



Safety Over Water: Advice on Personal Floatation Devices (PFDs)

Advisory Note No 01, 2022

Introduction: The Aquaculture Safety Group (ASG) comprises of members of the finfish and shellfish aquaculture industries in a working partnership with regulators and industry bodies. The purpose of this advisory note is to provide guidance on the features of Personal Floatation Devices (PFDs) to aid appropriate selection of over water safety equipment for aquaculture workers in varying working environments. The ASG supports the use of Personal Flotation devices when working over water as essential safety equipment.

Working over water in aquaculture: The aquaculture industry involves differing over water environments including, exposed coastal sea locations, nearshore sheltered areas, areas with strong tidal races, fresh and seawater lochs, open tanks, ponds and raceways. Work locations may include working from workboats, fast ridged inflatables craft, floating structures moored to the sea bed and working from land by open water. There may also be cases where indoor facilities over water may pose an over water risk.

Where there is a risk of falling into the water and drowning, it is essential to provide sufficient buoyancy to keep the person safely afloat¹

Personal floatation devices PFDs: PFDs include a range of safety equipment aimed at making the wearer buoyant when in the water.

Life jackets: These should support the wearer face up in-water regardless of environmental conditions; are worn around the torso and include those with inherent buoyancy, self-inflation mechanisms or a combination of both.

Buoyancy aids: These support the wearer in the water are made of inherency buoyant material and worn around the torso. Buoyancy aids may require the user to swim or make other movements to keep their face out of the water. They are not designed to be self-righting.

Floatation suits: A floatation suit is an safety garment that provides inherent buoyancy and thermal protection. Inherent buoyancy floats the wearer when in the water. Thermal protection offers additional protection from rain, wind and water emersion.

Understanding PFD buoyancy: In general adults regardless of their size have a net weight of around 5kg when immersed in water ². Life jackets therefore come with a standard amount of buoyancy suitable for an adult weighing over 40kg ². Bouncy aids and floatation suits may offer differing levels depending on the size of the garment.

Selecting the appropriate additional buoyancy of a PFD provides the user the ability to float or swim for the conditions they may encounter.

Newtons: Buoyancy is measured in Newtons, a metric measurement of force. This is used to indicate how much buoyancy each make, model of PFD offers. The Newton figure will be found on the PFD. The higher the buoyancy the greater the assistance there is to keep a person a float. With inherent buoyancy PFDs, the greater the buoyancy the bulkier the PFD is to wear, while gas inflation bottle mechanism enable high levels of buoyancy to be provided without the associated bulk.

Options for buoyancy: There are three methods of providing buoyancy in a PFD

Inflatable PFDs: These only provide full buoyancy when inflated and may be designed to a) inflate automatically from a gas bottle if the wearer enters the water, b) manually inflated (either from a gas bottle or orally) when the wearer takes some action to inflate it.

Inherently buoyant PFDs: These have solid buoyant material and there is no need to inflate.

Hybrid PFDs: As the name suggest these combined inherent buoyancy so will always provide some buoyancy for the user and include the same methods as inflatable PFDs to achieve full additional buoyancy.

Choice of activation method for PFDs: Manually or orally inflated PFDs are only suitable for use if the wearer believes there will be sufficient time to produce full buoyancy, if automatic operation would result in entrapment, or if help is close at hand.

Automatic operating PFDs that float wearers without any intervention on their part, except in initially donning the PFD (and regular inspection and rearming of inflatable types) are suited to activities where persons are likely to enter the water unexpectedly.

Understanding the buoyancy of a PFD: There are numerous options for PFDs and the below give a broad overview of the amount of buoyancy in various levels. A pictogram and short description for each buoyancy level illustrates the support provided.



EN ISO 12402-5
EN 393

These PFDs have a buoyancy of no less than 50 Newton. 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.



EN ISO 12402-4
EN 395

Have buoyancy of no less than 100 Newton. 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.



EN ISO 12402-3
EN 396

Have buoyancy of no less than 150 Newton. This level is intended for general application or for use with foul weather clothing.



EN ISO 12402-2
EN 399

Have buoyancy of no less than 275 Newton. This level of lifejacket is intended primarily for offshore use under extreme conditions. It is also of value to those who are wearing clothing which traps air or loads such as tool belts which may adversely affect the self-righting capacity of the lifejacket.










PFD and size measurements: PFDs that come in various sizes such as buoyancy aids and floatation suits may differ in their buoyancy depending on the size of the garment. They may indicate their suitability for the weight of the user. It is important to ensure the correct selection and correct fit of the PFD for the person wearing it.

