

OM 2009/03 Appendix 8 – European Standards and Markings for Bouyancy, Immersion and Diving Suits

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4 Increasingly, European Standards (prefixed EN – European Norm) are being superseded or subsumed by International Standards (prefixed ISO).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

Buoyancy

EN 393:1993 - Lifejackets and personal buoyancy aids. Buoyancy aid 50	
Superseded by EN ISO 12402-5:2006	
	<p>Basic text identifying manufacturer, model, size, limitations, donning and maintenance instructions, month or quarter and year of manufacture, Standard number, and completed label in Figure 1. Plus:</p> <ul style="list-style-type: none"> - BUOYANCY AID 50 and/or pictogram (Figure 2) - DO NOT USE AS A CUSHION - FOR THOSE WHO CAN SWIM AND ARE CLOSE TO HELP <p>If in colour, text table and pictogram should be RED</p>
EN 394:1993 - Lifejackets and personal buoyancy aids. Additional items	
Superseded by EN ISO 12402-8:2006 and SOLAS	
Emergency lights	<p>A - 'all round light' type B - 'lens dome light' type</p>
Also covered: whistles, multi-chamber buoyancy aids, safety harness and lines, body lines, sprayhoods, protective covers.	
EN 395:1993 - Lifejackets and personal buoyancy aids. Lifejacket 100	
Superseded by EN ISO 12402-4:2006	
	<p>Basic text as for EN 393, plus:</p> <ul style="list-style-type: none"> - LIFEJACKET 100 and/or pictogram (Figure 3) - DO NOT USE AS A CUSHION - TEACH THE CHILD TO FLOAT IN THIS LIFEJACKET (if intended for use by children under 40kg) - FULL PERFORMANCE MAY NOT BE ACHIEVED USING CERTAIN CLOTHING OR IN OTHER CIRCUMSTANCES. REFER TO THE LEAFLET <p>If in colour, text table and pictogram should be YELLOW</p>
EN 396:1993 - Lifejackets and personal buoyancy aids. Lifejacket 150	
Superseded by EN ISO 12402-3:2006	
	<p>Basic text as for EN 393. Additional text as for EN 395 except:</p> <ul style="list-style-type: none"> - LIFEJACKET 150 and/or pictogram (Figure 4) <p>If in colour, text table and pictogram should be GREEN</p>

EN 399:1994 - Lifejackets and personal buoyancy aids. Lifejacket 275	
Superseded by EN ISO 12402-2:2006	
	<p>Basic text as for EN 393. Additional text as for EN 395 except:</p> <ul style="list-style-type: none"> - LIFEJACKET 275 and/or pictogram (Figure 5) <p>If in colour, text table and pictogram should be BLUE</p>
EN ISO 12402-1:2005 – Lifejackets for seagoing ships – Safety Requirements	
	<ul style="list-style-type: none"> - Manufacturer identification - Size range of intended wearer plus symbol for adult, child or infant - Approval information - Model and serial numbers - Month (numeral 1-12_ or Quarter (I – IV) and year of manufacture - “Date of servicing” and “Annual servicing required” for inflatable devices - upper height/weight limits <p>Additionally for crew lifejackets:</p> <ul style="list-style-type: none"> - Minimum buoyancy and inflatable buoyancy (if provided) - Brief storage care and cleaning instructions - Simple use, donning and adjustment instructions - If gas inflated, the correct size and charge of cylinder - Warning that gas cylinders are dangerous goods - Words / pictograms for “other risks” - “Do not use as a cushion” - “Train in the use of this PFD” - Compatibility with safety harnesses and clothing - “Trapped air and carried load impair the performance”
EN ISO 12402-2:2006 – Personal flotation devices – Part 2: Lifejackets, performance level 275 - Safety Requirements	
	<ul style="list-style-type: none"> - Manufacturer identification - Class of the PFD (275) - Statement that it is not a PFD until inflated (inflatable types) - Size range of intended wearer - Minimum buoyancy and inflatable buoyancy (if provided) - Brief storage care and cleaning instructions - Simple use, donning and adjustment instructions - If gas inflated, the correct size and charge of cylinder - Warning that gas cylinders are dangerous goods, keep away from children, do not misuse - Model and serial numbers - Month (numeral 1-12) or Quarter (I – IV) and year of manufacture - This standard and part number (ISO 12402-2) - Words / pictograms for “other risks” - “Do not use as a cushion” - “Train yourself in the use of this PFD” - “Teach the child to float in this PFD” if intended for use by children - “For children less than 6 years of age use automatically operating devices only” if relevant - the range of its specific application (corresponding to class) - expected servicing interval assuming average use; space for dates to be marked (including for components) - Compatibility with safety harnesses and clothing - “Full performance may not be achieved using waterproof clothing or in other circumstances. Refer to leaflet” - “Warning: Do not apply diapers which provide buoyancy when using the lifejacket” (For users up to 15kg) - Label (Figure 6 or 7) and/or pictogram (Figure 5) <p>Optional colour code for relevant text / pictogram blue</p>
EN ISO 12402-3:2006 – Personal flotation devices – Part 3: Lifejackets, performance level 150 - Safety Requirements	
	<p>As for ISO 12402-2 except:</p> <ul style="list-style-type: none"> - Class of the PFD (150) - This standard and part number (ISO 12402-3) - Label (Figure 6 or 7) and/or pictogram (Figure 4)

