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Personal flotation devices —

Part 1: Lifejackets for seagoing ships — Safety requirements

Équipements individuels de flottabilité —

Partie 1: Gilets de sauvetage pour navires de haute mer — Exigences de sécurité

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 12402-1 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 162, *Protective clothing including hand and arm protection and lifejackets*, in collaboration with Technical Committee ISO/TC 188, *Small craft*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

ISO 12402 consists of the following parts, under the general title *Personal flotation devices*:

— *Part 1: Lifejackets for seagoing ships — Safety requirements*

— *Part 2: Lifejackets, performance level 275 — Safety requirements*

— *Part 3: Lifejackets, performance level 150 — Safety requirements*

— *Part 4: Lifejackets, performance level 100 — Safety requirements*

— *Part 5: Buoyancy aids (level 50) — Safety requirements*

— *Part 6: Special purpose lifejackets and buoyancy aids — Safety requirements and additional test methods*

— *Part 7: Materials and components — Safety requirements and test methods*

— *Part 8: Accessories — Safety requirements and test methods*

— *Part 9: Test methods*

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

Introduction

ISO 12402 has been prepared to give guidance on the design and application of personal flotation devices (hereafter referred to as PFDs) 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 standard should give a reasonable assurance of safety from drowning to a person who is immersed in water.

Requirements for lifejackets on large, commercial seagoing ships are regulated by the International Maritime Organisation (IMO) under the International Convention for the Safety of Life at Sea (SOLAS). ISO 12402-1 addresses lifejackets for seagoing ships.

ISO 12402 allows for the buoyancy of a PFD to be provided by a wide variety of materials or designs, some of which may require preparation before entering the water (e.g. inflation of chambers by gas from a cylinder or blown in orally). However, PFDs can be divided into the following two main classes:

— those which provide face up in-water support to the user regardless of physical conditions (lifejackets), and

— those which require the user to make swimming and other postural movements to position the user with the face out of the water (buoyancy aids).

Within these main two classes there are a number of levels of support, types of buoyancy, activation methods for inflatable devices, and auxiliary items (such as location aids), all of which will affect the user's probability of survival. Within the different types of buoyancy allowed, inflatable PFDs either provide full buoyancy without any user intervention other than arming (i.e. PFDs inflated by a fully automatic method) or require the user to initiate the inflation. Hybrid PFDs always provide some buoyancy but rely on the same methods as inflatable PFDs to achieve full buoyancy. With inherently buoyant PFDs, the user only needs to put the PFD on to achieve the performance of its class.

PFDs that do not require intervention (automatically operating PFDs) are suited to activities where persons are likely to enter the water unexpectedly; whereas PFDs requiring intervention (e.g. manually inflated PFDs) are only suitable for use if the user believes there will be sufficient time to produce full buoyancy, or help is close at hand. In every circumstance, the user should ensure that the operation of the PFD is suited to the specific application. The conformity of a PFD to this part of ISO 12402 does not imply that it is suitable for all circumstances. The relative amount of required inspection and maintenance is another factor of paramount importance in the choice and application of specific PFDs.

ISO 12402 is intended to serve as a guide to manufacturers, purchasers, and users of such safety equipment in ensuring that the equipment provides an effective standard of performance in use. Equally essential is the need for the designer to encourage the wearing of the equipment by making it comfortable and attractive for continuous wear on or near water, rather than for it to be stored in a locker for emergency use. Throwable devices and flotation cushions are not covered by this part of ISO 12402. The primary function of a PFD is to support the user in reasonable safety in the water. Within the two classes, alternative attributes make some PFDs better suited to some circumstances than others or make them easier to use and care for than others. Important alternatives allowed by ISO 12402 are the following:

— to provide higher levels of support (levels 100, 150, or 275) that generally float the user with greater water clearance, enabling the user's efforts to be expended in recovery rather than avoiding waves; or to provide lighter or less bulky PFDs (levels 50 to 100);

— to provide the kinds of flotation (inherently buoyant foam, hybrid, and inflatable) that will accommodate the sometimes conflicting needs of reliability and durability, in-water performance, and continuous wear;

— to provide self-acting (inherently buoyant or automatically inflated) PFDs that float users without any intervention on their part, except in initially donning the PFD (and regular inspection and rearming of inflatable types), or to provide user control of the inflatable PFD's buoyancy by manual and oral operation; and

— to assist in detection (location aids) and recovery of the user.

