BRITISH STANDARD

BS EN 414:2000

# Safety of machinery — Rules for the drafting and presentation of safety standards

The European Standard EN 414:2000 has the status of a British Standard

ICS 13.110

# National foreword

This British Standard is the official English language version of EN 414:2000. It supersedes BS EN 414:1992 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MCE/3, Safeguarding of machinery, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

**Cross-references**

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled "International Standards Correspondence Index", or by using the "Find" facility of the BSI Standards Electronic Catalogue.

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**Summary of pages**

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 30, an inside back cover and a back cover.

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This British Standard, having been prepared under the direction of the Engineering Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 July 2000



**ISBN 0 580 32963 1**

**Amendments issued since publication**

| Amd. No. | Date | Comments |
|---|---|---|
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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 414

April 2000

ICS 01.120; 13.110

Supersedes EN 414:1992

English version

# Safety of machinery - Rules for the drafting and presentation of safety standards

Sécurité des machines - Règles pour l'élaboration et la présentation des normes de sécurité

Sicherheit von Maschinen - Regeln für die Abfassung und Gestaltung von Sicherheitsnormen

This European Standard was approved by CEN on 16 July 1999.

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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

**Central Secretariat: rue de Stassart, 36 B-1050 Brussels**



Ref. No. EN 414:2000 E

# Contents

# Foreword

This European Standard has been prepared by Technical Committee CEN/TC 114, Safety of machinery, the secretariat of which is held by DIN.

This European Standard replaces EN 414:1992.

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 2000, and conflicting national standards shall be withdrawn at the latest by October 2000.

This document is intended for use by Technical Committees writing type B and type C standards (as defined in 3.2 and 3.3).

It is the rule for the presentation of standards requested by CEN/BT in the programme mandated from the European Commission in support of the “Machinery Directive” (98/37/EC).

The revision of EN 414 takes into account relevant resolutions and guidance of CEN/BT, CEN/BTS 2 and the result of the CEN-Seminar on safety of machinery held on 8 and 9 December 1994. It is also the result of feed back from TCs and WGs using the first edition of EN 414 when preparing B and C type standards.

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

# 0 Introduction

CEN/CENELEC have embarked on a programme of work to produce a series of related machinery safety standards as part of the European process for harmonization. It has been necessary to propose rules for the preparation, drafting and presentation of these safety standards to supplement the CEN/CENELEC Internal Regulations – Part 3 which set out general principles and requirements for all European standards. This document both makes use of and refers to the principles and concepts established in EN 292. In addition, the draft revision of ISO/IEC Guide 51 has been taken into account as far as possible at the time of drafting.

## 1 Scope

This document specifies requirements for the drafting and presentation of European machinery safety standards and standards for safety components, primarily to achieve consistency and acceptable quality, throughout the programme, of the various standards to be prepared (also to meet the requirements of the Mandate from the European Commission).

It also gives requirements on the criteria for the selection of new work items and for procedures to prepare and produce standards in an efficient and effective way.

This document gives requirements which are supplementary to the CEN/CENELEC Internal Regulations – Part 3 when this is necessary because of the special requirements of machinery safety standards and standards for safety components.

This document applies primarily to the drafting of type C standards. It may also apply to type B standards but the foreseeable variation in the format of these standards prevents general application. When requirements specifically apply to type B standards, this is indicated.

This document applies to type B and type C safety standards to be prepared, or in the course of preparation. It does not apply to those standards which have complied with the 1992 edition of this document and have reached stage 41 before issue of this document.

## 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.

EN 292-1:1991, *Safety of machinery – Basic concepts, general principles for design – Part 1: Basic terminology, methodology*

EN 292-2:1991, *Safety of machinery – Basic concepts, general principles for design – Part 2: Technical principles and specifications*

EN 292-2:1991/A1:1995, *Safety of machinery – Basic concepts, general principles for design – Part 2: Technical principles and specifications*

EN 1050:1996, *Safety of machinery – Principles for risk assessment*

EN 1070, *Safety of machinery – Terminology*

CEN/CENELEC Internal Regulations – Part 3:1999, *Rules for the drafting and presentation of European Standards (PNE-Rules) (ISO/IEC Directives – Part 3:1997, modified)*

## 3 Terms and definitions

For the purposes of this document, definitions given in EN 1070 apply.

Additional definitions specifically needed for this document are added below:

**3.1**
**type A standard**
**(Basic safety standard)**
Standard giving basic concepts, principles for design, and general aspects that can be applied to all machinery.

**3.2**
**type B standard**
**(Generic safety standard)**
Standard dealing with one safety aspect or one type of safeguard that can be used across a wide range of machinery:

— type B1 standard on particular safety aspects (e.g. safety distances, surface temperature, noise);

— type B2 standard on safeguards (e.g. two-hand control devices, interlocking devices, pressure sensitive devices, guards).

**3.3**
**type C standard**
**(Machine safety standard)**
Standard dealing with detailed safety requirements for a particular machine or group of machines.

NOTE The term “group of machines” means machines which have similar intended use and similar hazards, hazardous situations and events.

**3.4**
**relevant hazard**
Hazard which is identified as being present at or associated with the machine as the result of one step of the process described in EN 1050.

**3.5**
**significant hazard**
Hazard which has been identified as relevant and which requires specific action by the designer or manufacturer to eliminate or to reduce the risk according to the risk assessment (see Figure 1).