	Optional colour code for relevant text / pictogram turquoise
EN ISO 12402-4:2006 – Personal flotation devices – Part 4: Lifejackets, performance level 100 - Safety Requirements	
	<p>As for ISO 12402-2 except:</p> <ul style="list-style-type: none"> - Class of the PFD (100) - This standard and part number (ISO 12402-4) - Label (Figure 6 or 7) and/or pictogram (Figure 3) <p>Optional colour code for relevant text / pictogram light brown</p>
EN ISO 12402-5:2006 – Personal flotation devices – Part 5: Buoyancy aids (level 50) - Safety Requirements	
	<p>As for ISO 12402-2 except:</p> <ul style="list-style-type: none"> - Class of the PFD (50) - This standard and part number (ISO 12402-5) - Label (Figure 6 or 7) and/or pictogram (Figure 2) <p>Optional colour code for relevant text / pictogram pink</p>

EN ISO 12402-6:2006 – Personal flotation devices – Part 6: Special purpose lifejackets and buoyancy aids - Safety Requirements and additional test methods

- Specific additional requirements given for white water sports, personal water craft, waterskiing and towed uses, and firefighting applications.
- Manufacturer identification
 - Class of the PFD (50, 100, 150 or 275)
 - Statement that it is not a PFD until inflated (inflatable types)
 - Size range of intended wearer
 - Minimum buoyancy and inflatable buoyancy (if provided)
 - Brief storage care and cleaning instructions
 - Simple use, donning and adjustment instructions
 - If gas inflated, the correct size and charge of cylinder
 - Warning that gas cylinders are dangerous goods, keep away from children, do not misuse
 - Model and serial numbers
 - Month (numeral 1-12) or Quarter (I – IV) and year of manufacture
 - This standard and part number (ISO 12402-6)
 - Words / pictograms for “other risks”
 - “Do not use as a cushion”
 - “Train yourself in the use of this PFD”
 - “Teach the child to float in this PFD” if intended for use by children
 - the range of its specific application (corresponding to class)
 - expected servicing interval assuming average use; space for dates to be marked (including for components)
 - Compatibility with safety harnesses and clothing
 - “Trapped air and carried load impair the performance”
- Optional colour code for relevant text / pictogram according to level
- For commercial white-water rafting:
- “For use by persons engaged in commercial white water rafting”
 - “This is a Special Use PFD because it may be used in place of a lifejacket only in commercial white water activities. When worn, it offers protection to those participating in these activities and, therefore, shall be worn at all times to be considered an adequate substitute for a lifejacket.”
 - “Notice: Before boarding, put this jacket on and adjust to fit properly”

EN ISO 12402-8:2006 - Personal flotation devices – Part 8: Accessories – Safety requirements and test methods	
	Details requirements for Whistles, Deck harness and lines, Buddy lines, Sprayhoods, Protective covers, Multi-chamber buoyancy systems. Note: Emergency lights not covered. These are now specified by SOLAS.
EN 14144:2003 - Lifebuoys	
	- Designation "Lifebuoy EN14414 – [mass in kg]" Manufacturer - Year of manufacture - Lab test mark

Figure 1. Minimum label for flotation devices to EN standards (now withdrawn). Should indicate relevant device

Lifejacket Buoyancy Aid	EN 395 / EN 396 / EN 399 EN 393
Standard Application	Type
Offshore, extreme conditions Heavy protective clothing	275
Offshore, Foul weather clothing	150
Sheltered waters	100
Swimmers only, sheltered waters Help at hand Not a lifejacket	50
MANUFACTURER:	
LIFEJACKETS / BUOYANCY AIDS ONLY REDUCE THE RISK OF DROWNING THEY DO NOT GUARANTEE RESCUE	

