

OM 2009/05 - Appendix 5 – European Standards and Markings for Hand and Arm 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- 4 Increasingly, European Standards (prefixed EN – European Norm) are being superseded or subsumed by International Standards (prefixed ISO).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 hand/arm protection

General requirements

EN 420:2003 - General requirements for gloves	
	mark identifying the manufacturer product identifying mark # - size designation (normally in range 6 to 11) - date of obsolescence (if appropriate) # - dexterity performance in range 1 (lowest) to 5 (highest), if required markings specific to individual risks, including pictograms (Figs 1 to 13) where appropriate

Mechanical risks

EN 381-7:1999 - Requirements for chainsaw protective gloves	
	Note: Unless otherwise marked, only the left hand glove will incorporate chainsaw protection and the following markings. as for EN 420, plus: pictogram - for chainsaw use (Fig 10) - A (5 finger glove without protection in the fingers), or - B (glove or mitt also having protection on the back of the fingers, but not the thumb) # - chain speed class 0 to 4 (16 to 28 m/s in 4 m/s increments) below the pictogram - EN 381-7
EN 388:2003 - Protective gloves against mechanical risks	
Mechanical properties	as for EN 420, plus: pictogram - for mechanical risk (Fig 1), with four digits in a horizontal line, in the order: # - abrasion resistance (0 to 4) # - blade cut resistance (0 to 5) # - tear resistance (0 to 4) # - puncture resistance (0 to 4) (highest number = greatest resistance)
Plus, if appropriate:	
Impact cut resistance	pictogram - for impact cut resistance (Fig 2)
Anti static	pictogram - for antistatic properties (Fig 3)

EN 1082-1:1997 - Protective clothing - Gloves and arm guards protecting against cuts and stabs by hand knives: Chain mail gloves and arm guards	
	<p>pictogram - for impact cut resistance (Fig 2) mark identifying the manufacturer product identifying mark # - size designation (normally in range 6 to 11) maximum cleaning temperature if <82°C</p>
EN 1082-2:2000 - Gloves and arm guards made of material other than chain mail	
	<ul style="list-style-type: none"> - size - maximum cleaning temperature if <82°C
EN 14328:2005 - Gloves and armguards protecting against cuts by powered knives.	
	<ul style="list-style-type: none"> - size - maximum cleaning temperature if below 82°C - intended and forbidden applications - constituent materials

Physical risks

EN 407:2004 - Protective gloves against thermal risks (heat and/or fire)	
	<p>as for EN 420, plus: pictogram - for thermal resistance (Fig 4), with six digits in a horizontal line, in the order:</p> <ul style="list-style-type: none"> # - burning resistance # - contact heat resistance # - convective heat resistance # - radiant heat resistance # - resistance to small splashes of molten metal # - resistance to large splashes of molten metal <p>each graded X, or 1 to 4. X denotes that this property has not been tested. Higher numbers indicate higher resistance.</p>
EN 421:1994 - Protective gloves against ionising radiation and radioactive contamination	
	<p>as for EN 420, plus where appropriate: pictogram - for radioactive risk (Fig 8) # - 'lead equivalence' in mm # - water vapour permeability (1 [most] to 5 [least]) # - ozone cracking resistance (1 [least] to 4 [most]) - any mechanical resistance as for EN 388 - any chemical resistance tested by EN 374-3</p>

EN 511:1994 - Protective gloves against cold	
Superseded by EN 511:2006	
	as for EN 420, plus pictogram - for cold risk (Fig 6) with two or three digits in a horizontal line in the order: # - convective cold resistance (1 [least] to 4 [most]) # - contact cold resistance (1 [least] to 4 [most]) 1 - water impermeability (if required)
EN 511:2006 – Protective gloves against cold	
	as for EN 420, plus pictogram - for cold risk (Fig 6) with two or three digits in a horizontal line in the order: # - convective cold resistance (1 [least] to 4 [most]) # - contact cold resistance (1 [least] to 4 [most]) 1 - water impermeability (if required)
EN 659:2003 - Protective gloves for firefighters	
	as for EN 420, plus pictogram (Fig.11): EN 659 - implies the following performance levels
Mechanical properties	# - abrasion resistance ≥ 3 # - cut resistance ≥ 2 # - tear resistance ≥ 3 # - puncture resistance ≥ 3
Thermal properties	4 - burning resistance # - convective heat resistance ≥ 3 # - radiant heat resistance (t_{24} time of ≥ 18 s when tested according to EN ISO 6942) # - contact heat resistance (t_t time of ≥ 10 s when tested according to EN 702, wet and dry) - heat resistant lining
Other properties	# - dexterity ≥ 1 - defined water permeability for waterproof layer - water penetration resistance 1 – 4 optional - integrity to water immersion optional - liquid chemical penetration resistance optional
EN 12477:2001 – Protective gloves for welders	
	As for EN 420, plus: A – Higher protection but lower dexterity B – Lower protection but higher dexterity

