OM 2009/03 Appendix 3 – European Standards and Markings for Eye and Face Protection

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Introduction

1 Harmonised European Standards for Personal Protective Equipment (PPE) have been developed as the preferred means of demonstrating equipment conformity with the basic health and safety requirements (BHSRs) of the EC Personal Protective Equipment Directive (89/686/EEC). Only equipment which meets these BHSRs is entitled to carry the CE mark and to be sold for use in the EC.

2 The alternative route to obtaining the CE mark involves the manufacturer producing a 'technical file' for the equipment which also demonstrates that it satisfies the BHSRs. In such cases, the equipment will carry the CE mark but may not display any Standard number. The manufacturer's information will contain the performance specification.

3 For Category III PPE (for use against “mortal danger”), the CE mark will be accompanied by a four-digit code number identifying the responsible Notified Body appointed to ensure that the manufactured product continues to satisfy the BHSRs.

4 Increasingly, European Standards (prefixed EN – European Norm) are being superseded or subsumed by International Standards (prefixed ISO). Where these are adopted in the UK, they will also be issued as British Standards and be prefixed BS. The British versions of standards (BS EN, BS ISO or BS EN ISO) may have minor differences from the original versions of the standard, usually in the form of a National Foreword or National Annex, to account for legislative or technical variations specific to the UK. If such a UK variation exists, this is flagged up in the attached listings below for the individual standards. BS versions may also differ slightly in the stated year of issue from the EN or ISO versions; the original EN or ISO issue dates are quoted here.

5 The Standards may contain design, performance and marking requirements for the different types of equipment. This document lists the Standards, and gives a brief explanation of the markings which they define.

Organisation of the information

6 PPE Standards are separated into broad categories, depending on the type of protection intended, eg head protection, foot protection. Separate documents have been produced for each category.

7 Within a category, where possible, Standards have been further subdivided according to the hazard (eg mechanical hazards, heat and flame) or component type (eg filters; facepieces) as appropriate. Both current and recently superseded versions are listed, as equipment marked according to either version may be encountered in the field.

8 Standard number and date are given, with the title (sometimes abridged).

9 If a UK National variation applies to this standard, the nature of this variation is described.

10 Markings and classifications defined in the Standard for that class of equipment are listed and briefly described.

11 Related Standards, eg specific test methods which will not usually appear in the markings on equipment are listed separately at the end of each document.

12 Pictograms and symbols for each type of equipment are included at the rear of the relevant document.

Updates

13 Standards are constantly under review, and new Standards issued. The information in this document is believed to be correct at the time of issue, but updates will be necessary. The intention is to revise and re-issue the list periodically.

Further information

14 For information on how the various performance levels and classifications are assessed, and their relevance to practical use situations, contact:

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Standards for eye and face protection

General

EN 166:2001 - Personal eye protection - specifications							
Not all types of eye protector are permitted to meet all these requirements. Order of marking on **oculars** where relevant:							
Scale number (filters only)	**Makers mark**	**Optical class**	**Mechanical strength**	**Fields of use**	**Scratch resist**	**Fog resist**	**Radiant heat**
Order of marking on **frames** where relevant:							
	Makers mark	EN 166	Fields of use	Mechanical strength			
Scale Number - for oculars with filtering effect only. Higher numbers have a stronger filtering effect (e.g. are darker for welding).							
Scale number consists of a **code** number and a **shade** number separated by a hyphen, except for welding filters which have no code number Example: an IR filter with shade number 4 has the scale number 4-4.							

Welding filters See EN 169 and EN 379	shade number between **1.2** and **16**. Suffix a denotes filter for use in gas welding with flux
UV filters See EN 170	**2-** or **3-** - code number denoting UV filter without or with good colour recognition respectively, plus; shade number between **1.2** and **5**.
IR filters See EN 171	**4-** - code number for IR filters, plus; shade number between **1.2** and **10**.
Sunglare See EN 172 and EN 1836	**5-** or **6-** - code number for sunglare filters without and with IR specification respectively, plus; shade number between **1.1** and **4.1**.
Optical class **1, 2** or **3** - indicates optical quality of the ocular. Class 1 is the best.	