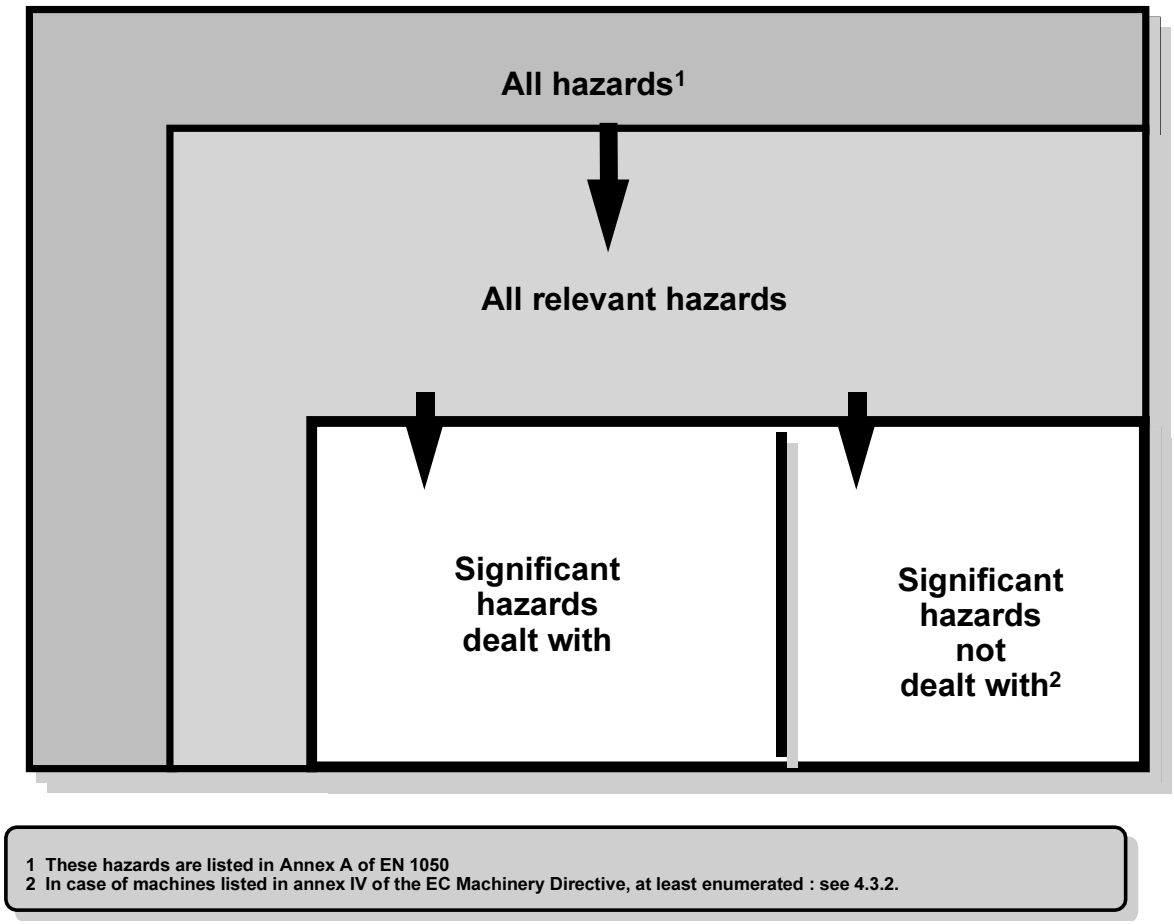


**Figure 1 — Dealing with hazards of a particular machine or machine group**

**3.6**
**added value**
More detailed description or specification of a provision than in existing documents (for example, a description of a specific protective measure may include reference to appropriate type B and type C standards). This describes the state of the art for Essential Safety Requirements as defined in EN 292-2:1991/A1:1995, annex A ("Annex I of the EC Machinery Directive").

NOTE The provisions of a standard are aimed at reflecting the state of the art at a given time, for a given product.

The added value results from applying to the product the provisions for design on which, when the standard was being prepared, the consensus of all interested parties has been reached. It rises along with technical progress.

## 4 General principles

### 4.1 All safety standards

The Part 3 of the CEN/CENELEC Internal Regulations, EN 292 and EN 1050 shall be used in conjunction with the present standard when preparing a new safety standard, or when revising an existing safety standard.

Safety standards shall not contradict the basic concepts, principles for design and general aspects stated in type A standards. The overall purpose of type A standards is to provide manufacturers, designers, etc. with the strategy or framework necessary to achieve conformity with the European Legislation. An essential element in this process is an understanding of the underlying legal framework, which is expressed in the essential safety requirements of the EC Machinery Directive.

In general, standards shall not repeat or paraphrase the text of other reference standards (see CEN/CENELEC Internal Regulations – Part 3:1999, 6.6.6.1) but, for better understanding of safety standards, it is acceptable to repeat a basic definition or concept, the scope of the standard, and/or basic requirement given in EN 292.

## 4.2 Type B standards

They shall:

a) deal either with one safety aspect (type B1 standard) or a safeguard (type B2 standard);

b) concerning type B1 standards, define the basic principles of the safety topic and define by data and/or methodology how these can be applied to type C standards. Where relevant the means of verification shall also be included;

c) concerning type B2 standards, give the performance requirements for the design and construction of the safeguard together with the means of verification;

d) establish, as necessary and practicable, more than one category to allow for different applications and give guidance.

NOTE Reasons for categories to be established are e.g.:

— the severity of the possible harm from the considered hazard;

— the frequency and duration of the hazardous situation;

— the probability of occurrence of a hazardous event;

— the possibility to avoid or limit the harm.

## 4.3 Type C standards

### 4.3.1 General

Type C standards should deal with all the hazards significant to one type of machine or one group of machines in one standard:

a) by reference to relevant and applicable type B standards and categories (see 6.8.3);

   Any type B standard may be used as a reference standard if it is available as prEN when finalizing a type C standard on the condition that the reference is dated.

   When type B standards give a choice between various protective measures (e.g. EN 294 shows Table 1 and Table 2 for reach over protective structure), the type C standard shall state which protective measure(s) should be used.

b) by reference to other standards (e.g. type C standard) where such significant hazards are adequately dealt with (see 4.4);

c) by specifying safety requirements in the standard, when reference to other standards is not possible or not sufficient and risk assessment and priorities show this is required (see 5.4 to 5.6);

d) deal as far as possible with objectives rather than design details to minimize restrictions on design.

### 4.3.2 Standards related to Annex IV of the Machinery Directive

A type C standard corresponding to machinery listed in “annex IV of the Machinery Directive” shall deal with or at least enumerate all its significant hazards, hazardous situations and hazardous events in one standard.

### 4.3.3 Required provisions

It is a basic principle that type C standards shall contain sufficient provisions to enable designers and manufacturers to meet the essential requirements of the Machinery Directive. In doing so the standards also meet the conditions of the relevant EC/EFTA mandates. The standards shall therefore clearly establish the following:

— the scope (see 5.3 and 6.4);

— all significant hazards (see 6.7);

— the provisions with added value (see 4.3.4, 5.7 and 6.8);

— the means of verifying the protective measures(see 5.8 and 6.9).

This means that wherever possible a type C standard should deal with all significant hazards, hazardous situations and events identified as arising from the use of the machine. The exception to this comprehensive treatment of significant hazards, hazardous situations and events is justified where a type C standard deals with one or more hazard(s) that are sufficiently important to require special treatment. Where a type C standard deals with specific hazard(s) this should be indicated clearly in the title and the scope (e.g. “Safety of Widget machines — Measurement of noise”). These standards may be produced as a series of parts forming a complete standard or as several discrete standards that could be combined at a subsequent revision.

Where it is decided not to deal with all significant hazards, hazardous situations and events (e.g. by lack of knowledge because this will cause an unacceptable delay in the drafting of the standard) this shall be indicated clearly in the scope (see 6.4.2.2).

A special case requiring careful consideration are those type C standards dealing with “common requirements”. Common requirements are defined as those provisions adding value to an essential requirement that can be used to minimize or eliminate a risk that occurs across the range of defined machines and that can be applied to all or most of these machines. Any machines not covered by particular aspect of a common requirement should be identified as an exclusion. Too many exclusions from any common requirement would indicate that it is not common. The standard should not contain unspecific general principles.

### 4.3.4 Provision with added value

Added value will normally consist of a description of specific protective measure(s) dealing with the significant hazard, hazardous situation and event. However, this may also include reference to type B standards or to other reference standards (EN, ISO or IEC) (see 6.8 of this document and CEN/CENELEC Internal Regulations – Part 3:1999, 6.2.2, 6.6.6.2 and 6.6.6.5).

NOTE In the absence of a ratified type B standard, common requirement standard or other reference standard, the following options are available:

— repeat in full the relevant sections of the draft type B standard, common requirement standard, or any other suitable technical document.

— refer to the relevant section of a prEN identified by number and date of issue.

— refer to a technical specification produced by a professional organization (such as FEM[1)]). This can be done following the specific CEN policy on normative references.

— seek help from the relevant type B standard WG/TC.

— provide self data/specification.

Dealing with a significant hazard by a direct reference to the relevant clause in EN 292 is only acceptable:

— where the relevant clause of EN 292 gives sufficient added value (particularly clause 5 “information for use”);

— if the drafting of provisions would cause an unacceptable delay in the preparation of the standard.

However, in this case:

— it shall be stated in the standard that the hazard concerned is not adequately dealt with in the current version of the standard;

— the TC shall make any effort to complete as soon as possible the drafting of the needed provisions.

In exceptional circumstances, where there is nothing to add because the essential requirement says all that is required to be said, it is permissible to refer to the essential requirement by quoting the reference in EN 292-2:1991/A1:1995, annex A.

This is also permissible for machinery according to Annex IV of the Machinery Directive where the standard cannot give a provision with added value but the hazard has been identified as significant (see 4.3.2).

## 4.4 Need for a type B standard

The creation of a type B standard (see 6.11.1) shall be considered when requirements appropriate to more than one type of machine or one group of machines have been identified.

## 4.5 Deviation in a type C standard

When a type C standard deviates from one or several aspects or provisions dealt with by a type B, the existing type C standard takes precedence over the type B standard.

