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**Personal flotation devices —**  
**Part 10:**  
**Selection and application of personal**  
**flotation devices and other relevant**  
**devices**

**iTeh STANDARD PREVIEW** —  
*Équipements individuels de flottabilité —*

*(standards.iteh.ai)*  
*Partie 10: Sélection et application des équipements individuels de*  
*flottabilité et d'autres équipements pertinents*

ISO 12402-10:2020

<https://standards.iteh.ai/catalog/standards/sist/72ffc3ac-39c7-4d17-9d4c-a560a4e58ec1/iso-12402-10-2020>



## iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO 12402-10:2020

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 188, Subcommittee *Small craft*, SC 1, *Personal safety equipment*.

This second edition cancels and replaces the first edition (ISO 12402-10:2006), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the document has been updated to be consistent with ISO 12402-2:2020 to ISO 12402-9:2020 (second editions).

A list of all parts in the ISO 12402 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

ISO 12402 (all parts):2020 has been prepared to give guidance on the design and application of personal flotation devices (hereafter referred to as PFDs) and immersion suits according to ISO 15027 (all parts):2012. This document deals with personal floatation devices for persons engaged in activities, whether in relation to their work or their leisure, in or near water. PFDs manufactured, selected, and maintained to this International Standard give a reasonable level of safety against drowning.

Based on a risk assessment, a PFD according to ISO 12402 (all parts):2020 can be used in combination with other personal protection equipment (PPE) according to the European PPE Regulation (EU) 2016/425.

ISO 12402 (all parts):2020 and ISO 15027 (all parts):2012 neither cover life saving appliances (LSA) on commercial vessels, which are regulated by the International Maritime Organisation (IMO)<sup>1)</sup> under the International Convention for the Safety of Life at Sea (SOLAS), nor devices used in aircraft, which are under IATA rules. All those devices are equipment on board used in case of emergency and not suitable for permanent use.

Rescue devices, throwable devices and flotation cushions are also not covered in ISO 12402 (all parts):2020.

Devices under ISO 12402-2:2020 to ISO 12402-10:2020 and ISO 15027-1:2012 to ISO 15027-3:2012 are regarded as personal protective equipment.

### Performance criteria

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PFDs can be divided into the following two main classes, based on their performance:

- **lifejackets**, providing face-up in-water support to the user regardless of physical conditions, and
- **buoyancy aids**, requiring swimming and other movements to keep the user with airways free out of the water.

"**Buoyancy**" is a main criterion to meet those basic performances.

The ISO 12402 series:2020 encourages manufacturers to adopt innovative designs of PFDs providing buoyancy by a wide variety of materials, devices and performance levels.

Buoyancy can be provided by means requiring preparation before entering the water (e.g. inflation of chambers by gas) or inherent materials.

"**Inherently buoyant**" provide permanent buoyancy; the user needs only to don the PFD to achieve full performance.

"**Inflatable PFDs**" provide full buoyancy without further intervention other than arming. They can be operated in fully automatic mode or require initiating the inflation (manual mode).

"**Hybrid PFDs**" provide some minimum inherent buoyancy but rely on additional inflatable buoyancy, such as inflatable PFDs, to achieve full buoyancy.

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1) The International Maritime Organization (IMO) is an institution with domicile in London issuing regulations which are then published as laws by its Member States.

# Personal flotation devices —

## Part 10:

# Selection and application of personal flotation devices and other relevant devices

## 1 Scope

This document provides requirements and recommendations for the selection and application of both personal flotation devices (PFD) complying with the relevant Parts of the ISO 12402 series:2020, and immersion suits according to ISO 15027 (all parts):2012.

It is intended to assist manufacturers, suppliers, users and regulators in the appropriate selection and application of those garments for the circumstances in which they will be used.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 12401:2009, *Small craft — Deck safety harness and safety line — Safety requirements and test methods*

ISO 12402-2:2020, *Personal flotation devices — Part 2: Lifejackets, performance level 275 — Safety requirements*

ISO 12402-3:2020, *Personal flotation devices — Part 3: Lifejackets, performance level 150 — Safety requirements*

ISO 12402-8:2020, *Personal flotation devices — Part 8: Accessories — Safety requirements and test methods*

ISO 12402-9:2020, *Personal flotation devices — Part 9: Evaluation*

ISO 15027-1:2012, *Immersion suits — Part 1: Constant wear suits, requirements including safety*

ISO 15027-2:2012, *Immersion suits — Part 2: Abandonment suits, requirements including safety*

ISO 15027-3:2012, *Immersion suits — Part 3: Test methods*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15027-1:2012 and the following apply.

