard, the following definitions apply.

Where the terms "voltage" and "current" are used, they imply the r.m.s. value unless otherwise specified.

2.1

rated voltage

voltage (for three-phase supply, the voltage between phases) assigned to the tool by the manufacturer

2.2

rated voltage range

voltage range assigned to the tool by the manufacturer, expressed by its lower and upper limits

2.3

working voltage

maximum voltage to which the part under consideration can be subjected when the tool is operating at its rated voltage and under normal conditions of use.

Normal conditions of use include changes of voltage within the tool imposed by likely occurrences such as the operation of a circuit breaker or the failure of a lamp.

When determining the working voltage, the effect of possible transient voltages on the supply mains is ignored

2.4

rated input

input in watts at rated voltage or the mean of the rated voltage range assigned to the tool by the manufacturer

2.5

rated current

current at rated voltage or at the mean of the rated voltage range assigned to the tool by the manufacturer

NOTE If no current is assigned to the tool, the rated current for the purpose of this standard is determined by calculation from the rated input and the rated voltage and/or by measuring the current when the tool is operating at rated voltage under normal load and at normal operating temperature.

2.6

rated frequency

frequency assigned to the tool by the manufacturer

2.7

rated frequency range

frequency range assigned to the tool by the manufacturer, expressed by its lower and upper limits

2.8

rated no-load speed

no-load speed at rated voltage or at the upper limit of the rated voltage range, assigned to the tool by the manufacturer

2.9

detachable flexible cord

flexible cord, for supply or other purposes, intended to be connected to the tool by means of a suitable appliance coupler

NOTE Cord sets are covered by EN 60799; appliance couplers for household and similar general purposes by EN 60320-1.

2.10

power supply cord

flexible cord, for supply purposes, fixed to, or assembled with, the tool according to one of the following methods:

- **type X attachment:** Method of attachment such that the flexible cord can easily be replaced, without the aid of special purpose tools, by a flexible cord not requiring any special preparation;
- **type M attachment:** Method of attachment such that the flexible cable or cord can easily be replaced, without the aid of special purpose tools, by a special cord with, for example, a moulded-on cord or crimped terminations

2.11

basic insulation

insulation applied to live parts to provide basic protection against electric shock

NOTE Basic insulation does not necessarily include insulation used exclusively for functional purposes.

2.12

supplementary insulation

independent insulation applied in addition to the basic insulation, in order to ensure protection against electric shock in the event of a failure of the basic insulation

2.13

double insulation

insulation comprising both basic insulation and supplementary insulation

2.14

reinforced insulation

single insulation system applied to live parts, which provides a degree of protection against electric shock equivalent to double insulation under the conditions specified in this standard.

"Single insulation system" does not imply that the insulation must be one homogeneous piece. It may comprise several layers which cannot be tested singly as supplementary or basic insulation

2.15

class I tool

tool in which protection against electric shock does not rely on basic insulation only, but which includes an additional safety precaution in such a way that means are provided for the connection of accessible conductive parts to the protective (earthing) conductor in the fixed wiring of the installation in such a way that accessible conductive parts cannot become live in the event of a failure of the basic insulation.

NOTE Class I tools may have parts with double insulation or reinforced insulation or parts operating at safety extra-low voltage.

For tools intended for use with a flexible cord, the provision includes a protective conductor as part of the flexible cord

2.16

class II tool

tool in which protection against electric shock does not rely on basic insulation only, but in which additional safety precautions, such as double insulation or reinforced insulation, are provided, there being no provision for protective earthing or reliance upon installation conditions.