PFDs provide various degrees of buoyancy in garments that are light in weight and only as bulky and restrictive as needed for their intended use. They will need to be secure when worn, in order to provide positive support in the water and to allow the user to swim or actively assist herself/himself or others. The PFD selected shall ensure that the user is supported with the mouth and nose clear of the water under the expected conditions of use and the user's ability to assist.

Under certain conditions (such as rough water and waves), the use of watertight and multilayer clothing, which provide (intentionally or otherwise) additional buoyancy, or the use of equipment with additional weight (such as tool belts) will likely alter the performance of the PFD. Users, owners and employers need to ensure that this is taken into account when selecting a PFD. Similarly, PFDs may not perform as well in extremes of temperature, although fully approved under this part of ISO 12402. PFDs may also be affected by other conditions of use, such as chemical exposure and welding, and may require additional protection to meet the specific requirements of use. If the user intends taking a PFD into such conditions, she/he has to be assured that the PFD will not be adversely affected. This part of ISO 12402 also allows a PFD to be an integral part of a safety harness designed to conform to ISO 12401, or an integral part of a garment with other uses, for example to provide thermal protection during immersion, in which case the complete assembly as used is required to conform to this part of ISO 12402.

In compiling the attributes required of a PFD, consideration has also been given to the potential length of service that the user might expect. Whilst a PFD needs to be of substantial construction and material, its potential length of service often depends on the conditions of use and storage, which are the responsibility of the owner, user and/or employer. Furthermore, whilst the performance tests included are believed to assess relevant aspects of performance in real-life use, they do not accurately simulate all conditions of this. For example, the fact that a device passes the self-righting tests in swimming attire, as described herein, does not guarantee that it will self-right an unconscious user wearing waterproof clothing; neither can it be expected to completely protect the airway of an unconscious person in rough water. Waterproof clothing can trap air and further impede the self-righting action of a lifejacket.

It is essential that owners, users and employers choose those PFDs that meet the correct standards for the circumstances in which they will be used. Manufacturers and those selling PFDs have to make clear to prospective purchasers the product properties, alternative choices and the limitations to normal use, prior to the purchase.

Similarly, those framing legislation regarding the use of these garments should consider carefully which class and performance levels are most appropriate for the foreseeable conditions of use, allowing for the higher risk circumstances. These higher risk circumstances should account for the highest probabilities of occurrence of accidental immersion and the expected consequences in such emergencies. More information on the selection and application is given in ISO 12402-10.

Personal flotation devices —

Part 1:
Lifejackets for seagoing ships — Safety requirements

1 Scope

This part of ISO 12402 specifies the safety requirements for lifejackets intended for use on seagoing ships with regard to the technical provisions of the International Convention for the Safety of Life at Sea (SOLAS).

NOTE This part of ISO 12402 also takes account of Maritime Safety Committee Resolutions MSC.48 (66) and MSC.81 (70) so far as they are applicable to lifejackets.

2 Normative references

The following referenced documents are indispensable for the application 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 12402-4, *Personal flotation devices — Part 4: Lifejackets, performance level 100 — Safety requirements*

ISO 12402-7, *Personal flotation devices — Part 7: Materials and components — Safety requirements and test methods*[1)]

ISO 12402-8, *Personal flotation devices — Part 8: Accessories — Safety requirements and test methods*[1)]

ISO 12402-9, *Personal flotation devices — Part 9: Test methods*[1)]

International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, International Maritime Organization[2)]

IMO Resolution A.658 (16), *Use and fitting of retro-reflective materials on life-saving appliances,* International Maritime Organization

1) To be published.