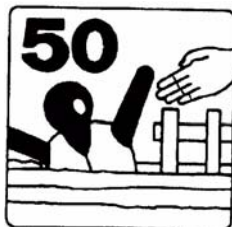


Figure 2. Pictogram, Buoyancy aid 50

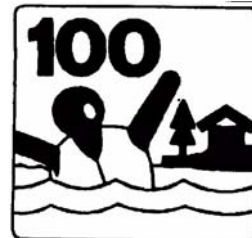


Figure 3. Pictogram, Lifejacket 100

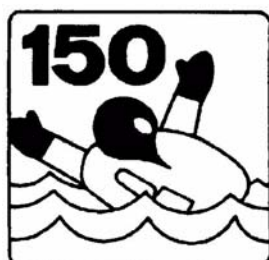


Figure 4. Pictogram, Lifejacket 150



Figure 5. Pictogram, Lifejacket 275

PERSONAL FLOTATION DEVICE		ISO 12402-2 to ISO 12402-8	
Application		Performance level	
Offshore, extreme conditions, special protective clothing, heavy equipment	lifejackets	275	
Offshore, foul weather clothing		150	
Sheltered waters, light clothing		100	
Swimmers only, sheltered waters, help at hand, limited protection against drowning, not a lifejacket.	buoyancy aids	50	
Special purpose device	all performance levels		
Manufactured by:			
.....			
.....			
WARNING: FLOTATION DEVICES ONLY REDUCE THE RISK OF DROWNING THEY DO NOT GUARANTEE RESCUE			

Figure 6. Basic label layout for EN ISO standards

PERSONAL FLOTATION DEVICE	ISO 12402-2 to ISO 12402-6	
Application	Performance level	
Offshore, extreme conditions, special protective clothing, heavy equipment	Lifejackets	275
Offshore, foul weather clothing		150
Sheltered waters, light clothing		100
Swimmers only, sheltered waters, help at hand, limited protection against drowning, not a lifejacket.	Buoyancy aids	50
Special purpose device	all performance levels	
Manufactured by:	
WARNING: FLOTATION DEVICES ONLY REDUCE THE RISK OF DROWNING THEY DO NOT GUARANTEE RESCUE		

SPECIAL FEATURES				Integrated emergency light and spray cap				
SPECIAL APPLICATION				Use in extreme climate conditions (-50°C)				
OPERATION MODE				DESIGN				
Auto-matically operating	Manually operated	Oral inflation only	Multi-chamber system	Amount of inflatable buoyancy (N)	Amount of inherent buoyancy (N)	Integrated harness	Use with harness	
							yes	no
√	√			90	70	√	√	
Size	Chest (cm)	Body mass (kg)		Buoyancy for specified body mass (N)				
				Actual value		Nominal value		
Medium		70		150		150		

Figure 7. Complete consumer information label for EN ISO standards

Immersion

EN 1809:1998 - Diving accessories - Buoyancy compensators - Functional and safety requirements, test methods	
	<ul style="list-style-type: none"> - name or mark of manufacturer, importer or supplier - model and size - maximum size of cylinders (pictogram) - maximum buoyancy (to 10N) <p>This is not a lifejacket: it does not guarantee a head up position of the wearer at the surface</p>
EN 12628:1999 - Diving accessories - Combined buoyancy and rescue devices - Functional and safety requirements, test methods	
	<ul style="list-style-type: none"> - name or mark of manufacturer, importer or supplier - model and size - maximum size of cylinders (pictogram) - year of manufacture - maximum buoyancy (to 10N) - at least the following wording: <p>For your safety it is essential to follow the instructions for use of the manufacturer</p>
EN 15027-1:2002 - Immersion suits - Constant wear suits	
	<p>Wet / dry type and thermal protection class A, B, C or D, preferably as a label - See Figure 8</p>
EN 15027-2:2002 - Survival suits - Abandonment suits	
	<p>Marine or Helicopter - intended use</p> <p>-1.9 to 5.0°C or 5.0 to 35°C - water temperature range for intended use</p>

Figure 8. Example of information label for EN ISO 15027-1 Suit.

IMMERSION SUITS ACCORDING TO EN ISO 15027-1							
TYPE OF		Dry suit		CONSTANT WEAR SUIT			
		Wet suit		HELICOPTER SUIT			
STANDARD APPLICATION		PROTECTION AGAINST COLD WATER DEPENDS ON THE INSULATION OF THE SUIT IN CORRELATION WITH WATER TEMPERATURE. ESTIMATED PROTECTION TIME PROVIDED BY THIS SUIT CAN BE IDENTIFIED FROM THE TABLE BELOW					
Water temp	<5°C	6,0h		2,5h		1,5h	
	5-10 °C	9,0h		4,5h		2,5h	
	10-15 °C	15,0h		7,0h		4,0h	
	>15 °C	24,0h		15,0h		6,0h	
Performance class		A		B		C	
Required under-garments		See system components					
Size of suit		Small		Medium		Large	
Height / waist						X large	
Special features							
<p>WARNING ESTIMATED THERMAL PROTECTION TIME ACCORDING TO PERFORMANCE CLASSES A...D ARE BASED ON STANDARD TESTING CONDITIONS AS SPECIFIED BY EN ISO 15027-3 REAL ENVIRONMENTAL CONDITIONS AND PERSONAL CHARACTERISTICS WILL CHANGE THERMAL PROTECTION TIME</p>							

Figure 9. Example of information label for EN ISO 15027-2 Suit.