Mechanical strength - marked on frames and/or oculars.	
	S - increased robustness (oculars only) **F** - high speed particles, low energy impact (any type) **B** - high speed particles, medium energy impact (goggles and faceshields only) **A** - high speed particles, high energy impact (faceshields only)
Fields of use	
Frames	**3** - resistant to liquid droplets (goggles), or liquid splashes (faceshields, but not mesh) **4** - resistant to coarse dust particles **5** - resistant to gas and fine dust particles **9** - resistant to molten metals and hot solids **G** - resistant to radiant heat (EN 1731 faceshields only)
Oculars	**8** - resistant to short circuit electric arc (faceshields only) **9** - resistant to molten metals and hot solids (goggles and faceshields only)
Other ocular markings	
	K - resistant to surface damage by fine particles **N** - resistant to fogging **G** - resistant to radiant heat (EN 1731 faceshields only)

EN 1731:1998 - Mesh type eye and face protectors

Superseded by EN 1731:2006

Markings (following EN166) are, where applicable, in the order:

Maker's mark	**EN 1731**	**Mechanical strength**	**Resistant to radiant heat**

Mechanical strength	**S, F, B** or **A** - as for EN 166
Resistant to radiant heat	**G** - faceshields only

EN 1731:2006 - Mesh type eye and face protectors

Note: Requirements and markings for radiant heat deleted from the standard.

Markings (following EN166) are, where applicable, in the order:

Maker's mark	**EN 1731**	**Mechanical strength**

Mechanical strength	**S, F, B** or **A** - as for EN 166

Welding

EN 169:2002 - Filters for welding and related techniques

Markings follow EN166. Contains informative annex giving guidance on selection and use of welding filters.

EN 175:1997 - Eye and face protection during welding and allied processes

Note – this describes the frame or holder which must be used in conjunction with an appropriate welding filter - EN 169 or EN 379.)

Markings (following EN166 with additions) are, where applicable:

	S, F or **B** - mechanical strength (as for EN 166) **9** - resistant to molten metal splash or hot solids **W** - face/hand shield sizes stable after water immersion # - if mass of shield >450g (faceshield) or >500g (handshield), mass in grams (where applicable)

EN 379:2003 – Personal eye-protection — Automatic welding filters

Markings follow EN166 with additions.
It is easiest to explain the markings for different types of device.

Automatic welding filters and automatic welding filters with manual scale number setting

The order of markings (each separated by an oblique stroke /) is:

Light shade	**Dark shade [or range(s)]**	**Makers mark**	**Optical class**	**Light diffusion class**	**Variations in luminous transmittance**	**Angle dependence of luminous transmittance class (optional)**

followed by the standard number **EN379**

Light and dark scale (shade) numbers

The light state scale number and the lightest dark state scale number(s), separated by an oblique stroke, are given instead of a single scale number. If the dark state is manually controlled, the limits of the range are separated by a hyphen.

Light shade

- scale number between **1.2** and **5** (typically)

Dark shade [or range(s)]

Options:
- one dark state – single number
- one dark state range – top and bottom of range separated by hyphen
- two dark state ranges – each range as above, with ranges separated by hyphen

Examples of light and dark scale numbers
a) A simple device with one light state (5) and one dark state (11): 5/11
b) A device with one light state (4) and manual control of the dark state in one range (9-13): 4/9-13
c) A device with one light state (4) and manual control of the dark state in two ranges (5-7) & (10-13) : 4/5-7 /10-13

Optical class	**1, 2** or **3** - indicates optical quality of the ocular. Class 1 is the best.
Light diffusion class - (switchable filters only)	
	1, 2 or **3** - indicates light diffusion by the ocular. Class 1 is the best.
Variations in luminous transmittance - (switchable filters only)	
	1, 2 or **3** - indicates shade variability in the dark state of the ocular. Class 1 is the best.

Angle dependence of luminous transmittance class (optional)
If applicable, marked before the standard number.
Classes **1, 2** or **3** with class 1 the best.

