BS EN 13743:2017

BSI Standards Publication

Safety requirements for coated abrasive products

bsi.

National foreword

This British Standard is the UK implementation of EN 13743:2017. It supersedes BS EN 13743:2009 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MTE/13, Grinding wheels, abrasive tools, paper and cloths, and powders.

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

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

Published by BSI Standards Limited 2017

ISBN 978 0 580 91773 8

ICS 25.100.70

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 31 January 2017.

Amendments/corrigenda issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13743

January 2017

ICS 25.100.70

Supersedes EN 13743:2009

English Version

Safety requirements for coated abrasive products

Prescriptions de sécurité pour les produits abrasifs appliqués

Sicherheitsanforderungen für Schleifmittel auf Unterlagen

This European Standard was approved by CEN on 14 November 2016.

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

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

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

Ref. No. EN 13743:2017 E

Contents

Page

European foreword

This document (EN 13743:2017) has been prepared by Technical Committee CEN/TC 143 “Machine tools - Safety”, the secretariat of which is held by SNV.

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 July 2017, and conflicting national standards shall be withdrawn at the latest by July 2017.

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 13743:2009.

Significant changes against EN 13743:2009 are as follows:

a) the scope was clarified and the types of permissible abrasive grains were specified;

b) Table 3 was updated with additional hazard designations;

c) Table 5 was revised according to current scientific and technical knowledge;

d) Clause 7 was modified in order to avoid overlap with European legislation;

e) the short signs on the restriction of use were removed from Annex A.

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

Introduction

This European Standard has been prepared to provide one means of conforming to essential safety requirements, e.g. of the General Product Safety Directive and associated EFTA regulations.

This European Standard is addressed to manufacturers, suppliers and importers of the coated abrasive products and back-up pads described in the scope. In addition, it helps manufacturers, suppliers and importers of grinding machines in the selection of abrasive products, in order to reduce the risks and achieve conformity of the respective machinery with the Essential Safety Requirements of the Machinery Directive.

The extent to which hazards are covered is indicated in the scope of this European Standard.

1 Scope

This European Standard is applicable to the following coated abrasive products and a combination of coated and non-woven abrasive products: flap wheels, flap discs, vulcanised fibre discs and spindle mounted flap wheels. It also applies to back-up pads for vulcanised fibre discs. These products are manufactured using the following abrasive grains: aluminium oxide, silicon carbide, diamond, or CBN.

This European Standard specifies requirements and/or measures for removal or reduction of hazards resulting from the design and application of the coated abrasive products and clamping devices.

This European Standard also contains procedures and tests for verification of compliance with the requirements as well as safety information for use, which is to be made available to the user by the manufacturer.

The hazards taken into consideration are listed in Clause 4 of this standard.

This European Standard does not apply to abrasive products entirely of non-woven web.

2 Normative references

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

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 General

3.1.1
coated abrasive product
abrasive product composed of backing, abrasive particles and bond and optionally a supporting element

Note 1 to entry: Examples for supporting elements are pads and spindles.

3.1.2
clamping device
device for fixing and positioning the abrasive product on the spindle of the grinding machine

Note 1 to entry: Clamping devices include e.g. back-up pads for vulcanised fibre discs, and clamping flanges for flap wheels.

3.2 Grinding machines

3.2.1
stationary grinding machine
grinding machine being fixed in position during operation

Note 1 to entry: See for example EN ISO 16089.

3.2.2
mobile grinding machine
grinding machine not being fixed in position during operation

Note 1 to entry: Mobile grinding machines are manually guided (but not supported) by hand during use, e.g. floor grinding machines.

3.2.3
hand-held grinding machine
grinding machine being held in the hand during the grinding process

Note 1 to entry: See for example EN ISO 11148-7, EN ISO 11148-9, EN 60745–2–3 and EN ISO 19432.

3.3 Type of application

3.3.1 General

See Table 1.