EN 50237:2000 - Gloves and mitts with mechanical protection for electrical purposes	
Superseded by EN 60903:2003	
	symbol - for insulating protective equipment (Fig 9) symbol - for mechanical protection (Fig 1) - mark identifying the manufacturer - category (see below) # - size designation (normally in the range 6 to 11) - class (see below) - month and year of manufacture
Category	A - acid resistance H - oil resistance Z - ozone resistance P - acid, oil and ozone resistance C - extreme low temperature
Class	- marking / symbol colour code for material thickness: 00 (beige) (thinnest) 0 (red) 1 (white)
Service history	Panel on which date of first use, and dates of subsequent inspection and test, can be marked
EN 60903:2003 - Gloves and mitts of insulating material for live working	
	symbol - for insulating protective equipment (Figs 1 & 9) - mark identifying the manufacturer # - size designation (normally in the range 6 to 11) - month and year of manufacture
Category	A - acid resistance H - oil resistance Z - ozone resistance R - all the above C - resistance to low temperature
Class	- marking and/or symbol colour code:
	00 (beige) 0 (red) 1 (white) 2 (yellow) 3 (green) 4 (orange) - depending on length of glove and thickness of material (00 is shortest and thinnest)

Service history	panel on which date of first use, and dates of subsequent inspection and test, can be marked
EN 60984:1993 - Sleeves of insulating material for live working	
	symbol - for insulating protective equipment (Fig 9) - mark identifying the manufacturer # - size designation (S, M, LG or XLG) Right or Left - sleeve orientation - month and year of manufacture
Category	A - acid resistance H - oil resistance Z - ozone resistance S - both oil and ozone resistance C - resistance to low temperature
Style	Style A - straight taper sleeve Style B - curved elbow sleeve
Class	marking and/or symbol colour code: 0 (red) 1 (white) 2 (yellow) 3 (green) 4 (orange) - depending on thickness of material (0 is thinnest)
Service history	panel on which date of first use, and dates of subsequent inspection and test, can be marked

Chemical/biological risks

EN 374-1:2003 - Protective gloves against chemicals and micro-organisms	
	As for EN 420 and EN 388, plus:
Gloves resisting penetration and permeation:	- Pictogram (Fig 4) with a minimum of 3 letters A to L denoting which chemicals have been tested
Gloves resisting micro-organisms:	must achieve performance level 2 in penetration Note: does not infer protection against virus
Gloves resisting penetration only (low chemical hazards):	- Pictogram (Fig 12)

EN 455-1:2000 – Medical gloves for single use – Part 1: Requirements and testing for freedom from holes	No specific marking requirement
EN 455-2:2000 – Medical gloves for single use – Part 2: Requirements and testing for physical properties	No specific marking requirement
EN 455-3:2006 – Medical gloves for single use – Part 3: Requirements and testing for biological evaluation	If glove contains latex, Fig 13. (May be on packaging)

Other standards relevant to hand and arm protection

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

EN 374-2:2003	Protective gloves against chemicals and micro-organisms: Determination of resistance to penetration
EN 374-3:2003	Protective gloves against chemicals and micro-organisms: Resistance to permeation by chemicals
EN 381-4:1999	Test methods for chainsaw protective gloves
EN 1082-3 :2000	Gloves impact cut test for fabric, leather and other materials
EN ISO 10819 :1997	Hand-arm vibration: Method for the measurement of the vibration transmissibility of gloves at the palm of the hand
BS 6526:1998	Domestic oven gloves - Requirements and test methods
BS 7971	Protective clothing and equipment for use in violent situations and in training. Part 4:2002 – Limb protectors Part 6: 2003 - Gloves against mechanical thermal and chemical hazards Part 7: 2003 – Slash resistant gloves

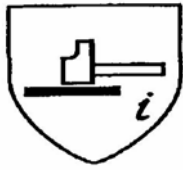


Fig. 1 Mechanical hazards

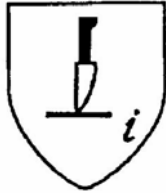


Fig. 2 Impact cut



Fig. 3 Static electricity



Fig. 4 Chemical hazards



Fig. 5 Micro-organism hazards

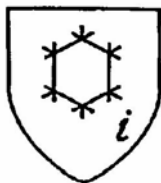


Fig. 6 Cold hazard



Fig. 7 Heat and fire



Fig. 8 Ionising radiations and radioactive contamination



Fig. 9 Live working symbol



Fig. 10 Chainsaw protection



Fig. 11 Firefighters protection



Fig. 12 Low chemical



Fig. 13 Warning of latex