The reason for deviation should be put in the standardization-file or, in case of comments at prEN stage in the CRM (Comments Resolution Meeting) -file.

1) Fédération Européenne de la Manutention.

# 5 Preliminary work for drafting

## 5.1 General

Before a safety standard on machinery is drafted, the need for the standard shall have been established, using the criteria given in 5.2.

NOTE The result of the procedure may provide information which can be used in the scope (see 5.3).

Then, the procedure given in 5.3 to 5.8 shall be carried out in the order indicated, to provide information to allow an appropriate standard to be drafted.

## 5.2 Determination of the necessity and/or priority for standardization

The need for standardization and its priority shall be determined from the answers to the questions contained in 5.2a) to 5.2h).

a) Is there a demand for European standards arising from regulatory bodies or other interested bodies such as professional bodies, employee or employers associations, trade unions, accident prevention organizations, consumer organizations, standardization bodies?

b) Is there a need for a standard (e.g. terminology) to support other safety standards?

c) Are there significant hazards, hazardous situations and events generating risk to the safety or health of persons?

d) Is there or will there be in the foreseeable future a sufficient number of related machines or devices to justify the production of a standard?

e) Are there national standards/specifications giving specific requirements, either directly or by reference to another document, which can be barriers to internal European trade?

f) Are there proven professional, national or international documents or other documents available so as to give reasonable expectation for positive and rapid results?

g) Is there sufficient expertise, collective knowledge and experience for standardization?

h) Is there sufficient availability of experts, project leader and support (secretariat, financial resources)?

## 5.3 Definition of the scope

The precise limits of the machine or group of machines to be standardized shall be established and include the following (see EN 292-1:1991, 5.1):

a) definition of the machine or group of similar machines;

b) determination of the intended use of the machine (see EN 292-1:1991, 3.12);

c) determination of the space limits (see EN 292-1:1991, 5.1);

d) determination of the foreseeable “life limit”, when applicable;

e) definition of the field of application;

f) indication of machines and/or hazards not dealt with.

## 5.4 Identification of hazards, hazardous situations and hazardous events (see 6.7)

Considering the list contained in EN 1050:1996, annex A as guidance:

a) identify the hazards that the machine is likely to generate (see EN 292-1:1991, clause 4);

b) identify the hazardous situations for each hazard, taking into account the different machine operating modes and the different intervention procedures for the operators;

c) identify the hazardous events which can lead to harm.

## 5.5 Assessment of the risk(s) caused by hazard(s) (see EN 292-1:1991, clause 6 or EN 1050)

### 5.5.1 Estimation of the risk

a) estimate the severity of the possible harm for the considered hazard (see EN 292–1:1991, 6.2);

b) estimate the probability of the occurrence of that harm (see EN 292-1:1991, 6.2) which is a function of:

- the exposure of persons to the hazard (e.g. frequency, duration);
- the probability of occurrence of a hazardous event;
- the technical and human possibilities to avoid or limit the harm.

### 5.5.2 Evaluation of the risk

After risk estimation, risk evaluation shall be carried out to determine if risk reduction is required or whether safety has been achieved (see EN 1050:1996, clause 8).

## 5.6 Definition of the safety objectives and determination of the hazards, hazardous situations and events for which safety requirements and/or protective measures are needed (see EN 292-1:1991, Table 2)

Using the result of the procedure given in 5.4 and 5.5:

a) define safety objectives;

b) determine the significant hazards, hazardous situations and events for which it is sufficient to refer to other standards for safety requirements and/or protective measures to meet these safety objectives;

c) determine which significant hazards, hazardous situations and events need specific safety requirements and/or protective measures in the standard to meet these safety objectives.

### 5.7 Determination of safety requirements and/or protective measures to remove the hazard and/or limit the risk (see 6.8.2)

It shall be done in the following order:

a) by inherently safe design (see EN 292-2:1991, clause 3);

b) by safeguarding (see EN 292-2:1991, clause 4);

c) by information for use (see EN 292-2:1991, clause 5);

NOTE The principle is to remove or reduce the risk as much as possible by inherently safe design without relying on guards or other methods of safeguarding. If this is not possible, other means should be defined to ensure safety, using the three-stage method given in EN 292-1:1991, Table 2. The various phases of the "life" of the machine should be taken into consideration as defined in EN 292-1:1991, 3.11.

### 5.8 Verification of compliance with the safety requirements and/or protective measures identified in 5.6 and 5.7 (see 6.9)

For each safety requirement and/or protective measure, except if it is self-evident, a method of verification shall be established as necessary and possible:

a) by testing (e.g. functional test of a two-hand control, strength test of a guard, stability test);

b) by measurement (e.g. measurement of noise emission);

c) by calculation (e.g. position of the centre of gravity);

d) by any other method of verification, if testing and calculation are not adequate (e.g. by visual inspection).

It shall be determined:

— whether adequate test/calculating methods (or other methods of verification) are available in another standard; and

— if it is necessary to draft such methods.

## 6 Format of a safety standard

### 6.1 General

The format of a safety standard shall comply with the CEN/CENELEC Internal Regulations – Part 3:1999 (see annex B and for information model-format given in annex C) and the specific provisions for safety standards on machinery contained in 6.2 to 6.11.

NOTE A standard need not contain all the normative technical elements shown in annex B and it may contain normative technical elements other than those shown. Both the nature of the normative technical elements and their sequence are determined by the needs of the standard being prepared. It is generally desirable to include any element (e.g. diagrams, tables) which may facilitate the understanding of the standard.

A model format in annex C is to help standard makers and provide for a consistent presentation for all type C standards according to clause 6.

When a normative reference e.g. for a ISO/IEC standard is required, the standard shall:

a) either reproduce the text of the ISO/IEC standard, in the body of the EN or in a normative annex, and indicate clearly its origin by “(extract from ISO/IEC ...)”;

b) or make reference to a definite clause(s) or subclause(s) of the ISO/IEC standard (without reproducing it);

c) or make reference to the whole ISO/IEC standard, if the whole ISO/IEC standard applies (e.g. test methods).

Before in a CEN/CENELEC standard a reference is made to an ISO/IEC standard it has to be identified, if this ISO/IEC standard contains references which will lead to contradictions with the European Regulations.

NOTE Normative reference in European standard to documents other than CEN/CENELEC or ISO/IEC should be avoided. If this is necessary, specific policy needs to be followed (see 4.3.4).

## 6.2 Clause “Foreword”

The foreword is a compulsory element unnumbered and shall comply with the CEN/CENELEC Internal Regulations – Part 3:1999, 6.1.3, and be unnumbered.

As a minimum requirement, the following statement shall be inserted in each mandated type B and C standard:

> *“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 EC Directive(s).*
>
> *For relationship with EC Directives, see informative Annex Z [appropriate letter], which is an integral part of this document.”*

## 6.3 Clause "Introduction"

**6.3.1** Although the Introduction is optional according to the CEN/CENELEC Internal Regulations – Part 3, it is a compulsory element in machinery safety standards and shall be numbered clause 0. This clause shall comply with the CEN/CENELEC Internal Regulations – Part 3:1999, 6.1.4. When a subject of a type B standard is covered by EN 292, reference shall be made to the relevant clause of EN 292.

**6.3.2** As a minimum requirement, the following statement shall be inserted in each type C standard:

> *“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.*
>
> *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.”*

**6.3.3** As a minimum requirement, the following statement shall be inserted in each type B standard:

*"This document is a type B standard as stated in EN 1070.*

*The provisions of this document may be supplemented or modified by a type C standard.*

*NOTE For machines which are covered by the scope of a type C standard and which have been designed and built according to the provisions of that standard, the provisions of that type C standard take precedence over the provisions of this type B standard."*

## 6.4 Clause "Scope"

**6.4.1** The scope, including field of application, is a compulsory element and shall comply with the CEN/CENELEC Internal Regulations – Part 3:1999, 6.2.1. It shall be drafted using the result of the procedure described in 5.3. It shall be numbered clause 1.

