

OM 2009/03 - Appendix 7 – European Standards and Markings for Protective Clothing

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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- 4 Increasingly, European Standards (prefixed EN – European Norm) are being superseded or subsumed by International Standards (prefixed ISO).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 protective clothing

Mechanical hazards

EN 340:2003 - Protective clothing - General requirements	
	<ul style="list-style-type: none"> - mark identifying the manufacturer - product identifying mark # - size or size range designation EN ### - specific Standard number pictogram - for specific hazard protection (Figs 1 to 15), plus performance levels, where applicable - care labelling. May include a maximum number of cleaning cycles (max ## x) - single use PPE to be marked "DO NOT RE-USE"
EN 381-11:2002 – Protective clothing for users of chainsaws – Upper body protectors	
	Pictogram (Fig. 5) Chainsaw speed class: <ul style="list-style-type: none"> - 0 up to 16 m/s - 1 up to 20 m/s - 2 up to 24 m/s - 3 up to 28 m/s Year and month of manufacture "If the protective clothing is damaged, the garment is to be discarded"
EN 471:2003 - Specification for high visibility warning clothing	
	as for EN 340, plus: <ul style="list-style-type: none"> pictogram - for high visibility clothing (Figure 6), and if applicable one or two digits alongside: # - class of garment (1 to 3) based on minimum areas of visible background, retro-reflective and combined performance materials <li style="padding-left: 40px;"># - retro-reflective class (1 or 2; 2 is most reflective) for materials
EN 510:1993 - Specification for protective clothing for use where there is a risk of entanglement with moving parts	
	as for EN 340, plus:
	pictogram - for moving parts (Fig 1)

EN 1150:1999 - Visibility clothing for non-professional use	
	<ul style="list-style-type: none"> - Identifying mark of the manufacturer - designation of product type, name or code - size according to EN 340 - Standard number (EN 1150)
EN 1621-1:1997 - Motorcyclists' protective clothing against mechanical impact. Impact protectors	
	<p>Type of protector:</p> <p>S – shoulder</p> <p>E – elbow</p> <p>H – hip</p> <p>K – knee</p> <p>K + L – knee + upper and middle tibia</p> <p>L - front of leg below a K protector</p> <p>Plus an indication of the covered area:</p> <p>A – reduced coverage for specialized applications</p> <p>B – normal coverage</p>
EN 1621-2:2003 - Motorcyclists' protective clothing against mechanical impact. Motorcyclists back protectors	
	<p>Pictogram (Fig. 14) accompanied by:</p> <ul style="list-style-type: none"> - Type of protector: B full back protector L lumbar protection only - Performance class 1 or 2 (2 is better)
EN 13158:2000 - Protective clothing. Protective jackets, body and shoulder protectors for horse riders.	
	<p>Size and year of manufacture</p> <p>Performance level:</p> <p>1 for professional jockeys (and Warning to this effect)</p> <p>2 minimum recommended for general horse riding</p> <p>3 better level of protection</p>
EN 13595-1 - Protective clothing for professional motorcycle riders. Jackets, trousers and one piece or divided suits	
	<p>Pictogram (Fig. 14) accompanied by:</p> <p>Abrasion resistance level 1 or 2</p> <p>Impact cut resistance level 1 or 2</p> <p>Burst strength level 1 or 2</p> <ul style="list-style-type: none"> - Level 2 is more protective in all cases.