2) IMO is an institution with domicile in London issuing regulations which are then published as laws by its Member States.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
personal flotation device
PFD
garment or device which, when correctly worn and used in water, will provide the user with a specific amount of buoyancy which will increase the likelihood of survival

3.2
inherently buoyant material
material which is permanently less dense than water

3.3
self-acting PFD
PFD in which buoyancy is provided by permanent means (inherently buoyant material) or by suitable means (gas inflation) effected by a system which automatically activates upon immersion and which, except for the inspection and rearming of inflatable types, when correctly donned requires no further action by the user

3.4
automatically operating PFD
PFD in which inflation is effected as a result of immersion without the user carrying out any action at the time of immersion

3.5
manually inflated PFD
PFD in which inflation is effected as a result of the user operating a mechanism

3.6
orally inflated PFD
PFD inflated by mouth to produce buoyancy

3.7
PFD with secondary donning
PFD for which additional donning or adjustment is needed to place the PFD in its functioning position from the position it is normally worn

NOTE Pouch-type devices are examples of the type of PFDs which usually require such additional positioning.

3.8
vest-type PFD
PFD covering the upper trunk of the user like a vest

3.9
yoke-type PFD
PFD worn around the back of the neck and secured by a waist strap

3.10
emergency light
device which emits light so as to increase the chances of a user being located

3.11
multi-chamber buoyancy system
system that divides the buoyancy provided by an inflatable lifejacket into two or more separate compartments, such that if mechanical damage occurs to one, others can still operate and provide buoyancy so as to aid the user when immersed

3.12
deck safety harness and safety line
device that allows a user to be securely attached to a strong point on a vessel or on shore, so as to prevent him from falling into the water, or, if he does fall into the water, to prevent him from being separated from the vessel or shore

3.13
buddy line
length of cord which can be tied or otherwise fixed to another person or to that person's PFD 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

3.14
lifting loop
device which facilitates manual recovery of a person from water

3.15
sprayhood
cover brought or placed in front of the airways of a user in order to reduce or eliminate the splashing of water from waves or the like onto the airways and thereby to promote the survival of the user in rough water conditions

3.16
protective cover
cover that is normally in place over the functional elements of a PFD in order to protect them from physical damage, or snagging on external objects.

NOTE 1 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 The inflatable chamber of an inflatable PFD is an example of a functional element.

3.17
overpressure relief valve
valve which may be used in an inflatable system to avoid the likelihood of destruction caused by overpressure

3.18
whistle
device which, when blown by mouth, produces an audible sound which can aid in the location of the user

3.19
hybrid-type PFD
PFD of combined buoyancy types, i.e. inherent and inflatable

4 Classification

4.1 Classes

4.1.1 Lifejackets

These devices provide face-up flotation with levels of support sufficient for various open and rough water uses. Lifejackets have a buoyancy distribution sufficient to turn users, when tested on users wearing swimming costumes according to ISO 12402, to a position where the mouth has a defined freeboard above the water's surface, even when the user is unconscious.

4.1.2 Buoyancy aids

These devices should be comfortable for continuous wear and provide lift, without significant face-up turning ability, to float the conscious user with the level of support marked on the device. Buoyancy aids shall at least be suitable for sheltered waters, but at higher performance levels may be suitable for some users in other waters.

4.1.3 Special purpose lifejackets and buoyancy aids

These devices perform as in 4.1.1 and 4.1.2 with different levels of support, but have modifications related to special applications for use. These applications shall not relate to essential requirements such as in-water performance, stability and safety in use. The specific conditions for use shall be stated on their label to maintain essential requirements.