**6.4.2** The scope shall indicate when applicable:

**6.4.2.1** The limits of the machine, preferably by physical characteristics and taking into account aspects such as intended use (see EN 292-1:1991, 3.12 and 5.1).

**6.4.2.2** Whether protective measures dealt with in the standard account for all or only some of the hazards. This applies to hazards arising during the various phases of the "life" of the machine as described in EN 292-1:1991, 3.11.

The significant hazards dealt with in the standard (see 3.5 and Figure 1) shall be mentioned as appropriate, either:

a) by listing them in the scope, when there are only a few of them; or

b) by a statement that they are dealt with and referring to a separate clause (see 6.7). In this case, the significant hazards not dealt with shall be listed in the scope.

**6.4.2.3** Whether additional designed-in protective measures are taken into consideration for certain type of machines (e.g. hygiene requirements for food-processing machinery).

**6.4.3** The scope shall indicate that the standard is not applicable to machinery or safety components which are manufactured before the date of publication of the standard by CEN.

NOTE In case of revision of the safety standard, the standard makers should consider the transition period of application of previous and the revised edition.

As a minimum requirement, the following statement shall be inserted in the scope:

*"This document is not applicable to [specify the machinery or safety components] which are manufactured before the date of publication of this document by CEN."*

## 6.5 Clause "Normative references"

This clause is a compulsory element and shall comply with the CEN/CENELEC Internal Regulations – Part 3:1999, 6.2.2 and be numbered clause 2.

Only documents (standards) to which normative reference is made in the text shall be listed in this clause. Therefore, at least the following references shall always appear:

> *"EN 292-1, Safety of machinery – Basic concepts, general principles for design – Part 1: Basic terminology, methodology*
>
> *EN 292-2, Safety of machinery – Basic concepts, general principles for design – Part 2:Technical principles and specifications*
>
> *EN 1070, Safety of machinery – Terminology"*

Do not list EN 414 as a normative reference (although it is used for the drafting and presentation).

Reference to ISO/IEC standards shall be in accordance with the CEN/CENELEC Internal Regulations – Part 3:1999, 6.6.6.5 and shall be dated (see memorandum CEN/CR 1100 for more details).

When reference is required only for information, it shall be introduced by "see also EN ..." and the referenced standards shall appear after the last annex and be entitled "Bibliography" (see 6.11.2) but not in this clause.

## 6.6 Clause "Terms and definitions, symbols and abbreviated terms"

This clause is a compulsory element. It shall comply with the CEN/CENELEC Internal Regulations – Part 3:1999, 6.3.1, 6.3.2 and annex C, and be numbered clause 3.

**6.6.1** As a minimum requirement, the following statement shall be inserted in each type B and C standard:

> *"For the purposes of this document, the definitions given in EN 1070 apply."*

**6.6.2** Where a safety-related term or definition is required which is not in EN 1070, or in another European, ISO or IEC standard, or if it is necessary to improve or restrict an existing definition, a new definition shall be established.

Definitions shall be prepared at an early stage and shall be sent to CEN/TC 114 "Safety of machinery" as soon as possible. CEN/TC 114 shall also be informed of any subsequent change.

NOTE 1 CEN/TC 114 is responsible for ensuring that, as far as possible, the definitions of terms used in more than one standard are consistent. Therefore it may be necessary for proposed definitions to be modified and TC 114 will co-ordinate this.

NOTE 2 The association of the word "safety" with the name of a component or a device should be avoided. A recommended approach is to replace, where possible, the word "safety" by an indication of the objective or characteristic (for example "synchronous two-hand controls" can be used instead of "safety two-hand controls").

**6.6.3** When there is a need to define symbols or abbreviations (especially for test methods), this optional element shall comply with the CEN/CENELEC Internal Regulations – Part 3:1999, 6.3.2.

## 6.7 Clause "List of significant hazards"

This clause is required when 6.4.2.2b) applies.

This clause shall present, for defined danger zones, the significant hazard(s), the significant hazardous situation(s) [circumstances that lead to expose a person to this(these) hazard(s)], the significant hazardous event(s) and may refer to the particular subclause of "Safety requirements and/or protective measures" in which the hazard, hazardous situation or event is dealt with.

The significant hazards, hazardous situations and hazardous events should preferably be listed in the order shown in EN 1050:1996, annex A.

NOTE 1 Particular attention should be paid to the fact that this list of EN 1050:1996, annex A is not exhaustive, especially concerning the hazardous situations.

NOTE 2 Type C standard makers have tendency for reproducing a list of all possible hazards, hazardous situations and events described in EN 1050 and mark those dealt with and those not dealt with. This is not required by this document: in fact this document requires to list in this clause the significant hazards, hazardous situations and events dealt with, assessed during risk assessment, which considers all the possible hazards, hazardous situations and events.

See Figure 1 for an illustration of the difference between “relevant hazard”, “significant hazard” and “hazard”.

If added values are not given in clause “Safety requirements and/or protective measures” or in clause “Information for use” (because of the possible reasons explained in 4.3), the standard does not sufficiently deal with that significant hazard.

For practical reasons, in certain cases, it is possible to combine clauses “List of significant hazards, hazardous situations and events” and “Safety requirements and/or protective measures” in a format which gives, for each hazard, the hazardous situation and the corresponding safety requirement(s) and/or protective measures(s).

## 6.8 Clause “Safety requirements and/or protective measures”

This clause is a compulsory element. It shall comply with the CEN/CENELEC Internal Regulations – Part 3:1999, 6.3.3 and be numbered.

As a minimum requirement, the following statement shall be inserted in each type C standard:

> *“Machinery shall comply with the safety requirements and/or protective measures of this clause. In addition, the machine shall be designed according to the principles of EN 292 for hazards relevant but not significant, which are not dealt with by this document (e.g. sharp edges).”*

**6.8.1** Each standard shall contain a clause stating the safety requirements and/or protective measures to be met to reduce the effect of all hazards determined in accordance with 5.6b) and 5.6c) and to be mentioned in the standard. The safety requirements and protective measures shall be defined in accordance with 5.7.

Protective measures to avoid or minimize harm shall be defined, directly or by reference to another standard and/or to clause “information for use”, for all the significant hazards dealt with.

**6.8.2** To minimize restraint on design, safety standards should specify requirements in terms of the objective to be met and then define the means for achieving it, e.g. by giving examples or defining test specifications. The safety requirements and/or protective measures shall be sufficiently precise to allow verifications.

NOTE 1 In many type C standards, it may be necessary to define acceptable means of achieving the objective, such as particular types of protective measures, etc., to ensure that the safety requirements and/or protective measures will be adequate or to give examples of well-known and proven solutions for reaching and maintaining the adequate safety.

NOTE 2 More than one solution to reduce the risk may be given if the objective is reached in a similar manner.

NOTE 3 Measures in terms of objectives, and measures defined by data, limits, results and provisions giving the practical means for achieving the objectives may be given together or in separate clauses.

The safety requirements and/or protective measures specified shall be expressed in terms of verifiable performance with regard to safety, using performance characteristics (parameters) together with their values, rather than merely descriptive characteristics.

**6.8.3** Where requirements contained in relevant type A or B standards are used, reference shall be made to them in accordance with 4.3.

Where type A or type B standards are not yet available and general requirements (valid for several types of machines) are included in a type C standard, these provisions shall be included preferably in normative annexes of the type C standard (see annex A).

When measures given in another standard are used, specific reference shall be made to it in this clause.

**6.8.4** Type B standards shall give added value (more specific and/or more detailed provisions) to the essential requirements of the EC Directives and/or type A standards and type C standards shall give added value to the provisions expressed in type A and type B standards and, thus, to the essential requirements. See 4.3 for more details on "added values".