EN ISO 13998:2003 – Aprons, trousers and vests protecting against cuts and stabs by hand knives

	<p>As for EN 340 plus:</p> <ul style="list-style-type: none"> - mark identifying the manufacturer - mark identifying the product - size designation - mark identifying the outer surface - performance level: <ul style="list-style-type: none"> Level 1 – broad bladed knives only Level 2 – narrow bladed knives <p>Pictogram – see Figures 12 and 13</p>
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EN 14877:2002 - Protective clothing for abrasive blasting operations using granular abrasives

Clothing	<p>As EN 340, plus: Pictogram (Fig. 16) and type of clothing: Type 1 independent of RPE Type 2 combined with RPE Type 3 combined with RPE and dust-tight</p>
Gloves	<p>As EN 420, plus: Pictogram (Fig. 16)</p>

Weather cold/wet

EN 342:2004 – Ensembles and garments for protection against cold

	<p>As EN 340 plus:</p>
	<p>Pictogram (Fig. 4) accompanied by:</p> <ul style="list-style-type: none"> - thermal insulation of the garment or specified ensemble (m².K/W) - Air permeability class 1 to 3 (3 is least permeable) <p>Water penetration resistance class 1 or 2 (2 is more resistant)</p>

EN 343:2003 – Protection against rain

	<p>As EN 340 plus:</p>
	<p>Pictogram (Fig. 3) accompanied by:</p> <ul style="list-style-type: none"> - Resistance to water penetration class 1 to 3 (3 is best) - Water vapour resistance class 1 to 3 (3 is best). Class 1 garments must also be marked "Restricted wearing time"

EN 14058:2004 - Protective clothing. Garments for protection against cool environments	
	Pictogram (Fig. 4) accompanied by levels for: Thermal resistance 1 – 3 Air permeability 1 – 2 (optional) Water penetration resistance 1 – 2 (optional) Thermal insulation 1 – 2 (optional) for garment or ensemble - higher numbers are better protection in all cases

Chemical/biological hazards

EN 465:1995 - Protective clothing against liquid chemicals. Performance requirements for chemical protective clothing with spray-tight connections between different parts of the clothing (Type 4 equipment)	
Superseded by EN 14605:2005	
	as EN 340 plus: date of manufacture (month and year) pictogram - for resistance to chemicals (Fig 2)
May also specify any of the following (in all cases, higher numbers correspond to better performance):	
	<ul style="list-style-type: none"> - abrasion resistance class (1 to 6) - resistance to heat blocking class (1 or 2) - flex cracking resistance class (1 to 5) - puncture resistance class (1 to 5) - tear resistance class (1 to 5) - coating adhesion strength class (1 to 5) - resistance to permeation by liquids class (1 to 6) - seam strength class (1 to 5)
EN 466-1:1995 - Protective clothing against liquid chemicals. Performance requirements for chemical protective clothing with liquid-tight connections between different parts of the clothing (Type 3 equipment)	
Superseded by EN 14605:2005	
	as for EN 465
EN 467:1995 - Protective clothing against liquid chemicals. Performance requirements for garments providing protection to parts of the body	
Superseded by EN 14605:2005	
	as for EN 465

EN 943-1:2002 - Protective clothing against liquid chemicals. Ventilated and non-ventilated "gas-tight" (Type 1) and "non-gas-tight" (Type 2) chemical protective suits	
	Type of suit: 1a gas tight with BA inside 1b gas tight with BA outside 1c gas tight air fed suit 2 non-gas-tight air fed suit
	Pictogram (Fig. 2) Year of manufacture and shelf life. Size range Markings for other properties as defined in the relevant standards (eg heat and flame resistance, mechanical impact)
EN 943-2:2002 - Protective clothing against liquid chemicals. "Gas-tight" (Type 1) chemical protective suits for emergency teams (ET)	
	Type of suit: 1a-ET gas tight with BA inside 1b-ET gas tight with BA outside - plus either Limited use or Reusable
	Pictogram (Fig. 2) Year of manufacture and shelf life. Size range Markings for other properties as defined in the relevant standards (eg heat and flame resistance, mechanical impact)
BS 8428:2004 - Protective clothing against liquid chemicals. Chemical protective suits with liquid-tight connections between different parts of the clothing for emergency teams (type 3-ET equipment)	
	Type of suit: 3a-ET gas tight with BA inside 3b-ET gas tight with BA outside - plus either Limited use or Reusable
	Pictogram (Fig. 2) Year and month of manufacture and shelf life. Size range

