Helmets for pedal cyclists and for users of skateboards and roller skates
National foreword

This British Standard is the UK implementation of EN 1078:2012+A1:2012. It supersedes BS EN 1078:2012 which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by [A1].

The UK participation in its preparation was entrusted by Technical Committee PH/6, Head protection, to Subcommittee PH/6/4, Pedal cyclists helmets.

A list of organizations represented on this subcommittee 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.

© The British Standards Institution 2013.
Published by BSI Standards Limited 2013

ISBN 978 0 580 80322 2

ICS 13.340.20

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 28 February 2012.

Amendments/corrugenda issued since publication

<table>
<thead>
<tr>
<th>Date</th>
<th>Text affected</th>
</tr>
</thead>
</table>
Helmets for pedal cyclists and for users of skateboards and roller skates

Casques pour cyclistes et pour utilisateurs de planches à roulettes et de patins à roulettes

Helme für Radfahrer und für Benutzer von Skateboards und Rollschuhen

This European Standard was approved by CEN on 17 December 2011 and includes Amendment 1 approved by CEN on 19 July 2012.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.
Contents

Foreword ................................................................. 3
Introduction ............................................................. 4
1 Scope .................................................................. 5
2 Normative references .......................................... 5
3 Terms and definitions ........................................... 5
4 Requirements ....................................................... 6
  4.1 Materials ....................................................... 6
  4.2 Construction ................................................... 6
  4.3 Field of vision .................................................. 7
  4.4 Shock absorbing capacity .................................. 9
  4.5 Durability ......................................................... 9
  4.6 Retention system .............................................. 9
    4.6.1 General ..................................................... 9
    4.6.2 Chin strap .................................................. 9
    4.6.3 Fastening device ....................................... 9
    4.6.4 Colour ...................................................... 9
    4.6.5 Strength ..................................................... 9
    4.6.6 Effectiveness ............................................. 9
    4.6.7 Ease of release .......................................... 9
5 Testing .................................................................. 10
  5.1 Headforms ....................................................... 10
  5.2 Inspection and determination of mass .................. 10
  5.3 Number of samples and sequence of tests ............ 10
  5.4 Determination of shock absorbing capacity .......... 11
    5.4.1 Test area .................................................. 11
    5.4.2 Conditioning ............................................. 11
    5.4.3 Apparatus ................................................ 12
    5.4.4 Procedure ............................................... 15
    5.5 Determination of retention system strength and ease of release .............................................. 15
      5.5.1 Apparatus .............................................. 15
      5.5.2 Procedure ............................................. 16
    5.6 Determination of retention system effectiveness ................................................................. 16
      5.6.1 Apparatus .............................................. 16
      5.6.2 Procedure ............................................. 18
    5.7 Determination of field of vision ......................... 19
    5.8 Test report .................................................... 19
6 Marking .................................................................. 19
7 Information supplied by the manufacturer ............... 20
Annex A (informative) Alternative procedure for artificial ageing ........................................... 21
Annex B (informative) Significant technical changes between this European Standard and
EN 1078:1997 ............................................................... 22
Annex ZA (informative) Relationship between this European Standard and the
Essential Requirements of EU Directive 89/686/EEC Personal Protective
Equipment .............................................................. 23
Bibliography .......................................................... 24
Foreword

This document (EN 1078:2012+A1:2012) has been prepared by Technical Committee CEN/TC 158 "Head protection", the secretariat of which is held by BSI.

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 April 2013, and conflicting national standards shall be withdrawn at the latest by April 2013.

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

This document includes Amendment 1 approved by CEN on 19 July 2012.

This document supersedes EN 1078:2012.

The start and finish of text introduced or altered by amendment is indicated in the text by tags.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

Annex B provides details of significant technical changes between this European Standard and the previous edition.

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

The protection given by a helmet depends on the circumstances of the accident and wearing a helmet cannot always prevent death or long term disability.

A proportion of the energy of an impact is absorbed by the helmet, thereby reducing the force of the blow sustained by the head. The structure of the helmet may be damaged in absorbing this energy and any helmet that sustains a severe blow needs to be replaced even if damage is not apparent.

The technical committee which has prepared this European Standard realizes that it is of importance for the wearer’s comfort and psychrometric performance that a helmet is ventilated. At the time the standard was prepared no method for measuring the ventilating capacity of a helmet was recognized. For that reason no requirements concerning ventilation or heat transmission have been introduced. Manufacturers of helmets are urged to design their helmets to encourage a flow of air over the wearer’s head.