3.3.2
mechanically guided grinding
grinding process with feed movements of the abrasive product and/or workpiece guided by mechanical means

3.3.3
manually guided grinding
grinding process with feed movements of the abrasive product and/or the workpiece manually guided by the operator

3.3.4
hand-held grinding
grinding process with grinding machine entirely guided by the operator's hands

Table 1 — Type of application

Type of machine	Type of application	Abrasive product	Workpiece
Stationary grinding machines	Mechanically guided grinding	Fixed	Guided mechanically
		Guided mechanically	Fixed
		Guided mechanically	Guided mechanically
Stationary and mobile grinding machines	Manually guided grinding	Guided by hand	Fixed
		Fixed	Guided by hand
Hand-held grinding machines	Hand-held grinding	Guided by hand	Fixed

3.4 Symbols

The symbols used in this European Standard are listed in Table 2.

Table 2 — Symbols

Symbol	Designation	Definition	Unit
n_{ab}	Deflection speed of a spindle mounted flap wheel	Revolutions per minute at which the spindle of a rotating spindle mounted flap wheel is deflecting under centrifugal force	1/min
n_{max}	Maximum permissible speed of rotation	Revolutions per minute of a rotating new abrasive product at maximum operating speed	1/min
S_{ab}	Safety factor against spindle deflection for a spindle mounted flap wheel	Deflection speed divided by maximum permissible speed of rotation: $S_{ab} = \frac{n_{ab}}{n_{max}}$	—
v_s	Maximum operating speed	Maximum permissible peripheral speed of a rotating abrasive product	m/s
v_{br}	Bursting speed	Peripheral speed at which a rotating abrasive product breaks due to centrifugal force	m/s
$v_{br\ min}$	Minimum bursting speed	Peripheral speed, which a rotating abrasive product shall at least reach without bursting due to centrifugal force	m/s
f_{br}	Burst speed factor	Bursting speed divided by maximum operating speed: $f_{br} = \frac{v_{br}}{v_s}$	—
S_{br}	Safety factor against bursting due to centrifugal force	Bursting speed divided by maximum operating speed, all squared: $S_{br} = \left(\frac{v_{br}}{v_s}\right)^2$	—

4 List of significant hazards

The significant hazards are given in Table 3.

Table 3 — List of significant hazards

Hazard designation	Hazardous situation (Examples)	Relevant clauses in the standard
Ejection of parts	1. Abrasive product breakage caused by:	
	— improper design	5.1, 5.2, 5.3 and 5.4
	— manufacturing defects	5.1
	— wrong selection	5.4, Clause 7 and Annex A
	— improper handling and storage	Clause 7
	— improper use (mounting and grinding process)	Clause 7
	2. Grinding debris	Clause 7
	— dust, airborne particles	Clause 7
	— solid particles	Clause 7
Vibration	Hand arm vibration on hand-held machines caused by:	
	— improper use	Clause 7
	— incorrect mounting	Clause 7
Contact with the rotating/oscillating abrasive product	Improper use	Clause 7
Noise	Insufficient ear protection	Clause 7

5 Safety requirements

5.1 General requirements

5.1.1 General

Coated abrasive products shall be designed and manufactured in such a way that they resist the forces and loads that are to be expected when used as intended. They shall not present visible defects affecting safety and shall comply with the requirements listed in the following clauses.

5.1.2 Sequence of maximum operating speeds

Coated abrasive products shall be manufactured for maximum operating speeds according to the following sequence:

< 16 — 16 — 20 — 25 — 32 — 35 — 40 — 45 — 50 — 63 — 80 in m/s

For conversion of maximum operating speeds into speeds of rotation for different outside diameters *D* of the abrasive product, see Annex C.

5.2 Safety factors

5.2.1 Safety factors for flap wheels, flap discs and vulcanised fibre discs

Flap wheels, flap discs and vulcanised fibre discs shall have a safety factor against bursting due to centrifugal forces at their maximum operating speed as given in Table 4.

Table 4 — Safety factors

Type of machine	**Type of application**	**Dimensional limitation for the outside diameter *D* of the abrasive product** mm	**Maximum operating speed v_s** m/s	**Safety factor S_{br}**	**Burst speed factor f_{br}**
Stationary and mobile grinding machines	Mechanically and manually guided grinding	none	≤ 63	3,0	1,73
Hand-held grinding machines	Hand-held grinding	none	≤ 50	3,0	1,73
		≤ 125	$50 < v_s \leq 80$	3,0	1,73
		> 125	$50 < v_s \leq 80$	3,5	1,87

5.2.2 Safety factors for spindle mounted flap wheels

Spindle mounted flap wheels shall have a safety factor against bursting due to centrifugal forces of $S_{br} = 3$ at their maximum operating speed. The spindle shall have a safety factor against deflection of $S_{ab} = 1,3$.

