Australian Standard®

Personal flotation devices

Part 1: General requirements

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- AWTA Textile Testing
- Australian Canoeing
- Australian Chamber of Commerce and Industry
- Australian Industry Group
- Australian Marine Industries Federation
- Australian Maritime Safety Authority
- Australian Power Boat Association
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- National Marine Safety Committee
- New South Wales Water Ski Association
- Office of Consumer and Business Affairs South Australia
- Office of Fair Trading NSW Consumer Protection Agency
- Tasmania Maritime Network
- Yachting Australia

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Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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PREFACE

This Standard was prepared by Joint Standards Australia/Standards New Zealand Committee CS-060, Buoyancy Aids to supersede the following Standards:

AS 1499—1996, Personal flotation devices—Type 2

AS 1512—1996, Personal flotation devices—Type 1

AS 2259—1996, General requirements for buoyancy aids

AS 2260—1996, Personal flotation devices—Type 3

This Standard incorporates Amendment No. 1 (November 2009). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The object of this Standard is to provide manufacturers, regulatory authorities and users with the requirements for personal flotation devices (PFDs) suitable for use by persons engaged in activities, whether in relation to their work or their leisure, in or near water in a range of prevailing conditions.

This Standard is Part 1 of a three-part series dealing with personal flotation devices. The other parts are as follows:

Part 2: Materials and components—Requirements and test methods

Part 3: Test methods

This Standard is based on but not identical with Parts 1 to 6 of the ISO 12402 series of Standards. PFDs are classified by buoyancy and this Standard applies to a wider range of products than those specified in AS 1499—1996, AS 1512—1996 and AS 2260—1996.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

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FOREWORD

This Standard was prepared to give guidance on the design and application of personal flotation devices (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 PFDs 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).

This Standard 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). However, PFDs can be divided into the following two main classes:

(a) Those which provide face up in-water support to the user regardless of physical conditions.

(b) Those which require the user to make swimming and other postural movements to position the user with the face out of the water.

Within these 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 Standard 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.

This Standard 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. 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 this Standard are the following:

(i) 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.

(ii) 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 PFDs buoyancy by manual and oral operation.

(iii) 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 is required to 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 complying this Standard. 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 Standard also allows a PFD to be an integral part of a safety harness designed to conform to AS 2227 or 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 Standard.

In compiling the attributes required of a PFD, consideration has also been given to the potential length of service that the user might expect. While 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 PFD.

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.

STANDARDS AUSTRALIA

Australian Standard
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Part 1: General requirements

1 SCOPE

This Standard specifies the requirements for personal flotation devices (PFDs) with buoyancy classifications of level 275, level 150, level 100 and level 50 suitable for use by adults and children.

NOTE: Guidance on the selection and use of PFDs is given in Appendix A.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS
2227 Yachting harnesses and lines—Conventional lines

4758 Personal flotation devices
4758.2 Part 2: Materials and components—Requirements and test methods
4758.3 Part 3: Test methods

AS/NZS
1906 Retroreflective materials and devices for road traffic control purposes
1906.1 Part 1: Retroreflective materials

ISO
105 Textiles—Tests for colour fastness
105-A02 Part A02: Grey scale for assessing change in colour
105-A03 Part A03: Grey scale for assessing staining
105-B02 Part B02: Colour fastness to artificial light: Xenon arc fading lamp test
105-E02 Part E02: Colour fastness to sea water
105-X12 Part X12: Colour fastness to rubbing

9227 Corrosion tests in artificial atmospheres—Salt spray tests

12401 Small craft—Deck safety harness and safety line for use on recreational craft—Safety requirements and test methods

12402 Personal floatation devices
12402-1 Part 1: Lifejackets for seagoing ships—Safety requirements

International Commision on Illumination (CIE)
Publication 15: Calorimetry

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

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

A1 Scandinavian Colour Institute
National Colour System (NCS)