**6.8.5** Protective measures shall be laid down in precise and clearly understandable terms so that they:

a) ensure that the objective is met;

b) are technically correct and precise;

c) are unequivocal, whether a measure is optional or mandatory, using verbal forms according to the CEN/CENELEC Internal Regulations – Part 3:1999, annex E;

d) can be verified in accordance with 5.8 and 6.9.

NOTE Subjective terms or words should not be used unless they are defined in the standard or they are consistent with the method of verification.

## 6.9 Clause “Verification of the safety requirements and/or protective measures”

**6.9.1** Each standard shall contain, either in a separate clause or with the relevant measures, the method to be used to verify conformity with the measures given in accordance with 6.8, unless the methods for verification are self-evident.

The standard shall not contain any instruction on **who** has to carry out the verification.

The method of verification shall be related to the nature of the safety requirements and/or protective measures, and shall follow the procedure given in 5.8.

If the methods of verification are to be put in a separate clause, the order of presentation should be the same as the order of the safety requirements and/or protective measures.

Priority should be given to the use of existing and standardized methods of verification (in EN or ISO/IEC standards), by reference.

When drafting a new method of verification which is not specific to the machine itself (e.g. measurement of dust suction efficiency in a standard about belt sanding machines), this method shall appear either in a normative annex (see 6.11.1), or in a separate part of the standard, or even in a separate standard so that reference can be made to it in another safety standard.

**6.9.2** The wording of methods of verification shall be sufficiently precise to ensure reproducible results. The structure relating to test methods given in the CEN/CENELEC Internal Regulations – Part 3:1999, 6.3.5 and for sampling in the CEN/CENELEC Internal Regulations – Part 3:1999, 6.3.4 shall be followed. If there are several test methods for one safety requirement and/or protective measure, the test method shall be identified.

NOTE 1 Calculation methods may be appropriate, for example when only destructive testing is possible and for special types of safety requirements and/or protective measures (e.g. those concerning stability).

NOTE 2 Where testing and calculation methods are impracticable for technical reasons or would cause excessive expenditure in relation to the reduction in risk which would be achieved, other methods may be more appropriate. Verification may be by inspection, or by examination when this is sufficiently precise (e.g. inspection to check the colour of warning signs and marking).

## 6.10 Clause “Information for use”

### 6.10.1 General

This clause is a compulsory element and shall be numbered. The standard shall refer to EN 292-2:1991, clause 5 and shall contain additional provisions for information for use for machines within the scope of the standard.

NOTE As these safety standards are dealing with machinery design, this is the only clause where the standard maker can set requirements related to the safe installation and use of the machinery (e.g. safe system of work). See also EN 292-2:1991/A1:1995, annex A, 1.7.4.

### 6.10.2 Signals and warning devices

Where safety signals or pictograms are fitted to the machine, they shall be described in this clause. The safety signals or pictograms already defined in EN or ISO standard should be used (e.g. EN 61310).

### 6.10.3 Accompanying documents (in particular: instruction handbook)

#### 6.10.3.1 General

The instructions are a compulsory part of the machine, so each type C standard shall state that instruction handbook shall be provided by the manufacturer. The type C standard shall refer to EN 292-2:1991, 5.5 and shall give specific information (e.g. intended use, foreseeable misuse, training, systems of work and Personal Protective Equipment) to be included in the handbook compiled from the results of the inquiry procedures in 5.2 to 5.7 of this document.

NOTE The instructions are normally the only means, available to the user, giving information on the use of the machine and the precautions necessary during use including maintenance interventions.

#### 6.10.3.2 Noise

The requirements concerning noise declaration shall be dealt with by reference to EN 292-2:1991/A1:1995, annex A, 1.7.4f) (requirements shall not be repeated).

NOTE Further guidance on the drafting of noise clauses is given in EN 1746.

#### 6.10.3.3 Vibration

If applicable, the requirements concerning the vibration declaration shall be dealt with by reference to EN 292-2:1991/A1:1995, annex A, 2.2 and 3.6.3 (requirements shall not be repeated).

NOTE Further guidance on drafting of vibration clauses is given in prEN 12786:1999.

#### 6.10.4 Marking

Every safety standard shall specify the minimum markings, which shall include:

— name and address of the manufacturer;

— mandatory marking[2)];

— year of construction;

— designation of series or type, if any;

— serial or identification number, if any;

— rating information (mandatory for electrotechnical products:voltage, frequency, power, etc.).

Other markings which shall be specified, if appropriate, include:

— rating information (for non-electrotechnical products) e.g. working load limit, safe working load, load limits, centre of gravity, gross weight;

— conditions of use (e.g. where intended for use in a potentially explosive atmosphere);

— reference(s) to relevant standard(s);

— year of “ageing-out” (date of expiration);

— reference to instructions for installation, use and maintenance;

— safety marking.

### 6.11 Annexes

#### 6.11.1 Normative annexes

When it is foreseeable that certain parts could be applicable to other documents (e.g. test methods) these parts shall be included as normative annexes.

A normative annex shall comply with the CEN/CENELEC Internal Regulations – Part 3:1999, 6.3.8.

NOTE This form of presentation may assist reference from other documents and allows easier conversion of those parts to a type A or type B standard (see 4.4).

[2)] For machines and their related products intended to be put on the market in EEA, CE marking as defined in the European applicable directive(s), e.g. Machinery, Low Voltage, Explosive Atmosphere, Gas appliances.

### 6.11.2 Informative annexes

Standards or documents which are not publicly available, which only give information, or which have served as references in the preparation of the standard shall not appear in clause 2 “Normative references”. They shall appear in a list after the last annex and be entitled “Bibliography” (see CEN/CENELEC Internal Regulations – Part 3:1999, 5.2.7 and 6.4.2).

Each mandated standard shall contain an annex Z [followed by a letter to precise] (informative) (see 6.2).

NOTE This annex being always located at the end of the standard, it will be normally called “ZA”. However, if one or more European annexes exist after an adopted international standard, the letter A will be replaced by the letter following the previous annexes (e.g. if there is an annex ZD, it becomes annex ZE).

As a minimum requirement, the following statement shall be inserted in each type B and C standard in annex Z [Letter]:

*“**Annex Z** ⌊**Letter**⌋*
*(informative)*

***Relationship of this document with EC Directives***

*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 EC Directive(s).*

*Machinery Directive 98/37/EC.*

*⌊If applicable “except clause ....”⌋* [3)]

*Compliance with this document provides one means of conforming with the specific essential requirements of the Directive concerned and associated EFTA regulations.*

*WARNING: Other requirements and other EC Directives may be applicable to the product(s) falling within the scope of this document.”*

[3)] In cases, where the standard also deals with subjects not supporting essential requirements of EC Directives such as performances.

# Annex A
(normative)

# Procedure to be followed if type A or type B standards are unavailable

Where possible type A and type B standards should be elaborated first, so that reference can be made to them when preparing type C standards for specific machines. When a type C standard needs to use type A or type B provisions and such standards are unavailable, the type C standard shall give those provisions, in annexes. If this method is adopted, these annexes can be withdrawn when revising the standard and the references in the standard changed to the relevant type A or type B standard.

In order to facilitate this approach the following procedure shall be used:

a) All type C working groups shall be kept informed about the on-going work in type A and type B working groups and about all existing type A and type B standards including drafts.

b) If type C working groups need to formulate type A or type B provisions, due to lack of existing type A or type B standards, the relevant type A or type B working groups and/or relevant TCs (especially CEN/TC 114) are to be involved.

c) If applicable type C working groups should participate in relevant type A or type B working groups and should influence the creation and content of type A and type B standards.

d) Type A or type B provisions in type C standards shall be put in annexes.