4.2 Performance levels

4.2.1 Level 275

This level is intended primarily for offshore use under extreme conditions and by people who are carrying significant weights and thus require additional buoyancy. It is also of value to those who are wearing clothing which traps air and which may adversely affect the self-righting capacity of the lifejacket. It is designed to ensure that the user is floating in the correct position with his mouth and nose clear of the surface.

See ISO 12402-2.

4.2.2 Level 150

This level is intended for general application or for use with foul weather clothing. It will turn an unconscious person into a safe position and requires no subsequent action by the user to maintain this position.

See ISO 12402-3.

4.2.3 Level 100

This level is intended for those who may have to wait for rescue, but are likely to do so in sheltered water. The device should not be used in rough conditions.

See ISO 12402-4.

4.2.4 Level 50

This level is intended for use by those who are competent swimmers and who are near to bank or shore, or who have help and a means of rescue close at hand. These garments have minimal bulk, but they are of limited use in disturbed water, and cannot be expected to keep the user safe for a long period of time. They do not have sufficient buoyancy to protect people who are unable to help themselves. They require active participation by the user.

See ISO 12402-5.

5 Requirements

5.1 General

A lifejacket for seagoing ships shall meet the requirements specified in 5.2 to 5.7, when tested in accordance with ISO 12402-9. The temperature cycling and rotating shock bin test shall be considered as reliability against wear and tear and shall be conducted prior to the appropriate physical properties test.

The MSC/Circ.980[3)] parts 2.2.1 and 2.2.2 test protocols should be used for recording the test results.

Materials and components used for a lifejacket for seagoing ships shall comply with ISO 12402-7.

An inflatable lifejacket complying with this part of ISO 12402 shall have at least two inflatable buoyancy chambers. It shall have automatic, manual and oral inflation that allows for full compliance with all performance requirements of this part of ISO 12402. Additionally, an inflated lifejacket shall have at least manual and oral inflation on each chamber. The inflatable lifejacket shall meet the performance requirements of this part of ISO 12402 with any one chamber deflated. Inflatable lifejackets shall be tested against inadvertent inflation according to ISO 12402-7 and ISO 12402-9.

5.2 Combination of lifejackets and accessories

5.2.1 General

Accessories used on lifejackets for seagoing ships shall comply with ISO 12402-8, as specified in Table 1.

A combination of a lifejacket and accessories shall not impair the performance of either item. This shall be proved during the test required for the lifejacket as well as accessories. If necessary, the test sequence has to be arranged accordingly. Requirements and test methods for accessories are specified in ISO 12402-8.

Table 1 — Accessories required for lifejackets

Accessory	Mandatory (M) / Optional (O)
Emergency light	M[a]
Whistle	M
Lifting loop	O
Buddy line	O
Retroreflective material	M
Deck safety harness	O
Overpressure relief valve	O
Multi-chamber system	M[b]
Protective covers	O
Sprayhood	O
[a] Only for operator.	
[b] Only for inflatables.	

Lifejackets can be equipped with further accessories. Such accessories shall comply with the requirements given in 5.1, second paragraph or with ISO 12402-8.

3) Circular 980 of the Maritime Safety Committee.

5.2.2 Lifting loop

If a lifejacket for seagoing ships is provided with a lifting loop, it shall be tested according to ISO 12402-9.

The lifting loop shall be affixed to the lifejacket in front of the chest anterior to two lines, each axial to the midline between the lower end of the sternum and the umbilicus and no more than 100 mm to the side of the midline.

The minimum length of the loop shall be 150 mm, measured from attachment to end of the loop.

The lifting loop shall have a minimum width of 20 mm and shall be of a colour distinctive from that of the lifejacket.

The lifting loop shall be conspicuous when the user is floating normally.

5.2.3 Whistle

The lifejacket shall be provided with a whistle. The whistle shall comply with 5.2 of ISO 12402-8.