Pedal cyclists’ helmets and helmets for users of skateboards and roller skates are fitted with a retention system to retain the helmet on the head. However, there may be a foreseeable risk that helmets of young children could become trapped and thereby cause a risk of strangulation of the child. In such cases an impact protection helmet for young children (see EN 1080) should be used.
1 Scope

This European Standard specifies requirements and test methods for helmets worn by users of pedal cycles, skateboards and roller skates.

Requirements and the corresponding methods of test are given for the following:

— construction, including field of vision;
— shock absorbing properties;
— retention system properties, including chin strap and fastening devices;
— marking and information.

2 Normative references

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

EN 960:2006, Headforms for use in the testing of protective helmets

ISO 6487, Road vehicles — Measurement techniques in impact tests — Instrumentation

3 Terms and definitions

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

3.1 protective helmet
item to be worn on the head and intended to absorb the energy of an impact, thus reducing the risk of injury to the head

3.2 helmet type
category of helmets which does not differ in such essential respects as the materials or dimensions or construction of the helmet, of the retention system or of the protective padding

3.3 padding

3.3.1 protective padding
material used to absorb impact energy

3.3.2 comfort padding
lining material provided for the wearer’s comfort

3.3.3 sizing padding
lining material used for adjustment of the helmet size
3.4 retention system
complete assembly by means of which the helmet is maintained in position on the head including any
devices for adjustment of the system or to enhance the wearer’s comfort

3.5 chin-strap
part of the retention system consisting of a strap that passes under the wearer's jaw to keep the
helmet in position

3.6 basic plane of the human head
plane at the level of the external ear opening (external auditory meatus) and the lower edge of the eye
sockets (orbits)

3.7 basic plane of a headform
plane relative to the headform that corresponds to the basic plane of the human head

3.8 reference plane
construction plane parallel to the basic plane of the headform at a distance from it which is a function
of the size of the headform

3.9 test area
area of the helmet in which impact tests may be conducted which corresponds to the minimum
protected area of the human head

4 Requirements

4.1 Materials
For those parts of the helmet coming into contact with the skin, the material used should be known
not to undergo appreciable alteration from contact with sweat or with substances likely to be found in
toiletries.

Materials shall not be used which are known to cause skin disorders.

4.2 Construction
The helmet normally consists of a means of absorbing impact energy and means of retaining the
helmet on the head in an accident.

The helmet should be durable and withstand handling. The helmet shall be so designed and shaped
that parts of it (visor, rivets, ventilators, edges, fastening device and the like) are not likely to injure the
user in normal use.

NOTE Helmets should:
  – have low weight;
  – be ventilating;
  – be easy to put on and take off;
  – be usable with spectacles;
– not significantly interfere with the ability of the user to hear traffic noise.

4.3 Field of vision

When tested in accordance with 5.7 there shall be no occultation in the field of vision bounded by angles as follows (see Figure 1):

– horizontally: min. 105° from the longitudinal vertical median plane to the left and right hand sides;
– upwards: min. 25° from the reference plane;
– downwards: min. 45° from the basic plane.


Dimensions in millimetres

a) Section of headform in longitudinal vertical plane

b) Section of headform in reference plane

Key
1 reference plane
2 basic plane
3 front
4 back
5 longitudinal vertical median plane
6 central transverse vertical plane

NOTE 1 Longitudinal vertical median plane – equivalent to EN 960:2006, 2.8 “vertical longitudinal plane”.

NOTE 2 Central transverse vertical plane – equivalent to EN 960:2006, 2.9 “vertical transverse plane”.

Figure 1 — Field of vision
4.4 Shock absorbing capacity

The helmet shall give protection to the forehead, rear, sides, temples and crown of the head.

When tested in accordance with 5.3 and 5.4 the peak acceleration shall not, for each impact, exceed 250 g for the velocity of $5.42 \pm 0.1 \text{ m/s}$ on the flat anvil, and $4.57 \pm 0.1 \text{ m/s}$ on the kerbstone anvil.

NOTE These are theoretically equivalent to 1 497 mm and 1 064 mm drop heights respectively.

4.5 Durability

After being tested the helmet shall not exhibit damage that could cause significant injury to the wearer (sharp edges, points).

4.6 Retention system

4.6.1 General

Means shall be provided for retaining the helmet on the wearer's head. All parts of the retention system shall be securely attached to the helmet.

