



BSI Standards Publication

## Plastics and rubber machines — Two-roll mills — Safety requirements

---

This is a preview of BS EN 1417:2023. [Click here to purchase the full version from the ANSI store.](#)

## National foreword

This British Standard is the UK implementation of EN 1417:2023. It supersedes BS EN 1417:2014, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MCE/3/2, Rubber and plastics machine - Safety.

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

### Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

This publication has been prepared under a mandate given to the European Standards Organizations by the European Commission and the European Free Trade Association. It is intended to support requirements of the EU legislation detailed in the European Foreword. A European Annex, usually Annex ZA or ZZ, describes how this publication relates to that EU legislation.

For the Great Britain market (England, Scotland and Wales), if UK Government has designated this publication for conformity with UKCA marking (or similar) legislation, it may contain an additional National Annex. Where such a National Annex exists, it shows the correlation between this publication and the relevant UK legislation. If there is no National Annex of this kind, the relevant Annex ZA or ZZ in the body of the European text will indicate the relationship to UK regulation applicable in Great Britain. References to EU legislation may need to be read in accordance with the UK designation and the applicable UK law. Further information on designated standards can be found at [www.bsigroup.com/standardsandregulation](http://www.bsigroup.com/standardsandregulation).

For the Northern Ireland market, UK law will continue to implement relevant EU law subject to periodic confirmation. Therefore Annex ZA/ZZ in the European text, and references to EU legislation, are still valid for this market.

UK Government is responsible for legislation. For information on legislation and policies relating to that legislation, consult the relevant pages of [\[http://www.gov.uk/ext-link%3e.%3c/p\]www.gov.uk](http://www.gov.uk/ext-link%3e.%3c/p]www.gov.uk).

© The British Standards Institution 2023  
Published by BSI Standards Limited 2023

ISBN 978 0 539 17267 6

This is a preview of BS EN 1417:2023. [Click here to purchase the full version from the ANSI store.](#)

ICS 83.200

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2023.

**Amendments/corrigenda issued since publication**

Date

Text affected

---

This is a preview of BS EN 1417:2023. [Click here to purchase the full version from the ANSI store.](#)

This is a preview of BS EN 1417:2023. [Click here to purchase the full version from the ANSI store.](#)

## EUROPÄISCHE NORM

November 2023

ICS 83.200

Supersedes EN 1417:2014

English Version

## Plastics and rubber machines - Two-roll mills - Safety requirements

Machines pour les matières plastiques et le caoutchouc  
- Mélangeurs à cylindres - Prescriptions de sécurité

Kunststoff- und Gummimaschinen - Walzwerke -  
Sicherheitsanforderungen

This European Standard was approved by CEN on 18 September 2023.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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



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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

## Contents

Page

European foreword.....	4
Introduction.....	5
1 Scope .....	6
2 Normative references .....	6
3 Terms and definitions.....	8
4 Safety requirements and/or protective/risk reduction measures.....	12
4.1 General .....	12
4.2 Control systems.....	12
4.2.1 General .....	12
4.2.2 Starting.....	12
4.2.3 Normal stopping .....	12
4.2.4 Emergency stop.....	12
4.2.5 Failure of power supply .....	13
4.3 Mechanical hazards .....	13
4.3.1 Requirements applicable to all types of two-roll mills.....	13
4.3.2 Specific requirements applicable to large two-roll mills ( $D > 200$ mm) .....	19
4.3.3 Specific requirements applicable to small two-roll mills ( $D \leq 200$ mm) .....	24
4.4 Electrical hazards.....	29
4.4.1 Electrical shock or burns caused by direct or indirect contact with live parts .....	29
4.4.2 Electrical shock, or fire due to electrostatic discharge.....	29
4.5 Hazards due to electromagnetic interference .....	29
4.6 Thermal hazards.....	29
4.7 Hazards caused by gases, dusts or vapours hazardous to health .....	30
4.8 Hazards generated by neglecting ergonomic principles.....	30
4.9 Hazards generated by noise .....	30
4.9.1 Main noise sources.....	30
4.9.2 Noise reduction at source by design.....	30
4.9.3 Noise reduction by devices .....	30
4.9.4 Information connected with noise hazards .....	30
4.10 Hazards due to unexpected start-up .....	30
4.11 Hydraulic and pneumatic equipment .....	30
5 Verification of safety requirements and/or protective/risk reduction measures.....	31
6 Information for use.....	34
6.1 General .....	34
6.2 Instruction handbook.....	34
6.2.1 General .....	34
6.2.2 Two-roll mills equipped with a trip bar as in 4.3.2.1 .....	35
6.2.3 Two-roll mills equipped with a trip device as in 4.3.3.3 .....	35
6.2.4 Two-roll mills equipped with light curtains as in 4.3.3.4.3.....	36
6.2.5 Laboratory two roll mills.....	36
6.2.6 Noise emission.....	36
6.3 Marking.....	36
6.4 Warning notice/signs on two-roll mills equipped with a trip bar as in 4.3.2.1 .....	37
6.5 Warning notice/signs on two-roll mills equipped with a trip device as in 4.3.3.3 .....	37