IMMERSION SUITS ACCORDING TO EN ISO 15027-2							
TYPE OF		Dry suit		ABANDONMENT SUIT			
		Wet suit					
STANDARD APPLICATION		PROTECTION AGAINST COLD WATER DEPENDS ON THE INSULATION OF THE SUIT IN CORRELATION WITH WATER TEMPERATURE. ESTIMATED PROTECTION TIME PROVIDED BY THIS SUIT CAN BE IDENTIFIED FROM THE TABLE BELOW					
Water temp	<5°C	6,0h		2,5h		1,5h	
	5-10 °C	9,0h		4,5h		2,5h	
	10-15 °C	15,0h		7,0h		4,0h	
	>15 °C	24,0h		15,0h		6,0h	
Performance class		A		B		C	
Required under-garments		See system components					
Size of suit		Small		Medium		Large	
Height / waist						X large	
Special features							
WARNING ESTIMATED THERMAL PROTECTION TIME ACCORDING TO PERFORMANCE CLASSES A...D ARE BASED ON STANDARD TESTING CONDITIONS AS SPECIFIED BY EN ISO 15027-3 REAL ENVIRONMENTAL CONDITIONS AND PERSONAL CHARACTERISTICS WILL CHANGE THERMAL PROTECTION TIME							

Diving suits

EN 14225-1:2005 – Diving suits – Part 1: Wetsuits – Requirements and test methods	
	<ul style="list-style-type: none"> - standard number (EN 14225-1) - manufacturer - type of suit (i.e. wet suit) - serial or batch number; - thermal performance class of material (A to D, A being most insulating) - date of manufacture on components affected by ageing or use - size designation - care instructions indicated by pictograms - maximum number of cleaning operations if applicable - identification of components and sub-assemblies that are of critical importance to safety, if applicable - see instructions for use; - warning about the possible risks of using the suit e.g. the potential for buoyancy changes with depth; the possibility that materials in the suit could cause an allergic reaction in some individuals.
EN 14225-2:2005 – Diving suits – Part 2: Dry suits – Requirements and test methods	
	<ul style="list-style-type: none"> - standard number (EN 14225-2) - manufacturer - type of suit (i.e. dry suit) - serial or batch number; - date of manufacture on components affected by ageing or use - size designation - care instructions indicated by pictograms - maximum number of cleaning operations if applicable - identification of components and sub-assemblies that are of critical importance to safety, if applicable - see instructions for use; - warning about the possible risks of using the suit e.g. the potential for buoyancy changes with depth; the possibility that materials in the suit could cause an allergic reaction in some individuals. -“This suit is only to be used by an individual who has had specific training in its use or who is under the supervision of an industry recognized diving instructors for use” - optional features: <ul style="list-style-type: none"> - TH – thermal insulation - HZ – protection against chemicals - BIO – protection against micro-organisms - VIS – high visibility - for HZ suits, the protection index (low or high) and the chemicals against which protection has been demonstrated: <ul style="list-style-type: none"> Ac - acid Bs – base Ps – polar solvent Hc - hydrocarbon F – fuels
EN 14225-3:2005 – Diving suits – Part 3 – Actively heated or cooled suit (systems) – Requirements and test methods	
	<p>As for EN 14225-2 except:</p> <ul style="list-style-type: none"> - type of suit (i.e. dry suit, wet suit, heated, cooled)
EN 14225-4:2005 – Diving suits – Part 4: One atmosphere suits (ADS) - Human factors requirements and test methods	
	<ul style="list-style-type: none"> - Number of this European Standard (EN 14225-4) - Manufacturer - Manufacturer’s model and size designation - Suit identification serial or batch number; - Quarter (I to IV) or month (1 to 12) and year of manufacture - Operating temperature range - Maximum normal duration of dive - Clothing to be worn with the suit

	<ul style="list-style-type: none"> - Care, cleaning, disinfection and maintenance instructions - Maximum diving depth.
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Other relevant standards

EN ISO 12402-7:2006	Personal flotation devices – Part 7: Materials and components – Safety requirements and test methods Note: BS version highlights identified shortcomings of the EN ISO. Seeking an immediate revision.
EN ISO 12402-9:2006	Personal flotation devices – Part 9: Test methods
EN ISO 12402-10:2006	Personal flotation devices – Part 10: Selection and application of personal flotation devices and other relevant devices
EN 15027-3:2002	Survival suits - Test methods