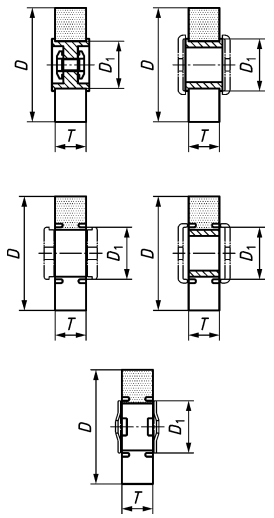
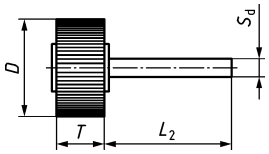
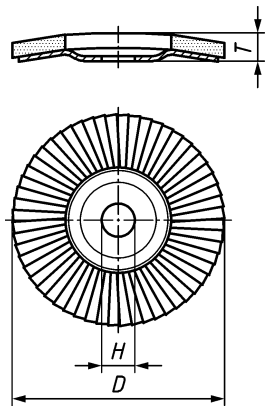
5.2.3 Safety factor for back-up pads for vulcanised fibre discs

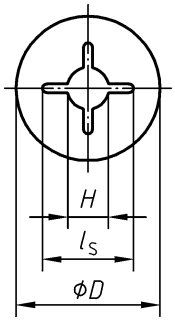
Back-up pads for vulcanised fibre discs shall fulfil a safety factor against bursting due to centrifugal force of $S_{br} = 3,5$ at their maximum permissible speed of rotation.

5.3 Dimensional limitations and maximum operating speeds

Coated abrasive products shall comply with the dimensional limitations and maximum operating speeds as specified in Table 5.

Table 5 — Dimensional limitations and maximum operating speeds

Designation, shape, dimensional letters[b]	**Type of machine**[a]	**Type of application**[a]	**Dimensional limitations** mm	**Maximum operating speeds** v_s m/s
Flap wheel  $D \times T$	Stationary grinding machines	Mechanically guided grinding	/	40, 50 and 63
	Stationary and mobile grinding machines	Manually guided grinding	$D \leq 600$ $T \leq 300$ $D_1 \geq 0{,}5\ D$	40, 50 and 63
	Hand-held grinding machines	Hand-held grinding	$D_{max} \times T_{max}$ 250 × 50 200 × 75 125 × 100 100 × 125 $D_1 \geq 0{,}33\ D$	40, 50 and 63
Spindle mounted flap wheel  $D \times T \times S_d$	Hand-held grinding machines	Hand-held grinding	$D \leq 80$ $T \leq 50$	40
Flap disc  $D \times T \times H$	Hand-held grinding machines	Hand-held grinding	$D \leq 230$ $T \leq 22$ $H = 22{,}23$ (For $D = 100$: $H = 16$)	80

Designation, shape, dimensional letters[b]	**Type of machine**[a]	**Type of application**[a]	**Dimensional limitations** mm	**Maximum operating speeds** v_s m/s
Vulcanised fibre disc with or without cross slots [c]  $D \times H$	Hand-held grinding machines (use always with back-up pad)	Hand-held grinding (use always with back-up pad)	$80 \le D \le 235$ $l_s \le 0{,}44\ D$, $l_{s,max} = 80$ $H = 22$ (For $D = 100$: $H = 16$ or 22)	80

[a] Definitions see 3.2 and 3.3.

[b] Figures show product examples.

[c] Beside vulcanized fibre, other backing material may be used.

5.4 Marking

Coated abrasive products and back-up pads shall be marked according to Annex A.

6 Verification of the safety requirements

6.1 Verification of the general requirements

For visible defects affecting safety the coated abrasive product is checked by visual inspection. Damaged abrasive products shall be destroyed.