5.2.4 Sprayhood

If any form of hood or sprayhood is fitted to cover the face in whole or in part, it shall comply with ISO 12402-8 and be marked as specified therein.

5.3 Types of buoyancy

5.3.1 General

5.3.1.1 The amount of buoyancy shall be such that the in-water performance required by this part of ISO 12402 (freeboard, turning capacity, stable floating position, etc.) is met.

The minimum amount of buoyancy for a lifejacket as specified in Table 2 can be provided by inherently buoyant material, chambers inflated by gas or by a combination of the two.

5.3.1.2 If the lifejacket is of a hybrid type, it shall provide, by its inherent buoyancy alone, the buoyancy required of an equivalently sized device of level 50.

5.3.1.3 Inflatable lifejackets which are manufactured for use by children under 30 kg in body mass and/or less than 6 years of age shall be automatically inflated. If a hybrid type is used, it shall have a minimum inherent buoyancy in accordance with ISO 12402-5.

5.3.2 Inflatable buoyancy chambers

5.3.2.1 Inflatable buoyancy chambers shall be capable of withstanding an internal pressure of 70 kPa without damage or permanent deformation when tested in accordance with ISO 12402-9 at a temperature of − 5 °C and + 30 °C for 2 min.

If a device is operated with an overpressure relief valve, the valve has to be blocked and tested in accordance with ISO 12402-9 with 40 kPa.

5.3.2.2 Gas-inflated lifejackets shall withstand the double inflation test in accordance with ISO 12402-9 before the buoyancy test in accordance with ISO 12402-9 is performed.

5.3.3 Inherently buoyant material

5.3.3.1 Any inherently buoyant material used to provide buoyancy shall be capable of withstanding compression and movement in normal wear without sustaining permanent loss of buoyancy. The maximum loss of buoyancy when three samples are tested in accordance with ISO 12402-7 shall not exceed 10 % in any foam material providing inherent buoyancy.

5.3.3.2 Any inherently buoyant material shall prove to have a thermal stability in accordance with ISO 12402-7 in which the maximum loss of volume in any sample shall not exceed 5 %.

5.3.4 Total buoyancy provided

5.3.4.1 For the purpose of assessment in accordance with this part of ISO 12402, items of different size are to be accompanied by stated minimum and maximum user's mass, which shall conform to the marked size ranges.

The primary means of indicating the device's size as regards fit shall be one which is appropriate and meaningful to the prospective user, for instance the statement of mass and girth ranges.

5.3.4.2 When tested in accordance with ISO 12402-9, the minimum buoyancy provided by the different levels shall be as specified in Table 2.

Table 2 — Minimum buoyancy

User	User's mass, m kg	Minimum buoyancy N
Infant	$m \leqslant 15$	50
Child	$15 < m \leqslant 43$	90
Adult	$m > 43$	150

5.3.4.3 If the lifejacket is intended for two or more mass categories, the buoyancy shall be at least as specified for the heavier category.

5.3.4.4 The buoyancy of the lifejacket shall be tested in accordance with ISO 12402-9. The difference between the initial measurements and the measurement after 24 h shall not exceed 5 % of the original buoyancy.

5.3.4.5 The two lifejackets which were subjected to the test in accordance with ISO 12402-9 shall be used to measure the total buoyancy.

5.4 Conspicuousness

5.4.1 Colour

The lifejacket shall be in the colour range from orange to red when tested in accordance with ISO 12402-7.

5.4.2 Retroreflective material

There shall be affixed to the surface of the lifejacket at least 400 cm^2 area of material which is retroreflective of light and conforms to the specification in IMO Resolution A.658 (16), Annex 2.

When supporting the user at rest in the water, approximately the same amount of material shall be visible from all directions around and above the lifejacket and the material shall be located above water level.

In case of a reversible lifejacket, the minimum area and arrangement shall be complied with no matter which way the device is donned.