Where terms are defined below and in ISO 15027-1:2012, the definitions given below apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <http://www.electropedia.org/>

**3.1  
personal flotation device  
PFD**

garment or device which, when correctly worn and used in water, provides the user with a specific amount of buoyancy which increases the likelihood of survival

**3.2  
inherently buoyant**  
permanently less dense than water

**3.3  
automatic inflation**  
inflation of the *PFD* (3.1) without the user carrying out any action at the time of water immersion

**3.4  
emergency position indicating light**  
device which emits light so as to increase the chances of a user being located

**3.5  
multi-chamber buoyancy system**  
*PFD* (3.1) with buoyancy to meet the applicable *PFD* performance requirement provided by two or more independent chambers

Note 1 to entry: This excludes supplemental inflation chambers.

**3.6  
deck safety harness**  
device that allows a user to be securely attached to a strong point on a vessel or on shore, preventing a fall into the water or, if falling occurs, preventing separation from the vessel or shore

**3.7  
buddy line**  
length of cord which can be tied or otherwise fixed to another person or to that person's *PFD* (3.1) or other objects, so as to keep a user in the vicinity of that person or object with a view to making location and thus rescue easier

**3.8  
lifting loop**  
device which facilitates manual recovery of a person from water

**3.9  
protective cover**  
cover that is normally in place over the functional elements of a *PFD* (3.1) in order to protect them from physical damage, or snagging on external objects

Note 1 to entry: The protective cover may be designed to provide additional properties, i.e. to make the *PFDs* suitable for use when the subject is exposed to additional hazards, e.g. significant abrasion, molten metal splash, flame and fire.

Note 2 to entry: The inflatable chamber of an inflatable *PFD* is an example of a functional element.

**3.10  
whistle**  
device which, when blown by mouth, produces an audible sound which can aid in the location of the user

**3.11  
hybrid PFD**  
*PFD* (3.1) of combined buoyancy types, i.e. inherent and inflatable



**3.12****sheltered waters**

water with protection from significant breaking waves, current, or strong winds, where the possibility of being blown or carried away from shore or a place of safety is minimal

**3.13****offshore**

water that is unprotected and influenced by a variety of threat conditions such as waves, tide, currents, or wind, at sea or on inland waters

**4 Classification; risks and recommended areas of application****4.1 General**

ISO 12402-2:2020 to ISO 12402-9:2020 have been developed to set safety requirements and test methods for PFD and to support design and application of PFDs for persons engaged in activities, related to their work or their leisure, in or near water.

A system of various classes and performance levels (see 4.4 and [Figure 1](#)) has been established to serve the numerous needs.

The buoyancy of the device is the physical quantity determining its performance level. With regard to the recommended basic application, both the conditions of environment (offshore, near shore, etc.) and the type of clothing worn are the overriding criteria for the selection of PFDs.

The fundamental distinction between lifejackets and buoyancy aids divides the system. Lifejackets provide face-up in-water support in case of unconsciousness in most conditions appropriate to their level. Buoyancy aids require active movements from the user to keep their airway clear of the water.

[Figure 1](#) illustrates a PFD label that conveys this information in plain text. Marking information displaying the same information is shown in [Figure 2](#).

PFDs manufactured, selected, and maintained in accordance with the relevant part of the ISO 12402 series:2020 give a reasonable assurance of safety from drowning to a person who is immersed in water.

None of the PFDs however guarantee rescue.

They are always to be seen as means to reduce the risk of drowning.

PFDs can be provided in a wide variety of materials or designs. Some can require preparation before entering the water, e.g. inflation of a chamber by gas from a cylinder.