BS 8467:2006 – Protective clothing – Personal protective ensembles for use against chemical, biological, radiological and nuclear (CBRN) agents – Categorization, performance requirements and test methods

	<ul style="list-style-type: none"> - Manufacturer - Category of clothing: <ul style="list-style-type: none"> A – gas tight with breathable air supply B1 – high levels of vapour challenge B2 – high levels of mainly liquid challenge C – low levels without vapour hazard D – very low levels or risk of contact contamination - year and month of manufacture - size - pictogram (Figure 2) - see instructions - The user’s attention is drawn to the quality assurance criteria of BS EN 374-3:2003 - which other items are required to be used with the clothing to provide protection to the specified level
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EN 13034:2005 - Protective clothing against liquid chemicals. Chemical protective clothing offering limited protection against liquid chemicals (type 6 and type PB [6] equipment)

	<p>Type of clothing:</p> <p>Type 6 – full body</p> <p>Type PB[6] – partial body</p>
	<p>Pictogram for chemical protection (Fig. 2)</p> <p>Note: Need to check performance against the specific chemicals in use – see clothing manufacturer’s information.</p>
	Care labeling, or “ DO NOT RE-USE ” for single use items
	Size

EN 13982-1:2004 - Protective clothing for use against solid particulates - Part 1: Performance requirements for chemical protective clothing providing protection to the full body against airborne solid particulates (type 5 clothing)

	<ul style="list-style-type: none"> - manufacturer; - identification or model number - Type 5 - number and date of this standard (i.e. EN ISO 13982-1:2004) - year of manufacture and, if appropriate, expected shelf-life - size designation - pictogram (Figure 2) and pictogram for “see instructions” - care pictograms
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EN 14126:2003 - Protective clothing. Performance requirements and tests methods for protective clothing against infective agents	
	Pictogram (Fig. 15) plus: Type of clothing 1a, 1b, 1c, or 2 to 6 with the suffix -B - plus markings appropriate to the specific clothing type standard
EN 14605:2005 - Protective clothing against liquid chemicals. Performance requirements for chemical protective clothing with liquid tight (Type 3) or spray-tight (Type 4) connections, including items providing protection to parts of the body only (Types PB[3] and PB[4])	
	Type of protective clothing: - Type 3 liquid tight connections for whole body - Type 4 spray tight connections for whole body - PB[3] liquid tight partial body protection - PB[4] spray tight partial body protection
	Pictogram for chemical protection (Fig. 2) Note: Need to check performance against the specific chemicals in use – see clothing manufacturer’s information.
	Year and month of manufacture if shelf life <2 years
	Care labeling, or “ DO NOT RE-USE ” for single use items
	Size

Heat, flame and electrical hazards

EN 469:1995 - Protective clothing for firefighters. Requirements and test methods for protective clothing for firefighters	
Superseded by EN 469:2005	
	as for EN 340, plus: - EN 469 - the relevant Standard - pictogram - for firefighting use (Fig 10). Minimum performance levels are exceeded for flame spread, heat transfer from flame and radiant heat, residual strength and heat resistance. Additional requirements may be met for tensile strength, tear strength, surface wetting, dimensional change, penetration by liquid chemicals, water resistance and breathability.
EN 469:2005 - Protective clothing for firefighters. Performance requirements for protective clothing for firefighting	
	as for EN 340, plus: - EN 469 - the relevant Standard - pictogram - for firefighting use (Fig 10), accompanied by: - flame heat transfer index (1 or 2) - radiant heat transfer index (1 or 2)