Such a tool may be of one of the following types:

- a) a tool having a durable and substantially continuous enclosure of insulating material which envelopes all metal parts, with the exception of small parts, such as nameplates, screws and rivets, which are isolated from live parts by insulation at least equivalent to reinforced insulation; such a tool is called an insulation-encased class II tool;
- b) a tool having a substantially continuous metal enclosure, in which double insulation is used throughout, except for those parts where reinforced insulation is used, because the application of double insulation is manifestly impracticable; such a tool is called a metal-encased class II tool;
- c) a tool which is a combination of types a) and b)

2.17**class III tool**

tool in which protection against electric shock relies on supply at safety extra-low voltage (SELV) and in which voltages higher than those of SELV are not generated

2.18**extra-low voltage**

voltage supplied from a source within the tool and, when the tool is operated at its rated voltage, not exceeding 42 V between conductors and between conductors and earth or, for three-phase supply, not exceeding 24 V between conductors and neutral, the extra-low voltage circuit being separated from other circuits by basic insulation only

2.19**safety extra-low voltage (SELV)**

nominal voltage not exceeding 42 V between conductors and between conductors and earth or, for three-phase supply, not exceeding 24 V between conductors and neutral, the no-load voltage not exceeding 50 V and 29 V respectively.

NOTE 1 When SELV is obtained from the supply mains, it must be through a safety isolating transformer or a convertor with separate windings.

NOTE 2 The voltage limits specified are based on the assumption that the safety isolating transformer is operated at its rated supply voltage.

Limitations to voltages lower than 50 V a.c. should be specified in the particular standards, especially when direct contact with live parts is involved.

Separation from the mains by protective impedance is excluded

2.20**safety isolating transformer**

transformer the input winding of which is electrically separated from the output windings by an insulation at least equivalent to double insulation or reinforced insulation, and which is designed to supply a distribution circuit, a tool or other equipment at safety extra-low voltage

2.21**normal load**

load to be applied to a tool so that the stress imposed corresponds to that occurring under normal conditions of use, any marking of short-time or intermittent operation being observed and, unless otherwise specified, heating elements, if any, being operated as in normal use

NOTE The normal load is based on the rated voltage or on the upper limit of the rated voltage range.

2.22**rated operating time**

operating time assigned to the tool by the manufacturer

2.23**continuous operation**

operation under normal load for an unlimited period

2.24**short-time operation**

operation under normal load for a specified period, starting from cold, the intervals between each period of operation being sufficient to allow the tool to cool down approximately to room temperature

2.25**intermittent operation**

operation in a series of specified identical cycles, each cycle being composed of a period of operation under normal load followed by a rest period with the tool running idle or switched off

2.26**non-detachable part**

part which can only be removed with the aid of a tool.

Where expressions such as “with the aid of a tool” occur the word tool means a hand tool, for example screwdrivers, which may be used to operate a screw or other means of fixing

2.27**detachable part**

part which can be removed without the aid of a tool

2.28**thermal cut-out**

device which, during abnormal operation, limits the temperature of a tool, or of parts of it, by automatically opening the circuit or by reducing the current, and which is so constructed that its setting cannot be altered by the user

2.29**non-self-resetting thermal cut-out**

thermal cut-out which requires resetting by hand, or replacement of a part, in order to restore the current

2.30**creepage distance**

shortest path between two conductive parts, or between a conductive part and the bounding surface of the tool, measured along the surface of the insulating material

2.31**clearance**

shortest distance between two conductive parts, or between a conductive part and the bounding surface of the tool, measured through air

NOTE The bounding surface of the tool is the outer surface of the enclosure, considered as though metal foil were pressed into contact with accessible surfaces of insulating material.

2.32**all-pole disconnection**

for single-phase a.c. tools and for d.c. tools, disconnection of both supply conductors by a single switching action or, for tools to be connected to more than two supply conductors, disconnection of all supply conductors, except the earthed (grounded) conductor, by a single switching action

NOTE The protective earthing conductor is not a supply conductor.

2.33**accessible part or accessible surface**

part or surface which can be touched by means of the standard test finger shown in Figure 1.

For accessible metal parts, it includes any other metal part which is in electrical contact with such parts.

The term “body” includes all accessible metal parts, shafts of handles, knobs, grips and the like and metal foil in contact with all surfaces of insulating material; it does not include inaccessible metal parts

2.34**power circuit**

circuit which contains electrical equipment intended for generation, transformation, distribution or consumption of electric energy