4.6.2 Chin strap

The chin strap shall not include a chin cup. Any chin strap shall be no less than 15 mm wide. Chin straps may be fitted with means of enhancing comfort for the wearer.

4.6.3 Fastening device

Any retention system shall be fitted with a device to adjust and maintain tension in the system. The device shall be capable of adjustment so that the buckle does not sit on the jaw bone.

4.6.4 Colour

No part of the retention system shall be coloured green.

NOTE It is recommended that the opening mechanism be marked with red or orange colour.

4.6.5 Strength

When tested in accordance with 5.5, the dynamic extension of the retention system shall not exceed 35 mm and the residual extension shall not exceed 25 mm. For this purpose, extension includes slippage of the fastening device.

Damage to the retention system shall be accepted provided that the above requirements are met.

NOTE In this test, slippage of the fastening device can be measured and recorded separately from other contributions to the extension but this is for information only and is not subject to a separate requirement.

4.6.6 Effectiveness

When tested in accordance with 5.6 the helmet shall not come off the headform.
4.6.7 Ease of release

Following the strength test in accordance with 5.5 and with the load still applied, it shall be possible to open the release system with one hand.

5 Testing

5.1 Headforms

The headforms used shall comply with EN 960:2006. The sizes in Table 1 shall be used, except for determination of shock absorbing capacity, for which only size designations 495, 535, 575, 605 and 625 shall be used.

For determination of retention system strength and ease of release, the headforms used shall comply with EN 960:2006 at least down from the basic plane.

NOTE Table 1 also gives the EN 960:1994 equivalent letter codes to the EN 960:2006 size designations for headforms with similar nominal dimensions. These are as given in EN 960:2006, Annex C. The EN 960:2006 size designation approximates to the circumference of the headform at the reference plane, in mm.

<table>
<thead>
<tr>
<th>Size designation (EN 960:1994 equivalent)</th>
<th>Inside circumference of helmet mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>495 (A)</td>
<td>500</td>
</tr>
<tr>
<td>515 (C)</td>
<td>520</td>
</tr>
<tr>
<td>535 (E)</td>
<td>540</td>
</tr>
<tr>
<td>555 (G)</td>
<td>560</td>
</tr>
<tr>
<td>575 (J)</td>
<td>570</td>
</tr>
<tr>
<td>585 (K)</td>
<td>580</td>
</tr>
<tr>
<td>605 (M)</td>
<td>600</td>
</tr>
<tr>
<td>625 (O)</td>
<td>620</td>
</tr>
</tbody>
</table>

5.2 Inspection and determination of mass

Inspect the helmet to ascertain whether it is suitable for its intended purpose and fulfils the general requirements in 4.2.

Determine the mass of the helmets of the same size submitted for testing. Calculate and record the mean value in g rounded off to the nearest 10 g, stating the size of the helmet.

5.3 Number of samples and sequence of tests

For each helmet type, four helmets for each headform size that fits within the manufacturers’ claimed head size range shall be submitted for testing.
The sequence of tests performed on each helmet size and the tests performed on the same sample are given in Table 2.

<table>
<thead>
<tr>
<th>Performance test</th>
<th>Sequence of test</th>
<th>Sample number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retention system effectiveness (5.6)</td>
<td>1st</td>
<td>1</td>
</tr>
<tr>
<td>Shock absorbing capacity (5.4)</td>
<td>2nd</td>
<td>1</td>
</tr>
<tr>
<td>Retention system strength (5.5)</td>
<td>3rd</td>
<td>—</td>
</tr>
</tbody>
</table>

The fourth sample is reserved as a reference sample, which can be used by the test laboratory in case of doubt about any of the performance requirements.

5.4 Determination of shock absorbing capacity

5.4.1 Test area

a) Take a headform of appropriate size designation and mark a point B, midway between point A’ (the point where the AA’ plane, as defined in EN 960:2006, exits the back of the headform) and point F (see Figures 1 and 2).

b) Place the helmet on the headform. Apply a vertical load of 50 N on the crown of the helmet in order to stabilize the helmet on the headform. Position the front edge of the helmet to meet the upwards field of vision specified in 4.3 or to the manufacturer’s normal wearing position, if this is detailed by the manufacturer and results in greater than the specified upwards vision.

c) Draw the AA” line (in the AA’ plane) on the helmet.

d) Draw a line on the helmet, parallel to and approximately 20 mm above the AA” line (for use as an angular measurement datum line).

e) Mark the helmet at points B₁ and B₂. These points are the sideways horizontal projection of point B on to the outer surface of the helmet.

f) Draw a line RR’ on the helmet passing through B₁ and B₂, the line being angled 10° upwards toward the front of the helmet relative to the datum line drawn in d).