# Annex B
(informative)

# General format of CEN/CENELEC standards

**Table B.1 — Arrangement of elements (Extract from CEN/CENELEC Internal Regulations – Part 3:1999, Table 2)**

| Type of element | Arrangement of elements in standard | | Permitted content of element(s) in standard |
|---|---|---|---|
| Informative preliminary | *Title page* | | **Title** |
| | *Table of contents* | | *(generated content)* |
| | ***Foreword*** | | ***Text***<br>*Note(s)*<br>*Footnote(s)* |
| | *Introduction* | | *Text*<br>*Figure(s)*<br>*Table(s)*<br>*Note(s)*<br>*Footnote(s)* |
| Normative general | **Title** | | **Text** |
| | **Scope** | | **Text**<br>*Figure(s)*<br>*Table(s)*<br>*Note(s)*<br>*Footnote(s)* |
| | Normative reference(s) | | *Reference(s)*<br>*Footnote(s)* |
| Normative technical | Term(s) and definition(s)<br>Symbols and abbreviated terms<br>Requirements<br>.<br>.<br>.<br>Normative annex | | Text<br>Figure(s)<br>Table(s)<br>*Note(s)*<br>*Footnote(s)* |
| Informative supplementary | Informative annex | | *Text*<br>*Figure(s)*<br>*Table(s)*<br>*Note(s)*<br>*Footnote(s)* |
| Normative technical | Normative annex | | Text<br>Figure(s)<br>Table(s)<br>*Note(s)*<br>*Footnote(s)* |
| Informative supplementary | *Bibliography* | | *Reference(s)*<br>*Footnote(s)* |
| | *Index(es)* | | *(generated content)* |

# Annex C
(informative)
# Model format of a type C European draft standard

| | | |
|---|---|---|
| pr **EN** | pr **EN** | pr **EN** |
| **EUROPEAN STANDARD**<br>**NORME EUROPÉENNE**<br>**EUROPÄISCHE NORM** Date | **NORME EUROPÉENNE**<br>**EUROPÄISCHE NORM**<br>**EUROPEAN STANDARD** Date | **EUROPÄISCHE NORM**<br>**EUROPEAN STANDARD**<br>**NORME EUROPÉENNE** Datum |
| ICS [Completed by CEN/CS] CEN/TC.../WG...**NX** (E) | ICS [Complété par le CEN/CS] CEN/TC.../WG...**NX** (F) | ICS [Zu Komplettieren CEN/CS] CEN/TC.../WG...**NX** (D) |
| Descriptors [Completed by CEN/CS] Supersedes CEN/TC.../WG...NX-1 | Descripteurs [Complété par le CEN/CS] Remplace CEN/TC.../WG...NX-1 | Deskriptoren [Zu Komplettieren CEN/CS] Ersatz für CEN/TC.../WG...NX-1 |
| **English version** | **Version française** | **Deutsche Fassung** |
| **First Title**<br>**Second Title**<br>**Third Title** | **Premier titre**<br>**Deuxième titre**<br>**Troisième titre** | **Erster Titel**<br>**Zweiter Titel**<br>**Dritter Titel** |
| French Title German Title | Titre allemand Titre anglais | Englischer Titel Französischer Titel |
| [Standardized text] | [Texte type] | [Einheitstext] |
| EUROPEAN COMMITTEE FOR STANDARDIZATION<br>COMITÉ EUROPÉEN DE NORMALISATION<br>EUROPÄISCHES KOMITEE FÜR NORMUNG | COMITÉ EUROPÉEN DE NORMALISATION<br>EUROPÄISCHES KOMITEE FÜR NORMUNG<br>EUROPEAN COMMITTEE FOR STANDARDIZATION | EUROPÄISCHES KOMITEE FÜR NORMUNG<br>COMITÉ EUROPÉEN DE NORMALISATION<br>EUROPEAN COMMITTEE FOR STANDARDIZATION |
| **Central Secretariat:rue de Stassart 36, B-1050 Brussels** | **Secrétariat Central:rue de Stassart 36, B-1050 Bruxelles** | **Zentralsekretariat:rue de Stassart 36, B-1050 Brüssel** |
|  |  |  |
| Ref. No. EN ...:1998 E | Réf. n° EN ....:1998 F | Ref. Nr EN ....:1998 D |

**Contents**



**Sommaire**



**Inhalt**

**Foreword**

This document has been prepared by CEN/TC.../WG...

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 EC Directive(s).

For relationship with EC Directives, see informative annex Z [appropriate letter], which is an integral part of this document.

**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.

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.

**1 Scope**

This standard applies for .....

and/or

This standard is not applicable to.....

This standard deals with all significant hazards, hazardous situations and events relevant to .....machinery, when they are used as intended and under the conditions foreseen by the manufacturer (see clause 4).

or

This standard deals with all significant hazards, hazardous situations and events with the exception of .... relevant to ..... machinery, when they are used as intended and under the conditions foreseen by the manufacturer (see clause 4).

or

**Avant-propos**

Le présent document a été élaboré par le CEN/TC .../WG ...

Le présent document a été élaboré dans le cadre d'un mandat donné au CEN par la Commission Européenne et l'association Européenne de Libre Échange et vient à l'appui des exigences essentielles de la (des) Directive(s) CE.

Pour les relations avec les directives CE, voir l'annexe Z [lettre appropriée] informative, qui fait partie intégrante du présent document.

**0 Introduction**

Le présent document est de type C tel que mentionné dans l'EN 1070.

Les machines concernées et l'étendue des phénomènes dangereux, situations et événements dangereux couverts sont indiquées dans le domaine d'application du présent document.

Lorsque des dispositions de la présente norme de type C sont différentes de celles mentionnées dans les normes de type A ou B, les dispositions du présent document de type C prennent le pas sur les dispositions des autres normes, pour les machines ayant été conçues et fabriquées suivant les dispositions du présent document de type C.

**1 Domaine d'application**

La présente norme s'applique aux ....

et/ou

La présente norme ne s'applique pas aux ....

La présente norme traite tous les phénomènes dangereux, situations et événements dangereux significatifs spécifiques aux machines ...., lorsqu'elles sont utilisées normalement et dans les conditions prévues par le constructeur (voir article 4).

ou

La présente norme traite tous les phénomènes dangereux, situations et événements dangereux significatifs, à l'exception de ...., spécifiques aux machines ...., lorsqu'elles sont utilisées normalement et dans les conditions prévues par le constructeur (voir article 4).

ou

**Vorwort**

Dieses Dokument wurde vom Technischen Komitee CEN/TC .../WG ... erarbeitet.

Dieses Dokument wurde unter einem Mandat erarbeitet, das dem CEN von der Europäischen Kommission und der Europäischen Freihandelszone erteilt wurde und unterstützt grundlegende Anforderungen der EG-Richtlinie(n).

Für den Zusammenhang mit EG-Richtlinien siehe Informativen Anhang Z [entsprechender Buchstabe], der Bestandteil dieses Dokumentes ist.

**0 Einleitung**

''Dieses Dokument ist eine Typ C-Norm wie in EN 1070 angegeben.

Auf die betreffenden Maschinen und die behandelten Gefährdungen, Gefährdungssituationen und Gefährdungsereignisse wird im Anwendungsbereich dieses Dokumentes hingewiesen.

Für Maschinen, die nach den Festlegungen dieser Typ C-Norm konzipiert und gebaut worden sind, gilt: Wenn die Festlegungen in dieser Typ C-Norm von den Festlegungen in Typ A- oder B-Normen abweichen, haben die Festlegungen dieser Typ C-Norm Vorrang gegenüber den Festlegungen der anderen Normen.''

**1 Anwendungsbereich**

Diese Norm gilt für .....

und/oder

Diese Norm ist nicht anwendbar auf ...