Welding filter with automatic scale number setting
The order of markings (each separated by an oblique stroke /) is:

Light shade	**Dark shade range**	**Makers mark**	**Optical class**	**Light diffusion class**	**Variations in luminous transmittance**	**Angle dependence of luminous transmittance class (optional)**

followed by the standard number **EN379**

The light state scale number and the lightest dark state scale number, separated by an oblique stroke, are given instead of a single scale number. The darkest state scale number is marked separated by the symbol ”<”.
For filters with manual offset, “M” is added after the number for the darkest state.

Light shade
- scale number between **1.2** and **5** (typically)

Dark shade range
top and bottom of range separated by <

Example of light and dark scale numbers
A device with one light state (4) and a dark state range (9-13): 4/9<13

The other markings are as described for automatic welding filters.	
Note – *For all device types there may also be a marking, if the device does not meet optical requirements at temperatures below 10^{o}C:*	
	" **DO NOT USE BELOW 10oC**"

Laser

EN 207:1998 - Filters and eye protection against laser radiation Markings, where applicable, in the order:	
Laser type(s) / **Wavelength** / **Scale number** / **Makers mark** / **Test mark** / **Mechanical strength**	
Laser types - if applicable to all types of laser, **no mark** appears.	
	D - continuous wave laser **I** - pulsed laser **R** - giant pulsed laser **M** - mode-coupled laser
Wavelength	# - single wavelength or range (nm), e.g '1060' or'630 - 700'
Scale number	**L#** - in range **L1** to **L10** denoting spectral transmittance. Higher numbers are lower transmittance
Test mark	eg Kitemark (if applicable)
Mechanical strength	**S, F, B, A** - as for EN 166

EN 208:1998 - Personal eye protectors for adjustment work on lasers Frames must be marked **adjustment eye protectors**. Other markings, where applicable, in the order:						
Max power	**Max energy**	**Wavelength**	**Scale no.**	**Makers mark**	**Test mark**	**Mechanical strength**
Maximum power		**#W** - maximum laser power (Watts), e.g. '10W'				
Maximum energy		**#J** - maximum laser energy (Joules), e.g '2x10-3J'				
Wavelength		# - single wavelength or range (nm), e.g '1060' or '630 - 700'				
Scale number		**R#** - in range R1 to R5 denoting spectral transmittance. Higher numbers are lower transmittance				

Test mark	eg Kitemark (if applicable)
Mechanical strength	**S, F, B or A** - as for EN 166

Firefighters and emergency teams

EN 14458:2004 – Faceshields and visors for firefighters, ambulance and emergency services	
	= General (non-firefighting) use, or + Firefighters' use
	☹ face guard, or ⊙ eye guard
Options	**Scale number** appropriate to filtering performance (see EN 166) Temperature extremes of testing **T** – resistance to medium energy impact at extremes of temperature **A** – resistance to high energy impact **AT** – resistance to high energy impact at extremes of temperature **K** – resistance to abrasion **N** – resistance to fogging **R** – enhanced infrared reflection **Ω** - electrical properties

Sport

EN 174:2001 - Ski goggles for downhill skiing Filtering oculars marked according to transmittance:	
	S# - in range **S0** to **S4**. Higher number indicates lower transmittance.
BS 7930-1:1998 - Eye protectors for racket sports - Squash.	
Oculars	- manufacturer identification - Standard number **(BS 7930-1)**
Frames	- manufacturer identification - Standard number **(BS 7930-1)** - model size if applicable

Other standards relevant to eye protectors

Occupational equipment is unlikely to be marked with these Standard numbers, but they may contain useful information on equipment performance or test methods.

EN 165:2005	Personal eye protection - vocabulary
EN 167:2001	Personal eye protection - optical test methods
EN 168:2001	Personal eye protection - non-optical test methods
EN 170:2002	Specification for UV filters
EN 171:2002	Specification for IR filters
EN 172:1994	Specification for sunglare filters for industrial use (amended 2002)
EN 1836:2005	Sunglasses and sunglare filters for general use
EN 1938:1998	Goggles for motorcycle and moped riders
BS 4110:1999	Specification for visors for vehicle users
BS 7028:1999	Eye protection for industrial and other uses. Guidance on selection, use and maintenance
EN 12254: 1998	Screens for laser working places - Safety requirements and testing
EN 13178: 2000	Eye protective equipment - Eye protectors for snowmobile drivers