	<ul style="list-style-type: none"> - water penetration resistance (1 or 2) water vapour resistance (1 or 2) - maximum number of washes before re-impregnation, if applicable
EN 470-1:1995 - Protective clothing for use in welding and allied processes. General requirements	
Superseded by EN ISO 11611:2007	
	as for EN 340, plus: pictogram - for protection against heat and fire (Fig 7) dimensional change after cleaning, if more than 3%
EN 531:1995 - Protective clothing for industrial workers exposed to heat (excluding firefighters' and welders' clothing)	
Imminently to be superseded by EN ISO 11612	
	as for EN 340, plus: pictogram - for heat and fire hazard (Fig 7) plus, in a horizontal line beneath the symbol, in order: A - limited flame spread, and at least one of: B# - convective heat resistance (# = 1 to 5) C# - radiant heat resistance (# = 1 to 4) D# - molten aluminium splash (# = 1 to 3) E# - molten iron splash (# = 1 to 3) In all cases, higher number = better performance. If no number is given, no protection is claimed
EN 533:1997 - Protective clothing - Protection against heat and flame. Limited flame spread materials and material assemblies.	
About to be superseded by EN ISO 14116:2008	
This Standard refers only to the materials or material assemblies from which garments with limited flame spread properties are made. Such information may appear in the manufacturer's literature. Markings in the form: <p style="text-align: center;">EN 533 Flame spread index / Durability</p>	
Flame spread index	1, 2 or 3 - limited flame spread index (3 is best)
Durability	A - aluminized material, or L - leather material, or X - after standard washing procedure (12 washes at 75oC), or #X# - after non-standard washing procedure, eg 5X60 indicates 5 washes at 60oC), or R - after standard soak and 5 dry cleaning cycles

For assemblies of different materials:	
	which face tested, and the indices measured
If index 1 materials are present:	
	Use only over EN 533 Index 2 or 3 material and do not use next to the skin
EN 1149-1:1994 - Protective clothing - Electrostatic properties. Surface resistivity (test methods and requirements)	
	as for EN 340, plus: pictogram - for electrostatic discharge (Fig. 9)
EN 1149-5:2008 - Protective clothing - Electrostatic properties. Material performance and design requirements	
	as for EN 340, plus: pictogram - for electrostatic discharge (Fig. 9)
EN 1486:1996 - Protective clothing for firefighters - Test methods and requirements for reflective clothing for specialized fire fighting	
Superseded by EN 1486:2007	
	as for EN 340, plus: pictogram - for firefighting (Fig. 10), with 'see information' symbol Type 1 - hood / shoulder cape / visor and gloves, or Type 2 - floor length coat / hood / visor and gloves, or Type 3 - suit incorporating boots / hood / visor
EN 1486:1996 - Protective clothing for firefighters - Test methods and requirements for reflective clothing for specialized fire fighting	
<i>Note: BS version has national foreword pointing out that UK considers the requirements for the visor contained within this standard are inaccurate and inadequate.</i>	
	as for EN 340, plus: - pictogram - for firefighting (Fig. 10) - visor marked as per EN 166
EN 13911:2004 - Protective clothing for firefighters. Requirements and test methods for fire hoods for firefighters	
	As EN 340, plus: Pictogram (Fig. 10)
EN ISO 14116:2008 - Protective clothing - Protection against heat and flame - Limited flame spread materials, material assemblies and clothing	
Single layer materials	- manufacturer identifying mark - “ material complies with ISO 14116 indexes 0/0/0 ”, as appropriate - limited flame spread index (1 to 3 with 3 being most flame resistant) and cleaning index: - [number of cycles] H / [home washing temperature] - [number of cycles] I / [industrial washing