6.2 Verification of the safety factor

Compliance with the safety factor is checked by a centrifugal force test (bursting speed test). The coated abrasive product mounted in a clamping device on a suitable test rig is loaded with steadily increasing speed of rotation by centrifugal forces up to the minimum bursting speed or until bursting. The speed of rotation shall be measured with an accuracy of ± 1 %. The speed of rotation at bursting of the abrasive product shall be detected and recorded by a suitable device.

Verification of the safety factor for back-up pads is carried out accordingly.

For spindle mounted flap wheels the verification is carried out with an overhang length of the spindle of $L_0 = 0$ mm.

The abrasive product and the back-up pad pass the bursting speed test, if they are run at minimum bursting speed without bursting. For the bursting speed test, the samples shall be stored at least 24 h at an ambient temperature of (20 ± 2) °C and a relative humidity of (65 ± 5) % (standard atmosphere according to ISO 554) prior to the test. All abrasive products subjected to the bursting speed test shall be destroyed.

Verification of the safety factor against deflection of the spindle for spindle mounted flap wheels is carried out with a clamping length of the spindle of 10 mm or with the maximum overhang length of the spindle indicated by the manufacturer.

6.3 Verification of the dimensional requirements

Compliance is checked on the basis of the dimensional data and the data in the drawings using suitable measuring means, e.g. limit gauges, calliper gauges, electronic measuring machines.

6.4 Verification of the marking

Verification of the marking data are effected by visual inspection.

7 Information for use

The manufacturer, supplier or importer shall bring safety instructions for correct use of coated abrasive products and back-up pads to the notice of the user. The information shall contain safety instructions as follows:

a) reference to the machine manual;

b) general information about the coated abrasive products and back-up pads and their properties;

c) handling and storage;

d) selection of coated abrasive products and back-up pads for safe and correct use;

e) conditions to be fulfilled before use of the coated abrasive products and back-up pads;

f) mounting instructions;

g) grinding operations:

   1) conditions to avoid;

   2) malpractice and incorrect use;

h) content and meaning of marking and supplied information;

i) restrictions of use

j) personal protective equipment, e.g. ear protection, gloves, eye protection, dusk mask.

Annex A
(normative)

Marking

A.1 Content of marking

A.1.1 Marking requirements

In Table A.1 the marking requirements applying to the different coated abrasive products and back-up pads are indicated with "X".

Table A.1 — Marking of coated abrasive products and back-up pads

Designation	Specification						
	1	2	3	4	5	6	7
	Manufacturer, supplier, importer, trademark	**Dimensions** mm	**Maximum operating speed**[a] m/s	**Maximum permissible speed of rotation** 1/min	**Declaration of conformity**	**Restrictions of use**	**Traceability code**
Flap discs	X	X	X	X	X	X	X
Flap wheels	X	X	X	X	X	X	X
Spindle mounted flap wheels	X	X	X	X	X	—	X
Coated vulcanised fibre discs	X	X	X	X	X	X	X
Back-up pads for vulcanised fibre discs	X	—	—	X	X	—	X

[a] Option: Additional marking with colour code in accordance with Annex B.

To specification 1

Instead of the name of manufacturer, supplier or importer their registered trademark may be shown.

To specification 2

Flap discs, flap wheels and coated vulcanised fibre discs — nominal dimensions

Spindle mounted flap wheels — nominal dimensions, diameter of the spindle and minimum clamping length

To specification 4

Maximum permissible speed of rotation in 1/min or rpm. The speed of rotation marked on the product should be according to Annex C.

For spindle mounted flap wheels, the maximum permissible speed of rotation as a function of the relevant overhang and the minimum length of spindle within the collet shall be given.

To specification 5

For declaration of conformity with the requirements of this European Standard, the products shall be marked with:

EN 13743

To specification 6

Coated abrasive products for which certain grinding procedures, grinding machines and certain applications have to be obeyed shall be marked with the corresponding restrictions of use according to Table A.2.

The restrictions of use shall be given in full length (see Table A.2, column 1) or in the form of symbols (see Table A.2, column 3).