5.5 Strength

The strength of the device shall be tested in accordance with ISO 12402-9. No damage shall occur which would result in the lifejacket failing to function in accordance with this part of ISO 12402. The means of adjustment shall not have a slippage exceeding 25 mm when subjected to the test.

The horizontal load shall be no less than 3 200 N for adults and 2 400 N for infants and children. The vertical load shall be no less than 900 N for adults and 700 N for infants and children.

The horizontal load value shall also apply for the lifting loop if fitted and be tested according to ISO 12402-9.

5.6 Performance

5.6.1 General

5.6.1.1 When worn, the lifejacket shall not be unduly bulky, heavy or uncomfortable when tested in accordance with ISO 12402-9.

5.6.1.2 The lifejacket shall not unduly restrict the vision, hearing, breathing or movement of the user when worn both ashore and in the water and tested in accordance with ISO 12402-9. It shall allow easy tightening and loosening of all essential adjustments both ashore and in the water. Lifejackets shall not interfere with vision when worn both ashore and in the water and shall allow sufficient comfort, and head and limb movement to preclude it from being removed because of encumbrance or discomfort during emergency use both ashore and in the water.

5.6.1.3 The lifejacket shall not contain any component nor use any method of component attachment which in normal use is likely to cause injury to the user or damage the lifejacket when tested in accordance with ISO 12402-9.

5.6.1.4 The lifejacket shall not significantly hinder dexterity. The user shall be able to swim whilst using the lifejacket, climb a ladder, and board a platform when tested in accordance with ISO 12402-9. At least two-thirds of subjects who can accomplish the task specified in ISO 12402-9 without the lifejacket shall also be able to perform it with the lifejacket.

5.6.1.5 The lifejacket shall withstand all tested conditions of normal storage and use. The lifejacket shall remain serviceable when tested in accordance with ISO 12402-9.

5.6.1.6 The lifejacket shall not form channels having a tendency to direct water into the face or to the head of the user. The test panel shall witness this by visual inspection during the in-water performance tests.

5.6.1.7 Automatic inflatable lifejackets shall be tested against inadvertent inflation in accordance with ISO 12402-9.

5.6.2 Donning, adjustment and fit

The lifejacket shall have a proper fit and adjustment. It shall be easy to don. Ties and fastenings necessary for proper performance should be few and simple.

An adult-size lifejacket shall readily fit persons from mass 43 kg and height 1,55 m up to at least 125 kg and 1,90 m, both lightly and heavily clad. It shall be capable of being worn inside-out, or clearly in only one way.

These requirements are considered to be fulfilled if at least 75 % of test subjects who are unfamiliar with the lifejacket are able to don the lifejacket correctly within 1 min without assistance, guidance or prior

demonstration. After demonstration, all persons must correctly don the lifejacket within a period of 1 min without assistance.

If a person is unable to don the lifejacket within 1 min on the first attempt, provide a donning demonstration and repeat the donning test. If less than five out of the first six test subjects are able to don the lifejacket within 1 min on the first attempt, a second and third set of six test subjects may be used to cumulatively demonstrate meeting the 75 % criteria. If used, the second and third sets of six subjects must meet the same subject size requirements as the first six subjects.

This test is to be carried out with at least six able-bodied persons. At least one and not more than two of these persons should be females with not more than one female with the same height. Each test subject shall wear normal clothing during the test.

The test shall be repeated on the same subjects with heavy-weather clothing, including an insulated hooded parka, that protects from cold. Wearing heavy-weather clothing, all persons shall correctly don the lifejacket within a period of 1 min without assistance.

The average time for subjects who are unfamiliar with the lifejacket to don the lifejacket (without assistance, guidance or prior demonstration) so as to float face up without holding it shall not exceed the time required to don the reference vest under the same conditions. Additionally, after receiving guidance or demonstration the average time for the same subjects to don the lifejacket so as to float face up without holding it shall not exceed the time required to don the reference vest under the same conditions.