	<p>temperature] -[number of cycles] C/ [international symbol for dry cleaning process], e.g.</p> <ul style="list-style-type: none"> - 3/5/75 indicates material that meets flammability index 3, five times industrially-washed at 75 °C - 2/5H/60 indicates a material that meets flammability index 2, five times home-washed at 60 °C - 3/5C/P indicates a material that meets flammability index 3, five times dry-cleaned with perchlorethylene - 2/0/0 indicates aluminized material, leather or material for single use only that meets flammability index 2, that has not been pretreated - 2/25H/75 indicates a material that meets flammability index 2, 25 times home-washed at 75 °C - for materials which cannot be washed or dry cleaned, the cleaning index is 0/0 - instructions for the care and cleaning, and any special precautions to be taken.
Material assemblies	<p>As for single layers except:</p> <ul style="list-style-type: none"> - “material assembly complies with ISO 14116 indexes x/x/x for outer face and indexes x/x/x for inner face”, or - “each material in the assembly complies with ISO 14116”, with indexes x/x/x given for each layer <p>The presence and position of any index 1 material in the assembly shall be indicated.</p>
Garments	<p>As EN 340 and as for single layers / material assemblies, plus: “Do not re-use” for single use garments</p>
<p>EN 15614:2007 – Protective clothing for firefighters – Laboratory test methods and performance requirements for wildland clothing</p>	
	<p>As EN 340 plus:</p> <ul style="list-style-type: none"> - manufacturer - model identification - size - washing instructions - standard number EN 15614:2007 - lot or trace number - pictogram (Figure 10) - flame test procedure used (A1 or A2)

EN 50286:1999 – Electrical insulating protective clothing for low-voltage installations	
	As EN 340 plus: - double triangle symbol (Figure 11), Class 00 and/or colour code beige - internal panel on which to mark date of periodic inspection
EN 60895:1997 – Conductive clothing for live working at a nominal voltage up to 8kV a.c.	
	- name or trade mark of manufacturer - type reference and size - year of manufacture - dark blue triangle on light blue background

Radioactive contamination

EN 1073-1:1998 - Protective clothing against particulate radioactive contamination - Ventilated suits	
	as for EN 340, plus: pictogram - particulate radioactive contamination (Fig 8) IL: class x - where x = 1-5 . 1 is lowest protection, 5 is highest
EN 1073-2:2002 - Protective clothing against particulate radioactive contamination - non-ventilated suits	
	as for EN 1073-1

Other standards relevant to clothing

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

EN 348:1992	Protective clothing - Determination of behaviour of materials on impact of small splashes of molten metal
EN 367:1992	Protective clothing - Protection against heat and flames: Test method. Determination of heat transmission on exposure to flame
EN 373:1993	Protective clothing - Assessment of resistance of materials to molten metal splash. Superseded by EN ISO 9185
EN 381-1:1993	Protective clothing for users of hand-held chainsaws: Test rig for testing resistance to cutting by a chainsaw
EN 381-10:2002	Protective clothing for users of hand-held chainsaws: Part 10: Test method for upper body protectors

EN 463:1994	Protective clothing - Protection against liquid chemicals: Test method. Determination of resistance to penetration by a jet of liquid (jet test)
EN 464:1994	Protective clothing against liquid and gaseous chemicals, including aerosols and solid particles: Test method. Determination of leak tightness of gas-tight suits (internal pressure test)
EN 468:1995	Protective clothing against liquid chemicals. Test method. Determination of resistance to penetration by spray (spray test)
EN 530:1995	Abrasion resistance of protective clothing material. Test methods
EN 702:1995	Protective clothing - Protective clothing against heat and flame. Test method. Determination of the contact heat transmission through protective clothing or its materials
EN 863:1996	Protective clothing - Mechanical properties. Test method: puncture resistance
EN 1149-2:1997	Protective clothing - Electrostatic properties. Test method for measurement of the electrical resistance through a material (vertical resistance)
EN 1149-3:2004	Protective clothing. Electrostatic properties. Test methods for measurement of charge decay
EN 1149-5:2008	Protective clothing. Electrostatic properties. Material performance and design requirements
EN ISO 6529 :2001	Protective clothing - Protection against liquid chemicals: Test method. Resistance of materials to permeation by liquids
EN ISO 6530 :2005	Protective clothing - Protection against liquid chemicals: Test method. Resistance of materials to penetration by liquids
EN ISO 6942:2002	Protective clothing - Protection against heat and fire: Method of test: Evaluation of materials and material assemblies when exposed to a source of radiant heat
BS 7184:2001	Selection, use and maintenance of chemical protective clothing. Guidance
BS 7971	Protective clothing for violent situations and training Part 1:2002 – General requirements Part 2:2003 – Guidance Part 8:2003 – Blunt trauma torso, shoulder, abdomen and genital protectors Part 9:2005 – Training suits and equipment Part 10:2004 - Coveralls
EN ISO 9185 :2007	Protective clothing – Assessment of resistance of materials to molten metal splash