Diese Norm behandelt alle signifikanten Gefährdungen, Gefährdungssituationen und Gefährdungsereignisse, die auf die ... Maschinen, Geräte, Anlagen zutreffen, wenn sie bestimmungsgemäß und entsprechend den vorhersehbaren Bedingungen des Herstellers verwendet werden (siehe Abschnitt 4).

oder

Diese Norm behandelt alle signifikanten Gefährdungen, Gefährdungssituationen und Gefährdungsereignisse, die auf die ... Maschinen, Geräte, Anlagen zutreffen, mit Ausnahme von ..., wenn sie bestimmungsgemäß und entsprechend den vorhersehbaren Bedingungen des Herstellers verwendet werden (siehe Abschnitt 4).

oder

This standard deals with the following significant hazards, hazardous situations and events relevant to.... machinery, when they are used as intended and under the conditions foreseen by the manufacturer[1)]:

[precise]

This document is not applicable to ... which are manufactured before the date of publication of this document by CEN.

**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.

EN 292-1:1991, *Safety of machinery Basic concepts, general principles for design Part 1: Basic terminology, methodology*

EN 292-2:1991, *Safety of machinery Basic concepts General principles for design Part 2:Technical principles and specifications*

EN 292-2:1991/A1:1995, *Safety of machinery Basic concepts General principles for design Part 2: Technical principles and specifications*

EN 1070, *Safety of machinery Terminology*

**3 Terms and definitions – Symbols and abbreviated terms**

For the purposes of this document, the definitions given in EN 1070 apply.

Additional definitions specifically needed for this document are added below:

La présente norme traite les phénomènes dangereux, situations et événements dangereux significatifs suivants spécifiques aux machines ...., lorsqu'elles sont utilisées normalement et dans les conditions prévues par le constructeur[1)]:

[préciser]

Le présent document ne s'applique pas aux machines .... qui sont fabriquées avant la date de publication de ce document par le CEN.

**2 Références normatives**

Cette norme européennne comporte par référence datée ou non datée des dispositions d'autres publications. Ces références normatives sont citées aux endroits appropriés dans le texte et les publications sont énumérées ci-après. Pour les références datées, les amendements ou révisions ultérieurs de l'une quelconque de ces publications ne s'appliquent à cette norme européennne que s'ils y ont été incorporés par amendement ou révision. Pour les références non datées, la dernière édition de la publication à laquelle il est fait référence s'applique.

EN 292-1:1991, *Sécurité des machines Notions fondamentales Principes généraux de conception Partie 1: Terminologie de base Méthodologie*

EN 292-2:1991, *Sécurité des machines Notions fondamentales, principes généraux de conception Partie 2: Principes et spécifications techniques*

EN 292-2:1991/A1:1995, *Sécurité des machines Notions fondamentales, principes généraux de conception Partie 2: Principes et spécifications techniques*

EN 1070, *Sécurité des machines Terminologie*

**3 Termes et définitions – Symboles et termes abrégés**

Pour les besoins du présent document, les définitions mentionnées dans l'EN 1070 s'appliquent.

Les définitions supplémentaires, spécialement requises pour le présent document sont ajoutées ci-dessous:

Diese Norm behandelt die folgenden signifikanten Gefährdungen, Gefährdungssituationen und Gefährdungsereignisse, die auf die ... Maschinen, Geräte, Anlagen zutreffen, wenn sie bestimmungsgemäß und entsprechend den vorhersehbaren Bedingungen des Herstellers verwendet werden[1)]:

[genau]

Dieses Dokument gilt nicht für ..., die hergestellt wurden, bevor CEN dieses Dokument veröffentlichte.

**2 Normative Verweisungen**

Diese Europäische Norm enthält durch datierte oder undatierte Verweisungen Festlegungen aus anderen Publikationen. Diese normativen Verweisungen sind an den jeweiligen Stellen im Text zitiert und die Publikationen sind nachstehend aufgeführt. Bei datierten Verweisungen gehören spätere Überarbeitungen dieser Publikationen nur zu dieser Europäischen Norm, falls sie durch Änderung oder Überarbeitung eingearbeitet sind. Bei undatierten Verweisungen gilt die letzte Ausgabe der in Bezug genommenen Publikation.

EN 292-1:1991, *Sicherheit von Maschinen Grundbegriffe, allgemeine Gestaltungsleitsätze Teil 1: Grundsätzliche Terminologie, Methodik*

EN 292-2:1991, *Sicherheit von Maschinen Grundbegriffe, allgemeine Gestaltungsleitsätze Teil 2: Technische Leitsätze und Spezifikationen*

EN 292-2:1991/A1:1995, *Sicherheit von Maschinen Grundbegriffe, allgemeine Gestaltungsleitsätze Teil 2: Technische Leitsätze und Spezifikationen*

EN 1070, *Sicherheit von Maschinen Terminologie*

**3 Begriffe – Symbole und Abkürzungen**

Für die Anwendung dieses Dokumentes gelten die Begriffe nach EN 1070.

Für dieses Dokument gelten zusätzlich folgende Begriffe:

## 4 List of significant hazards

This clause contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this standard, identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce the risk.

## 5 Safety requirements and/or protective measures

Machinery shall comply with the safety requirements and/or protective measures of this clause.

In addition, the machine shall be designed according to the principles of EN 292 for hazards relevant but not significant which are not dealt with by this document (e.g. sharp edges).

## 6 Verification of safety requirements and/or protective measures

## 7 Information for use

### 7.1 Signals and warning devices

### 7.2 Accompanying documents (in particular:Instruction handbook)

### 7.3 Marking

The minimum markings shall include:

name and address of the manufacturer;

mandatory marking[1)];

year of construction;

designation of series or type, if any;

serial or identification number, if any;

## 4 Liste des phénomènes dangereux significatifs

Cet article contient tous les phénomènes dangereux, situations et événements dangereux autant qu'ils sont traités dans la présente norme, identifiés, par l'appréciation du risque, comme étant significatifs, pour ce type de machine, et qui nécessitent une action pour éliminer ou réduire le risque.

## 5 Prescriptions et/ou mesures de prévention

Les machines doivent se conformer aux prescriptions et/ou mesures de prévention de cet article.

De plus, les machines doivent être conçues suivant les principes de l'EN 292 pour les phénomènes dangereux spécifiques mais non significatifs qui ne sont pas traités dans le présent document (par exemple les angles coupants).

## 6 Vérification des prescriptions et/ou mesures de prévention

## 7 Informations pour l'utilisation

### 7.1 Signaux et dispositifs d'avertissements

### 7.2 Documents d'accompagnement (en particulier: notice d'instructions)

### 7.3 Marquage

Le marquage minimum doit comprendre:

le nom et l'adresse du fabricant;

les marquages obligatoires[1)]

l'année de construction;

la désignation du type ou de la série, s'il y en a;

le numéro de série ou d'identification, s'il y en a un;

## 4 Liste der signifikanten Gefährdungen

Dieser Abschnitt enthält alle signifikanten Gefährdungen, Gefährdungssituationen und Gefährdungsereignisse, soweit sie in diesem Dokument behandelt werden, die nach dem Verfahren zur Abschätzung des Risikos als signifikant für diese Art von Maschinen festgestellt wurden und für die Maßnahmen zur Beseitigung oder Reduzierung des Risikos erforderlich sind.

## 5 Sicherheitsanforderungen und/oder Schutzmaßnahmen

Maschinen müssen den Sicherheitsanforderungen und/oder Schutzmaßnahmen dieses Abschnittes entsprechen.

Außerdem muß die Maschine im Hinblick auf Gefährdungen, die relevant aber nicht signifikant sind und die nicht in diesem Dokument behandelt werden, gemäß den Leitsätzen der EN 292 konstruiert sein (z.B. scharfe Kanten).