To specification 7

To ensure traceability and identification, the coated abrasive products and the back-up pads shall be marked with a traceability code which enables to link an individual product to a limited production quantity. The traceability code may be expressed by, e.g. a production/batch number, date of production or series number.

Table A.2 — Restrictions of use

1	2	3
Designation	**Application**	**Symbol**
Not permitted for hand-held grinding	Abrasive product only for use on stationary grinding machines. NOTE This restriction only applies to abrasive products not for use on hand-held machines but capable of being mounted on such machines.	
Not permitted for wet grinding	Abrasive product only suitable for dry grinding.	
Only permitted with back-up pad	Abrasive product only for use with additional appropriate back-up pad.	

A.1.2 Additional inscriptions

Additional inscriptions on coated abrasive products and back-up pads such as manufacturer's product name are permitted, provided legibility of the data required according to Table A.1 is not impaired.

A.2 Execution of marking

The marking shall be indelible and legible.

Where possible the marking shall be on the coated abrasive product and back-up pad. It may be on the product itself or on a fixed label. The traceability code shall be either on the product or the smallest packaging unit.

For coated abrasive products over 80 mm outside diameter when it is not possible to give all specified information on the product or label, the product itself shall at least be marked with the maximum operating speed (for back-up pads the maximum permissible speed of rotation) in so far as the surface and shape of the product permits.

For vulcanised fibre discs (all diameters) the marking shall be either on the product or the smallest packaging unit. The product shall at least be marked with the maximum operating speed.

For coated abrasive products with an outside diameter of $D \leq 80$ mm and for spindle mounted flap wheels, the specified information shall appear on the smallest packaging unit.

Annex B
(normative)

Colour codes

Colour codes may be used as additional marking of the maximum operating speed, see Table A.1. If they are used, the requirements of Table B.1 shall be met. Colour codes shall only be used for the discrete speed values given in Table B.1.

Table B.1 — Colour codes and design of colour codes

Maximum operating speed v_s m/s	**Colour code**	
	Number and colour	**Width of colour stripe**
50	1 × blue	5 mm to 20 mm
63	1 × yellow	
80	1 × red	

Colour code stripes shall extend through the centre and across the whole diameter of the abrasive product or the label. They shall be straight and of even width. A colour design of the label shall not impair the clear recognizability of the colour code.

Annex C
(informative)

Speed conversion table

The values given in Table C.1 are not the exact calculated values but recommended values to be used for marking the abrasive products.

Table C.1 — Speed conversion

Outside diameter *D* of the abrasive product mm	**Maximum operating speed vs** m/s									
	16	**20**	**25**	**32**	**35**	**40**	**45**	**50**	**63**	**80**
	Speed of rotation *n* 1/min									
6	51 000	64 000	80 000	102 000	112 000	128 000	143 240	160 000	201 000	-
8	38 200	48 000	60 000	76 500	84 000	95 500	107 430	120 000	150 500	191 000
10	30 600	38 200	48 000	61 200	67 000	76 500	86 000	95 500	120 500	153 000
13	23 550	29 500	35 600	47 100	51 500	58 800	66 500	73 500	92 600	118 000
16	19 100	23 900	29 850	38 200	41 800	47 800	54 000	59 700	75 200	95 500
20	15 300	19 100	23 900	30 600	33 500	38 200	43 000	47 800	60 200	76 500
25	12 300	15 300	19 100	24 500	26 800	30 600	34 400	38 200	48 200	61 200
32	9 550	11 950	14 950	19 100	20 900	23 900	26 900	30 000	37 600	48 000
40	7 650	9 550	11 950	15 300	16 750	19 100	21 500	23 900	30 100	38 200
50	6 150	7 650	9 550	12 250	13 400	15 300	17 200	19 100	24 100	30 600
63	4 850	6 100	7 600	9 750	10 650	12 150	13 650	15 200	19 100	24 300
80	3 850	4 800	6 000	7 650	8 400	9 550	10 750	12 000	15 100	19 100
100	3 100	3 850	4 800	6 150	6 700	7 650	8 600	9 550	12 100	15 300
115	2 700	3 350	4 200	5 350	5 850	6 650	7 500	8 350	10 500	13 300
125	2 450	3 100	3 850	4 900	5 350	6 150	6 900	7 650	9 650	12 250
150	2 050	2 550	3 200	4 100	4 500	5 100	5 750	6 400	8 050	10 200
180	1 700	2 150	2 700	3 400	3 750	4 250	4 800	5 350	6 700	8 500
200	1 550	1 950	2 400	3 100	3 350	3 850	4 300	4 800	6 050	7 650
230	1 350	1 700	2 100	2 700	2 950	3 350	3 750	4 200	5 250	6 650
250	1 250	1 550	1 950	2 450	2 700	3 100	3 450	3 850	4 850	6 150
300	1 050	1 300	1 600	2 050	2 250	2 550	2 870	3 200	4 050	5 100
350/356	875	1 100	1 400	1 750	1 950	2 200	2 450	2 750	3 450	4 400
400/406	765	960	1 200	1 550	1 700	1 950	2 150	2 400	3 050	3 850
450/457	680	850	1 100	1 400	1 500	1 700	1 950	2 150	2 700	3 400
500/508	615	765	960	1 250	1 350	1 550	1 750	1 950	2 450	3 100
600/610	510	640	800	1 050	1 150	1 300	1 450	1 600	2 050	2 550