The area above the line drawn in f) is the test area for impacts on to the flat anvil. The area above the line RWA” is the test area for impacts on to the kerbstone anvil, point W being the intersection of the lines marked in accordance with c) and f) above.

5.4.2 Conditioning

5.4.2.1 High temperature conditioning

The helmet shall be exposed to a temperature of (+50 ± 2) °C for not less than 4 h and not more than 6 h.

5.4.2.2 Low temperature conditioning

The helmet shall be exposed to a temperature of (-20 ± 2) °C for not less than 4 h and not more than 6 h.
5.4.2.3 Artificial ageing

The outer surface of the protective helmet shall be exposed successively to:

- ultraviolet irradiation by a 125 W xenon-filled quartz lamp for 48 h at a range of 250 mm;
- spraying for 4 h to 6 h with water at ambient temperature at the rate of 1 l/min.

NOTE A method for artificial ageing is described in Annex A. This method may be used as an alternative to the conditioning according to 5.4.2.3.

Key
1 angular displacement datum
2 reference plane
3 headform
4 helmet

Figure 2 — Definition of test area

5.4.3 Apparatus

5.4.3.1 Description

The test apparatus shall comprise:

- an anvil rigidly fixed to a base;
- a free fall guidance system;
— a mobile system supporting the helmeted headform;
— a metal headform fitted with a tridirectional accelerometer;
— an accelerometer output recording and conditioning system;
— a system by which the point of impact can be brought into correspondence with the centre of the anvil.

The principle is shown in Figure 3.

### 5.4.3.2 Base

The base shall be monolithic and made of steel or concrete or a combination of these materials and have a mass of at least 500 kg.

No part of the base or anvil shall have a resonant frequency liable to affect the measurements.

### 5.4.3.3 Anvils

A flat steel anvil having a circular impact face of $(130 \pm 3)$ mm diameter.

A steel anvil simulating a kerbstone and having two faces each inclined at $(52,5 \pm 2,5)°$ to the vertical and meeting along a striking edge with a radius of $(15 \pm 0,5)$ mm. The height shall be not less than 50 mm and the length not less than 125 mm.

### 5.4.3.4 Mobile system and guides

The mobile system supporting the headform shall be such that its characteristics do not affect the measurement of acceleration at the centre of gravity of the headform. It shall also be such that any point in the test area can be positioned vertically above the centre of the anvil.
5.4.3.5 Accelerometer and measuring assembly

The tridirectional accelerometer shall be capable of measuring and recording accelerations up to 2 000 g and its maximum mass shall be 50 g.

The measuring system, including the drop assembly, shall have a frequency response in accordance with channel frequency class (CFC) 1000 of ISO 6487.

The measuring system shall include equipment to record the velocity of the headform.
5.4.3.6 Headforms

The headforms to be used shall comply with EN 960:2006 (see 5.1).

5.4.4 Procedure

The testing shall be carried out in accordance with Table 3.

<table>
<thead>
<tr>
<th>Sample number</th>
<th>Conditioning</th>
<th>Anvil</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High temperature</td>
<td>Kerbstone</td>
</tr>
<tr>
<td></td>
<td>No reconditioning</td>
<td>Flat</td>
</tr>
<tr>
<td>2</td>
<td>Low temperature</td>
<td>Flat</td>
</tr>
<tr>
<td></td>
<td>No reconditioning</td>
<td>Kerbstone</td>
</tr>
<tr>
<td>3</td>
<td>Artificial ageing</td>
<td>Kerbstone</td>
</tr>
<tr>
<td></td>
<td>No reconditioning</td>
<td>Flat</td>
</tr>
</tbody>
</table>

Make the first impact within 1 min and all further impacts within 3 min from removal of the helmet from the conditioning chamber.

Impact the helmets on sites selected by the test laboratory to present worst case conditions. Use the kerbstone anvil without any restriction on its orientation. In each series of tests on a model, conduct impacts on each perceived weak area (i.e. ventilation features, retention anchorages or webbing supports) which fall within the test area. The impact sites on each sample shall be separated by a minimum distance of 150 mm along the chord. The impact site shall be centred over the centre of the anvil.