5.6.3 In-water performance

5.6.3.1 The lifejacket shall provide lateral and occipital support of the user's head so that the mouth of a relaxed individual is held clear of a still water surface, with the trunk of the body inclined backwards from the vertical at an angle of at least 30° and not more than 90° and a face plane angle of at least 40° and not more than 90°, when tested in accordance with ISO 12402-9. Lifejackets for small children shall be tested in accordance with ISO 12402-9. A manikin can be used as a supplementary tool, in which case the test procedure according ISO 12402-9 shall be followed.

The test subjects have to be able to swim. They are only wearing swimming costumes. Each test subject has to be made familiar with each of the tests, particularly the requirements regarding relaxing and exhaling in the face-down position. The test subjects have to don the lifejacket, unassisted, using only the instructions provided by the manufacturer.

The freeboard measured in accordance with ISO 12402-9 shall be not less than 120 mm for both adults and children.

5.6.3.2 For each of the procedures required by ISO 12402-9, the lifejacket shall be seen to bring each test subject face up within 5 s of relaxation without him/her having to carry out any voluntary movement provided the reference vest also turns him/her face up within 5 s. If more than one individual takes longer than 5 s to turn in the candidate device, only the average requirements compared to the reference vest need be met. If during the tests, all subjects turn quickly (in less than 2,2 s by the leg release method), there is an inadequate sampling and an additional six or twelve subjects shall be tested and included in the average.

5.6.3.3 The user shall have the possibility to maintain a stable position and not turn face down, when tested according to ISO 12402-9.

5.6.3.4 When tested in accordance with ISO 12402-9, the lifejacket shall not be damaged so as to affect the lifejacket's in-water performance or buoyancy.

The lifejacket shall not become dislodged, cause harm to the test subject or be damaged so as to affect its in-water performance or buoyancy.

5.6.3.5 When tested in accordance with ISO 12402-9, the lifejacket shall bring the test subject to rest with the mouth clear of the water by at least the required freeboard.

The lifejacket shall not become dislodged, cause harm to the test subject or be damaged so as to affect its in-water performance or buoyancy.

Without repositioning of any part of the body, the freeboard shall meet the relevant requirements.

5.7 Multi-chamber buoyancy systems

Multi-chamber buoyancy systems shall meet the performance requirements of this part of ISO 12402 with any one chamber deflated.

Multi-chamber systems shall conform with ISO 12402-8.

The buoyancy test according to ISO 12402-9 shall be repeated as many times as necessary to perform the test with each compartment in a deactivated condition.

6 Marking

6.1 General

The PFD shall be permanently and legibly marked with the information given in 6.2 a) to f) at least in the official language(s) of the country of destination and in the English language. Information shall be given as pictograms, or as text combined with pictograms, or, if defined pictograms do not exist, as text alone.

6.2 Information on the lifejacket

Information on the lifejacket shall include the following items:

a) identification of the manufacturer – at least the name and address of the entity in charge of initially putting on the market (manufacturer or importer);

b) size range of the PFD (height or height and mass) and the symbol for adult, child or infant;

c) approval information, including the administration which approved it;

d) manufacturer's model designation, serial number, and quarter (or month) and year of manufacture;

NOTE Months are to be given as arabic numerals (1 to 12), and quarters as roman numerals (I to IV) in order starting from 1st January.

e) for inflatable lifejackets only, a label for registration of "date of servicing" and the text "Annual servicing required";

f) if an adult lifejacket has only been evaluated as specified in 5.6.2, the limits of the size range for larger and heavier persons.

6.3 Additional information on devices to be used for crew and other trained personnel

For lifejackets mainly used for crew and other trained personnel (not passengers), and not covered by muster list and emergency instructions, the information shall include at least the following additional items:

a) minimum buoyancy provided and amount of inflatable buoyancy if provided;

b) storage, care, cleaning and maintenance instructions in brief;

c) simple donning and adjustment instructions;