Bibliography

[1] EN ISO 11148-7, *Hand-held non-electric power tools - Safety requirements - Part 7: Grinders (ISO 11148-7)*

[2] EN ISO 11148-9, *Hand-held non-electric power tools - Safety requirements - Part 9: Die grinders (ISO 11148-9)*

[3] EN 12413, *Safety requirements for bonded abrasive products*

[4] EN ISO 16089, *Machine tools - Safety - Stationary grinding machines (ISO 16089)*

[5] EN 13236, *Safety requirements for superabrasive products*

[6] EN ISO 7010, *Graphical symbols - Safety colours and safety signs - Registered safety signs (ISO 7010)*

[7] EN 60745-2-3, *Hand-held motor-operated electric tools — Safety — Part 2-3: Particular requirements for grinders, polishers and disk-type sanders (IEC 60745-2-3)*

[8] EN ISO 19432, *Building construction machinery and equipment - Portable, hand-held, internal combustion engine driven cut-off machines - Safety requirements (ISO 19432)*

[9] ISO 3864-2, *Graphical symbols — Safety colours and safety signs — Part 2: Design principles for product safety labels*

[10] 95/16/EC, *European Parliament and Council Directive 95/16/EC of 29 June 1995 on the approximation of the laws of the Member States relating to lifts*

[11] 01/95/EC, *Directive 2001/95/EC of the European Parliament and of the Council of 3 December 2001 on general product safety*

[12] 06/42/EC, *Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC*

This page deliberately left blank

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Copyright in BSI publications

All the content in BSI publications, including British Standards, is the property of and copyrighted by BSI or some person or entity that owns copyright in the information used (such as the international standardization bodies) and has formally licensed such information to BSI for commercial publication and use.

Save for the provisions below, you may not transfer, share or disseminate any portion of the standard to any other person. You may not adapt, distribute, commercially exploit, or publicly display the standard or any portion thereof in any manner whatsoever without BSI's prior written consent.

Storing and using standards

Standards purchased in soft copy format:

- A British Standard purchased in soft copy format is licensed to a sole named user for personal or internal company use only.
- The standard may be stored on more than 1 device provided that it is accessible by the sole named user only and that only 1 copy is accessed at any one time.
- A single paper copy may be printed for personal or internal company use only.

Standards purchased in hard copy format:

- A British Standard purchased in hard copy format is for personal or internal company use only.
- It may not be further reproduced – in any format – to create an additional copy. This includes scanning of the document.

If you need more than 1 copy of the document, or if you wish to share the document on an internal network, you can save money by choosing a subscription product (see 'Subscriptions').

Reproducing extracts

For permission to reproduce content from BSI publications contact the BSI Copyright & Licensing team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email subscriptions@bsigroup.com.

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Useful Contacts

Customer Services
Tel: +44 345 086 9001
Email (orders): orders@bsigroup.com
Email (enquiries): cservices@bsigroup.com

Subscriptions
Tel: +44 345 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

bsi.