The headform shall never be turned so that the vertical axis comes below the horizontal plane even if the test area allows. (See Figure 3.)

In the event of there being no helmet material at the impact site, then the adjacent material shall manage the energy of such an impact. In the case where anvil/headform contact can be made at the setting up stage for an impact, the result shall be deemed a failure, without conducting the test.

Measure the velocity of the helmeted headform at a distance not exceeding 60 mm prior to impact to an accuracy of 1 %.

5.5 Determination of retention system strength and ease of release

5.5.1 Apparatus

5.5.1.1 Description

The test apparatus shall comprise:

— a means to hold the helmet with headform and loads;

— a headform equipped with a loading device comprising a guide, an arrest device and a drop weight;

— a retention system extension measuring system.
A suitable apparatus is shown in Figure 4.

### 5.5.1.2 Headform

The headform to be used shall comply, at least down to the basic plane, with EN 960:2006 (see 5.1).

### 5.5.1.3 Loadbearing device

The loadbearing device shall consist of a chin strap stirrup with a round or square guide bar. The bar shall have a steel end stop.

The chin strap stirrup shall consist of two metal bars each with a diameter of $(12.5 \pm 0.5)$ mm that have a centre distance of $(76 \pm 1)$ mm.

The guide bar shall be provided with a cylindrical weight having a mass of $(4 \pm 0.2)$ kg and allow for a drop of the weight of $(600 \pm 5)$ mm. The mass of the entire loading apparatus excluding the 4 kg weight shall be $(5 \pm 0.5)$ kg.

### 5.5.1.4 Measuring device

A device to measure the vertical displacement of the chin strap fixture shall be included.

### 5.5.2 Procedure

Place the helmet on the headform. Fasten the chin strap under the stirrup bars so that the entire test apparatus hangs freely on the retention system. Place a preload ballast of $(5 \pm 0.5)$ kg on the helmet. Then raise the drop weight and allow it to fall and impact the end stop.

During the test measure the dynamic displacement of the chin strap stirrup.

After 2 min, measure the residual displacement with the drop weight still on the end stop.

Ascertain whether or not the system can be released by one hand.

### 5.6 Determination of retention system effectiveness

#### 5.6.1 Apparatus

The apparatus shall comprise:

- a drop weight with a mass of $(10.0 \pm 0.1)$ kg;
- a guiding system with a total mass of $(3.0 \pm 0.1)$ kg allowing the drop weight to drop in a guided free fall;
- a flexible strap and a hook attached to the guiding system running over a pulley with a diameter of 100 mm. The extension of the strap shall be less than 18 mm/m under a load of 1 000 N;
- headforms according to EN 960:2006 (see 5.1);
- a base to hold the headforms.

Figure 5 shows the principle of the apparatus.
**Key**

1. helmet
2. headform
3. chin strap stirrup
4. extension measuring device
5. load cell (optional)
6. drop weight 4 kg ± 0.2 kg
7. guide bar
8. drop height 600 mm ± 5 mm
9. stop anvil

**Figure 4** — Example of an apparatus for testing of retention system strength
Key
1  base
2  reference plane
3  drop weight mass 10 kg
4  guiding system mass 3 kg
5  pulley Ø 100 mm
6  flexible strap ≥ Ø 3 mm

Figure 5 — Apparatus for testing of the retention system effectiveness

5.6.2  Procedure

Fit the helmet according to the manufacturer's instructions to the appropriate headform which shall be the smallest and the largest and intermediate sizes measured for the helmet type.
Adjust the retention system to be as tight as possible.

Hook the strap to the rear of the helmet.

Release the drop weight and allow it to fall through a distance of $(175 \pm 5)$ mm.

Observe whether or not the helmet comes off.

**5.7 Determination of field of vision**

To carry out the test, the test laboratory shall select the size it considers likely to yield the least favourable result for the helmet type.

Place the helmet on a headform of appropriate size. Apply a load of 50 N on the crown of the helmet in order to stabilize the helmet on the headform. Ascertain that the vertical median plane of the helmet coincides with the vertical median plane of the headform.

Adjust the helmet on the headform according to the manufacturer's instructions, if supplied. In that position, determine if the helmet complies with the requirements for field of vision in 4.3.