<b>PERSONAL FLOTATION DEVICE</b>	<b>ISO 12402-2 to ISO 12402-6</b>		(1)
Application	Performance level		(2)
Offshore, extreme conditions, special protective clothing, heavy equipment	lifejackets	275	(3)
Offshore, heavy weather clothing		150	(4)
Sheltered waters, light clothing		100	(5)
Swimmers only, sheltered waters, help at hand, limited protection against drowning, not a lifejacket	buoyancy aids	50	(6)
Special application device	all performance levels		(7)
Manufactured by: <b>ITeH STANDARD PREVIEW</b> ..... <b>(standards.iteh.ai)</b> .....			(8)
<b>WARNING:</b> FLOTATION DEVICES ONLY REDUCE THE RISK OF DROWNING THEY DO NOT GUARANTEE RESCUE			(9)

Figure 1 — Label specification

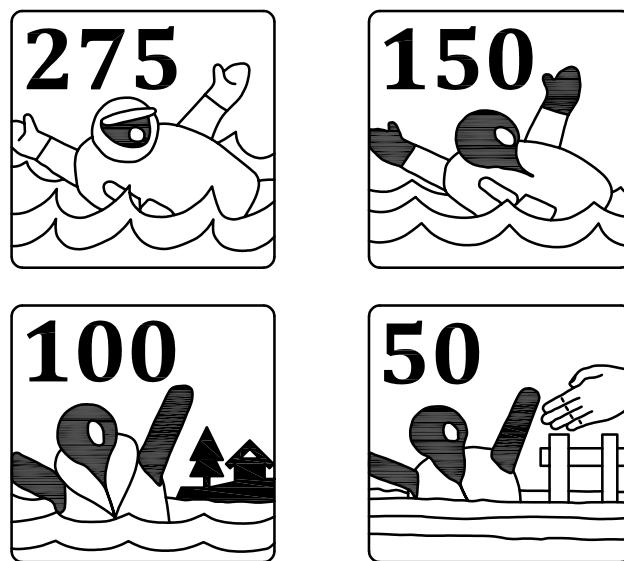


Figure 2 — Marking information

## 4.2 Performance criteria

Lifejackets and buoyancy aids according to ISO 12402 (all parts):2020 cover a number of performance levels, which require a suitable type of buoyancy, activation methods for inflatable devices, and auxiliary items (such as location aids). The selection of products should be based on a risk evaluation considering the following factors, which will affect the user's probability of survival.

Automatically operating PFDs should be required and worn in activities where persons are likely to enter the water unexpectedly.

Manual-only operated PFDs should be used only under certain circumstances, allowing for sufficient time to activate the PFD, and with either prior training of the user or help close at hand.

In any case, the user shall ensure that the operation mode of the PFD is suited to the specific application.

The required inspection and maintenance is another factor to be regarded for the choice and application of specific PFDs.

The conformity of a PFD to ISO 12402 (all parts):2020 does not imply that its performance is appropriate to all possible situations.

This document is intended to guide and encourage manufacturers, purchasers, and users to choose the safety equipment providing an effective level of performance in practical use.

It encourages designers to create a comfortable and attractive device for continuous wear on or near water, rather than to be stored in a locker for emergency use.

PFDs shall also fit to the different applications and uses by supporting a reasonable safety.

PFDs under ISO 12402 (all parts):2020 offer the following alternatives to manufacturers, designers and users:

- provision of different levels of buoyancy (levels 100, 150, or 275), that generally float the user with greater freeboard to ensure a safe floating position, or use of buoyancy aids (level 50) for activities requiring good mobility as in leisure activities such as canoeing or wake boarding for people with swimming capability;
- provision of different methods of buoyancy (inherently buoyant material, hybrid or inflatable devices) to accommodate the needs of reliability and durability, in-water performance, and continuous wear;
- provision of automatically operating (inherently buoyant or automatically inflated) PFDs to float users without any intervention except an initial donning (regular inspection and rearming of inflatable types requested) covering the risk of unexpected immersion;
- provision of controlled inflation by manual and oral operation for special application only, based on a risk assessment requiring special training of the user;
- assistance in detection, rescue and recovery by additional active (lights, radio beacon etc.) or passive (retroreflective materials) location aids;
- provision of attachment devices, like lifting loops and buddy lines to ease recovery.

## 4.3 Interaction with other devices or equipment

PFDs, in their effectiveness as personal protective equipment, shall provide the performance level (see 4.4) for the intended use, but also shall be lightweight and only as bulky and restrictive as needed. This requires PFDs in accordance to ISO 12402 (all parts):2020 to be safe when worn and to provide positive support in the water.