EN ISO 12127 :2007	Clothing for protection against heat and flame — Determination of contact heat transmission through protective clothing or constituent materials - Part 2: Test method using contact heat produced by dropping small cylinders
EN ISO 13277	Protective equipment for martial arts. Part 1:2000 General Part 2:2000 Instep, shin and forearm Part 3:2000 Trunk Part 4:2001 Head Part 5:2002 Genital / abdomen Part 6:2003 Breast
EN 13595	Test methods for motorcycle clothing Part 2:2002 – Impact abrasion resistance Part 3:2002 – Burst strength Part 4:2002 – Impact cut resistance
EN ISO 13982-2:2004	Protective clothing for use against solid particulates. Test method of determination of inward leakage of aerosols of fine particles into suits
ISO 13994:1998	Clothing for protection against liquid chemicals. Determination of the resistance of protective clothing materials to penetration by liquids under pressure
EN ISO 13995:2001	Test for puncture and dynamic tearing of materials
EN ISO 13997:1999	Protective clothing. Mechanical properties. Determination of resistance to cutting by sharp objects
EN 14325:2004	Protective clothing against chemicals. Test methods and performance classification of chemical protective clothing materials, seams, joins and assemblages
EN 14360:2004	Protective clothing against rain. Test method for ready made garments. Impact from above with high energy droplets
EN ISO 14460:1999	Protective clothing for racing drivers - Heat and flame - Performance requirements and test methods
TR 14560:2003	Guidelines for selection, use, care and maintenance of protective clothing against heat and flame
EN 14786:2006	Protective clothing - Determination of resistance to penetration by sprayed liquid chemicals, emulsions and dispersions - Atomizer test
EN ISO 15025:2002	Protective clothing. Protection against heat and flame. Method of test for limited flame spread
TR 15419:2006	Protective clothing - Guidelines for selection, use, care and maintenance of chemical protective clothing

ISO 16603:2004	Clothing for protection against contact with blood and body fluids. Resistance of protective clothing materials to penetration by blood and body fluids. Test method using synthetic blood
ISO 16604:2004	Clothing for protection against contact with blood and body fluids. Resistance of protective clothing materials to penetration by blood-borne pathogens. Test method using Phi-X174 Bacteriophage
ISO 22608:2004	Protective clothing against liquid chemicals. Measurement of repellency, retention, and penetration of liquid pesticide formulations through protective clothing materials
EN 60743:2003	Live working - Terminology of tools, equipment and devices

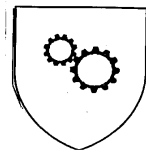


Fig. 1 Moving parts

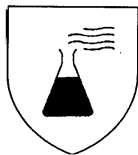


Fig.2 Chemicals



Fig. 3 Foul weather

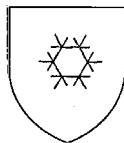


Fig. 4 Cold



Fig. 5 Chainsaws



Fig. 6 Low visibility



Fig. 7 Heat and fire

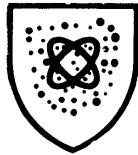


Fig. 8 Particulate radioactive contamination

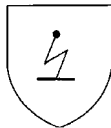


Fig. 9 Electrostatic discharge



Fig. 10 Firefighting



Fig. 11 Live working symbol



Fig. 12 Level 1 cut/stab resistance



Fig. 13 Level 2 cut/stab resistance



Fig. 14 Motorcyclist use



Fig. 15 Biological hazards



Fig. 16 Abrasive blasting operations