**5.8 Test report**

The test report shall contain at least the following information:

a) identification details of the helmets including range of sizes;
b) results of the test in accordance with 5.2 to 5.7;
c) date of testing;
d) name of the test laboratory.

**6 Marking**

Each helmet shall be marked in such a way that the following information is easily legible by the user and is likely to remain legible throughout the life of the helmet:

a) number of this European Standard;
b) name or trademark of the manufacturer;
c) designation of the model;
d) designation, which shall be one or more of the following: Helmet for pedal cyclists, skateboarders or roller skaters;
e) size or size range of the helmet, quoted as the circumference (in centimetres) of the head which the helmet is intended to fit;
f) weight of the helmet (the average mass in grams determined according to 5.2);
g) year and quarter of manufacture;
h) following text:
"Warning! This helmet should not be used by children while climbing or doing other activities when there is a risk of strangulation/hanging if the child gets trapped with the helmet."

In addition, if the helmet has components made of material which are known to be adversely affected by contact with hydrocarbons, cleaning fluids, paints, transfers or other extraneous additions, the helmet shall carry an appropriate warning.

If there is a consumer sales packaging, the information specified in a), b), d) and h) shall also be given on that package. The text shall be of minimum font size 12.

7 Information supplied by the manufacturer

With every helmet, clear information in the language of the country of sale shall be given as follows:

a) that the helmet can only protect if it fits well and that the buyer should try different sizes and choose the size which feels secure and comfortable on the head;

b) that the helmet should be adjusted to fit the user, e.g. the straps positioned so that they do not cover the ears, the buckle positioned away from the jawbone and the straps and buckle adjusted to be both comfortable and firm;

c) how the helmet should be positioned on the head to ensure the intended protection is provided (e.g. hat it should be placed so as to protect the forehead and not be pushed too far over the back of the head);

d) that a helmet cannot always protect against injury;

e) that a helmet subjected to a severe impact should be discarded and destroyed;

f) a statement of the danger of modifying or removing any of the original component parts of the helmet other than as recommended by the manufacturer, and that helmets should not be adapted for the purpose of fitting accessories in a way not recommended by the manufacturer.
Annex A
(informative)

Alternative procedure for artificial ageing

The helmet submitted to artificial ageing should be exposed to the radiation of a xenon arc lamp. The radiant energy of the lamp should be filtered to provide a spectral power distribution that closely approximates that of terrestrial daylight.

The helmet should be fixed on a cylindrical holder concentric to the lamp and which rotates at a speed of 1 min⁻¹ to 5 min⁻¹ around its axis.

Each helmet which will subsequently be tested for shock absorption should be orientated so that the area of test should be directed towards the lamp. The plane tangential to the shell at this point should be normal to a radius of the cylindrical holder.

The radiant energy incident in the plane of the test areas should be either measured or calculated from information provided by the manufacturer of the test apparatus. The exposure interval should be adjusted so that the exposed samples should receive a total energy of 1 GJ/m² over the wavelength range 280 nm to 800 nm.

The samples should be sprayed with distilled or demineralized water (having a conductivity below 5 µS/cm) intermittently with a cycle of 18 min spraying and 102 min without spraying. During the latter periods the measured relative humidity should be (50 ± 5) %.

The temperature within the test chamber should be measured with a black standard thermometer placed at the same distance from the lamp as the exposed test areas of the helmets. The temperature should be maintained at (70 ± 3) °C.

All other test and calibration conditions for the apparatus should be in accordance with Method A of EN ISO 4892-1, EN ISO 4892-2 and EN ISO 4892-3.

NOTE 1 Not all available test apparatus, otherwise meeting the requirements of EN ISO 4892-1, EN ISO 4892-2 and EN ISO 4892-3, will incorporate sample holder frames of diameter sufficient to accommodate complete helmets.

NOTE 2 The position of the water sprays may require adjustment in order to avoid interference with the test samples.

NOTE 3 The energy output of the xenon arc should be capable of being reduced below normal operational levels so as to maintain acceptable intensities in the sample surface plane required by this procedure.
Annex B
(informative)

Significant technical changes between this European Standard and EN 1078:1997

The significant changes with respect to the first edition of EN 1078 are as listed below.