This is a preview of BS EN 1417:2023. [Click here to purchase the full version from the ANSI store.](#)

<b>Annex B (normative) Positioning of the trip devices specified in 4.3.3.4.2.....</b>	<b>42</b>
<b>B.1 Production applications.....</b>	<b>42</b>
<b>B.2 Laboratory applications.....</b>	<b>45</b>
<b>Annex C (normative) Noise test code.....</b>	<b>46</b>
<b>C.1 General.....</b>	<b>46</b>
<b>C.2 Determination of the A-weighted emission sound pressure level .....</b>	<b>46</b>
<b>C.2.1 Basic standards and measurement procedure.....</b>	<b>46</b>
<b>C.2.2 Measurement uncertainty.....</b>	<b>47</b>
<b>C.3 Determination of the A-weighted sound power level .....</b>	<b>47</b>
<b>C.3.1 Basic standards and measurement procedure.....</b>	<b>47</b>
<b>C.3.2 Measurement uncertainty.....</b>	<b>47</b>
<b>C.4 Mounting and operating conditions .....</b>	<b>47</b>
<b>C.5 Information to be recorded and reported.....</b>	<b>48</b>
<b>C.5.1 General.....</b>	<b>48</b>
<b>C.5.2 General data .....</b>	<b>48</b>
<b>C.5.3 Mounting and operating conditions .....</b>	<b>48</b>
<b>C.5.4 Standards .....</b>	<b>48</b>
<b>C.5.5 Noise data.....</b>	<b>49</b>
<b>C.6 Declaration and verification of noise emission values.....</b>	<b>49</b>
<b>Annex D (informative) Positioning of trip bar .....</b>	<b>52</b>
<b>Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered.....</b>	<b>53</b>
<b>Bibliography.....</b>	<b>56</b>

This is a preview of BS EN 1417:2023. [Click here to purchase the full version from the ANSI store.](#)

## European foreword

This document (EN 1417:2023) has been prepared by Technical Committee CEN/TC 145 “Plastics and rubber machines”, 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 May 2024, and conflicting national standards shall be withdrawn at the latest by November 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1417:2014.

In comparison with the previous edition EN 1417:2014, the following technical modifications have been made:

- a) the structure of the document has been modified;
- b) covered ancillary equipment has been clarified in the scope;
- c) the list of significant hazards has been moved to an informative annex;
- d) technical developments in safeguards have been taken into account;
- e) revised type-A and type-B standards have been taken into account;
- f) the class of intermediate two-roll mills (requirements integrated in large and/or small two-roll mills) has been removed;
- g) requirements for braking system have been adapted to the state of the art;
- h) requirements for trip bar have been modified;
- i) hazard and measures related to secondary roller have been added;
- j) requirements for small mill rolls have been modified.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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

This is a preview of BS EN 1417:2023. [Click here to purchase the full version from the ANSI store.](#)

## **Introduction**

This document is a type-C standard as stated in EN ISO 12100.

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 the case of machinery intended for use by consumers).

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

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the scope of this document.

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 document deals with all significant hazards, hazardous situations or hazardous events relevant to two-roll mills for the processing of rubber and/or plastics (see Annex A), when used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer during all the phases of the life of the machine as described in EN ISO 12100:2010, 5.4.

This document covers two-roll mills as defined in 3.1.

This document covers two-roll mills intended to be used in normal production and two-roll mills intended to be used in laboratories (testing of mixtures by batchwise processing of small amounts, not continuously).

This document is applicable to the following ancillary equipment as integral part of the machine:

- powered stock guides;
- strip cutting device;
- stock blender;
- recovery conveyor belt;
- retractable ploughs;
- secondary roller;
- supply of heating and/or cooling fluids.

This document does not apply to the design of a local exhaust ventilation system that might be necessary in specific applications of the machine not known by the manufacturer.

This document does not apply to two-roll mills manufactured before the date of its publication as a European Standard.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 60204-1:2018, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2016, modified)*

EN IEC 61000-6-2:2019, *Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments (IEC 61000-6-2:2016)*

EN IEC 61496-1:2020, *Safety of machinery - Electro-sensitive protective equipment - Part 1: General requirements and tests (IEC 61496-1:2020)*

EN IEC 61496-2:2020, *Safety of machinery - Electro-sensitive protective equipment - Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs) (IEC 61496-2:2020)*

EN ISO 3744:2010, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2010)*