## 6 Feststellung der Übereinstimmung mit den Sicherheits-Anforderungen und/oder Schutzmaßnahmen

## 7 Benutzerinformation

### 7.1 Signale und Warneinrichtungen

### 7.2 Begleitende Dokumente (insbesondere: Betriebsanleitung)

### 7.3 Kennzeichnung

Die Mindestkennzeichnung muß enthalten:

den Namen und die Anschrift des Herstellers;

vorgeschriebene Kennzeichnungen[1)];

Baujahr;

Bezeichnung der Serie oder Type, falls vorhanden;

Seriennummer oder Identifikationsnummer, falls vorhanden;

---

[1)] For machines and their related products intended to be put on the market in EEA, CE marking as defined in the European applicable directive(s), e.g. Machinery, low Voltage, Explosive Atmosphere, Gas appliances.

[1)] Pour les machines et leurs produits, destinés à être mises sur le marché de l'EEE, le marquage CE. Tel qu'il est définie dans la(les) directive(s) européennes applicable(s) par exemple Machines, Basse Tension, Atmosphères explosibles, Appareils à gaz.

[1)] Für Maschinen und deren zugehörigen Produkte, die vorgesehen sind, im EWR auf den Markt gebracht zu werden, CE-Kennzeichnung gemäß den zutreffenden Europäischen Richtlinien, z.B. Maschinen-Richtlinie, Niederspannungs-Richtlinie, Explosionsschutz-Richtlinie, Gasgeräte-Richtlinie.

rating information (mandatory for electrotechnical products: voltage, frequency, power, etc).

Other markings which shall be specified if appropriate include:

rating information (for non-electrotechnical products), e.g. working load limit, safe working load, load limits, centre of gravity, gross weight;

conditions of use (e.g. where intended for use in a potentially explosive atmosphere);

reference(s) to relevant standard(s);

year of “ageing-out” (date of expiration);

reference to instructions for installation, use and maintenance;

safety markings.

The information printed directly on the machine should be permanent and remain legible throughout the expected life of the machine

**Annex A**
(normative)

**Annex B**
(informative)

This element includes any needed information considered as non-normative but which may help the comprehension of the standard.

NOTE Informative references (e.g. in notes) should be listed in “Bibliography”.

des caractéristiques nominales (obligatoire pour les produits électrotechniques: tension, fréquence, puissance, etc.).

D'autres marquages qui doivent être spécifiés, si cela convient, comprenant:

des caractéristiques nominales (pour les produits non électrotechniques), par exemple charge limite de travail, charge de travail nominale, limites de charge, centre de gravité, poids brut;

des conditions d'utilisation (par exemple, lorsque l'utilisation normale est en atmosphère potentiellement explosive);

référence(s) à une (des) norme(s) appropriée(s);

année de fabrication ou de péremption (date d'expiration);

référence aux instructions d'installation, d'utilisation et de maintenance;

pictogrammes de sécurité.

Il convient que les informations inscrites directement sur la machine soient permanentes et restent lisibles pendant toute la durée escomptée de la vie de la machine.

**Annexe A**
(normative)

**Annexe B**
(informative)

Cet élément comprend toute information nécessaire considérée comme étant non normative mais qui peut aider à comprendre la norme.

NOTE Il convient que les références informatives (par exemple, dans des notes) soient listées en “Bibliographie”.

Leistungsangaben (zwingend für elektrotechnische Erzeugnisse: Spannung, Frequenz, Leistung etc.).

Andere Kennzeichnungen, die - falls erforderlich noch festgelegt werden müssen, können sein:

Leistungsangaben (für nicht-elektrotechnische Erzeugnisse) z.B. Betriebslastgrenze, zulässige Betriebslast, Belastungsgrenzen, Schwerpunkt, Bruttogewicht;

Bedingungen für die Nutzung (z.B. wenn eine bestimmungsgemäße Verwendung in einem explosionsgefährdeten Bereich vorgesehen ist);

Verweis(e) auf zutreffende Norm(en)

Jahr des “Lebensendes” (Ablaufdatum)

Hinweise auf Anleitungen für das Errichten, die Verwendung und die Instandhaltung

Sicherheitskennzeichnung.

Informationen, die direkt auf die Maschine aufgedruckt sind, sollten während der erwarteten Lebensdauer der Maschine beständig sein und lesbar bleiben.

**Anhang A**
(normativ)

**Anhang B**
(informativ)

Dieses Element beinhaltet jede benötigte Information, die als nicht-normativ betrachtet wird, aber zum Verständnis der Norm hilfreich ist.

ANMERKUNG Informative Verweisungen (z.B. in Fußnoten enthalten) sollten unter “Literaturhinweise” aufgelistet werden.

**Annex ZA**
(informative)

**Relationship of this document with EC Directives**

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 EC Directive(s):

Machinery Directive 98/37/EC.

[If applicable “except clause ....”] [1)]

Compliance with this document provides one means of conforming with the specific essential requirements of the Directive concerned and associated EFTA regulations.

WARNING: Other requirements and other EC Directives may be applicable to the product(s) falling within the scope of this document.

**Annexe ZA**
(informative)

**Relation entre la présente norme et les Directives CE**

Le présent document a été élaboré dans le cadre d'un Mandat donné au CEN par la Commission Européenne et l'Association Européenne de Libre Échange et vient à l'appui des exigences essentielles des Directives CE suivantes:

Directive Machines 98/37/CE.

[Le cas échéant "A l'exception de l'article ...."] [1)]

La conformité avec le présent document est un des moyens de satisfaire aux exigences essentielles spécifiques de la Directive concernée et des règlements correspondants de l'AELE.

AVERTISSEMENT: D'autres exigences et d'autres Directives CE peuvent être applicables au(x) produit(s) relevant du domaine d'application du présent document.

**Anhang ZA**
(informativ)

**Zusammenhang dieses Dokumentes mit EG-Richtlinien**

Dieses Dokument wurde unter einem Mandat erarbeitet, das dem CEN von der Europäischen Kommission und der Europäischen Freihandelszone erteilt wurde und unterstützt grundlegende Anforderungen der EG-Richtlinie(n).

Maschinen-Richtlinie 98/37 EG.

[Falls zutreffend “ausgenommen Abschnitt ..”] [1)]

Die Übereinstimmung mit diesem Dokument ist eine der Möglichkeiten, die relevanten grundlegenden Anforderungen der betreffenden Richtlinie und der zugehörigen EFTA-Vorschriften zu erfüllen.

WARNHINWEIS: Für Produkte, die in den Anwendungsbereich dieses Dokumentes fallen, können weitere Anforderungen und weitere EG-Richtlinien gelten.

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[1)] In cases, where the standard also deals with subjects not supporting essential requirements of EC Directives such as performances.

[1)] Au cas où la norme traite également de sujets ne venant pas à l'appui des exigences essentielles des Directives CE, tels que les performances.

[1)] Wenn die Norm auch andere Themen behandelt, die nicht grundlegende Anforderungen der EG-Richtlinien unterstützt, wie z. B. Leistung.

# Bibliography

[1] EN 294, *Safety of machinery – Safety distances to prevent danger zones being reached by the upper limbs*

[2] EN 954-1, *Safety of machinery – Safety related parts of control systems – Part 1:General principles*

[3] EN 1746, *Safety of machinery – Guidance for the drafting of the noise clauses of safety standards*

[4] pr EN 12786:1999, *Safety of machinery – Guidance for the drafting of the vibration clauses of safety standards*

[5] EN 61310-1, *Safety of machinery – Indicating, marking and actuating principles – Part 1:Visual, audible and tactile signals*

[6] EN 61310-2, *Safety of machinery – Indicating, marking and actuating principles – Part 2:Marking principles*

[7] CEN-Report CR 1100:1994, *Memorandum on health and safety standardization in support of "New approach" Directives – Application in the field of Machinery/First Edition 1994.*

[8] CEN/CENELEC MEMORANDUM N°9:1994 *(ISO/IEC GUIDE 51:1990), Guidelines for the inclusion of safety aspects in standards*

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