Table B.1 — Significant changes between this European Standard and EN 1078:1997

<table>
<thead>
<tr>
<th>Clause/paragraph/table/figure</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clause 2</td>
<td>The normative references in Clause 2 and in the text have been updated. EN 960 has been dated throughout the text.</td>
</tr>
<tr>
<td>Figure 1</td>
<td>2 explanatory notes have been added.</td>
</tr>
<tr>
<td>5.1</td>
<td>EN 960 has been dated and sizes have been changed into size designations.</td>
</tr>
<tr>
<td>Table 1, column 1</td>
<td>Code letters have been extended to size designations with EN 960:1994 equivalent code letters in brackets. An explanatory note has been added before the table.</td>
</tr>
<tr>
<td>Annex ZA</td>
<td>Has been updated.</td>
</tr>
<tr>
<td>Bibliography</td>
<td>Has been added according to references in Annex A.</td>
</tr>
</tbody>
</table>

NOTE The technical changes referred include the significant technical changes from the EN revised but is not an exhaustive list of all modifications from the previous version.
Relationship between this European Standard and the Essential Requirements of EU Directive 89/686/EEC Personal Protective Equipment

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 89/686/EEC Personal Protective Equipment.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and the EU Directives

<table>
<thead>
<tr>
<th>EU Directive 89/686/ECC, Annex II</th>
<th>Clauses/subclauses of this European Standard</th>
<th>Qualifying remarks/notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.1 Absence of risks and other inherent nuisance factors</td>
<td>4.6.2, 4.6.6</td>
<td></td>
</tr>
<tr>
<td>1.2.1.3 Maximum permissible user impediment (sensory)</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td>1.3.2 Lightness and design strength</td>
<td>5.4.2.1, 5.4.2.2, 5.4.2.3</td>
<td></td>
</tr>
<tr>
<td>1.4 Information supplied by the manufacturer</td>
<td>6, 7</td>
<td></td>
</tr>
<tr>
<td>2.1 PPE incorporating adjustment systems</td>
<td>4.6.5</td>
<td></td>
</tr>
<tr>
<td>2.12 PPE bearing one or more identification or recognition marks directly or indirectly relating to health and safety</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>3.1.1 Impact caused by falling or projecting objects and collision of parts of the body with an obstacle</td>
<td>4.4</td>
<td></td>
</tr>
</tbody>
</table>
Bibliography


BSI is the independent national body responsible for preparing British Standards and other standards-related publications, information and services. It presents the UK view on standards in Europe and at the international level.

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

Revisions

British Standards and PASs are periodically updated by amendment or revision. Users of British Standards and PASs should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using British Standards would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Similarly for PASs, please notify BSI Customer Services.

Tel: +44 (0)20 8996 9001 Fax: +44 (0)20 8996 7001

BSI offers BSI Subscribing Members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of British Standards and PASs.

Tel: +44 (0)20 8996 7669 Fax: +44 (0)20 8996 7001
Email: plus@bsigroup.com

Buying standards

You may buy PDF and hard copy versions of standards directly using a credit card from the BSI Shop on the website www.bsigroup.com/shop. In addition all orders for BSI, international and foreign standards publications can be addressed to BSI Customer Services.

Tel: +44 (0)20 8996 9001 Fax: +44 (0)20 8996 7001
Email: orders@bsigroup.com

In response to orders for international standards, BSI will supply the British Standard implementation of the relevant international standard, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Knowledge Centre.

Tel: +44 (0)20 8996 7004 Fax: +44 (0)20 8996 7005
Email: knowledgecentre@bsigroup.com

BSI Subscribing Members are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration.

Tel: +44 (0)20 8996 7002 Fax: +44 (0)20 8996 7001
Email: membership@bsigroup.com

Information regarding online access to British Standards and PASs via British Standards Online can be found at www.bsigroup.com/BSOL.

Further information about British Standards is available on the BSI website at www.bsi-group.com/standards

Copyright

All the data, software and documentation set out in all British Standards and other BSI publications are the property of and copyrighted by BSI, or some person or entity that own copyright in the information used (such as the international standardisation bodies) has formally licensed such information to BSI for commercial publication and use. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI. This does not preclude the free use, in the course of implementing the standard, of necessary details such as symbols, and size, type or grade designations. If these details are to be used for any other purpose than implementation then the prior written permission of BSI must be obtained. Details and advice can be obtained from the Copyright & Licensing Department.

Tel: +44 (0)20 8996 7070
Email: copyright@bsigroup.com

BSI
389 Chiswick High Road London W4 4AL UK
Tel +44 (0)20 8996 9001
Fax +44 (0)20 8996 7001
www.bsigroup.com/standards