User considerations: Apart for an abandon ship scenarios were the PFD is worn purely as a survival aid, PFDs should to be comfortable to wear all day and to provide adequate buoyancy for the garments being worn. Due to the often harsh working environment the PFD should be constructed to withstand the working environment. The users clothing will change throughout the seasons and this should be taken into account. Additional clothing can result in additional weight when wet.

Where a worker is likely to encounter worse conditions - such as rough water and waves - the use of watertight and multilayer clothing can (intentionally or otherwise), provide additional buoyancy and this can alter the performance of the PFD. For example, a PFD that will self-right a person in swimwear does not guarantee that it will self-right an unconscious person wearing clothing. Waterproof clothing can trap air and further impair the self-righting action of a lifejacket. The use of equipment with additional weight (such as tool belts) can also alter the performance of the PFD. It is essential that owners, users and employers choose PFDs that meet the correct requirements for the circumstances in which they will be used.

PFD Optional Safety Features: When selecting a PFD device there are choice of safety features (Table 1). Some may be supplied as standard while other may need to be requested as per the users requirements.

Table 1: Examples of additional PFD safety features

Ride-Up Protection		Ride up protection (crotch straps), when worn correctly prevents the PFD riding up in the water. Typically for lifejackets these are straps that secure the device between the users legs. Without ride up protection an incorrectly fitted PFD can float up above the users head and pose a safety hazard.
Light		Safety lights, aid detection of the user when in the water. Not all PFDs come with integral lights.
Whistle		For drawing attention by the user
Rescue ring		Where fitted the rescue ring must be available for use. Care must be taken when donning that the rescue ring is free from obstruction.
Grab handles		Depending on style of PFD, grab handles become available when the jacket is inflated, often at the rear collar of a jacket. Position of handles may differ depending on make and model.
Deck Safety Harness		Can be used where risk of being washed overboard is present
Personal Locator Device		Used as part of a system to assist in finding a person who is overboard. Particularly useful in areas with strong current and tides or while working in hours of darkness
Spray hood		A device that can be pulled over our head when a life jacket is inflated to protect the user's airway from sea spray. Useful in rough weather conditions when immediate rescue is not an option. The may be integral to a PFD or purchased as an additional extra and housed in a pouch attached to the PFD
Fall Arrest body harness with integrate PFD		Specialist PFDs exist in the market place for task specific hazards

Regulatory requirement: Safety equipment must be maintained and functioning. It is an offence to carry an inflation lifejacket, which has not been serviced at the intervals prescribed by the applicable regulations³.

ASG - Personal Floatation Devices general recommendations for the aquaculture industry

While the ASG will not specifically endorse a make or model of PFD it makes eleven general recommendation.

1. PFDs should be worn for all above water working where there is a risk a person could enter the water including pens and decks of vessels and barges.
2. The level of PFD buoyancy chosen should be suitable for the potential conditions in association with clothing and any tools being carried with the aim that the person wearing can be supported with their mouth and nose clear of the water.
3. Selection consideration should include the ability of the PFD to right an injured or unconscious casualty.
4. Lifejackets should be used with appropriate ride up protection.
5. Buoyancy aid use should be limited to specific tasks such as worn when beside still water, ponds or by rivers where it is a short swim back to shore.
6. PFDs should have a means to aid recovery from the water by other persons. This may be through handles, attachment points or integral lifting points.
7. PFD are to be used in accordance with the manufactures instructions.
8. Inspection and servicing should be in accordance with legal requirement³ and manufactures requirements.
9. All PFDs are to have a pre-use inspection as per the manufactures' instructions
10. PFD with inflation mechanisms should be periodically inflated to ensure they maintain inflation.
11. To be effective the user must correctly fit their PFD and adjust all straps and fasteners:

'Snug Fit = A Safe Fit'

References

- 1 Personal buoyancy equipment on inland and inshore waters, Agricultural Information Sheet No 1 HSE 08/11
- 2 [Lifejackets – How To Choose A Lifejacket And Maintain It \(rnli.org\)](https://www.rnli.org) 22:00 14/09/2021
- 3 Life-Saving Appliances - Inflatable SOLAS Certificated Life rafts, Lifejackets, Marine Evacuation Systems, and repair of Inflated Rescue Boats - Servicing Requirements and Approved Service Stations Marine Guidance note MGN 548 (M+F), Marine Coastguard Agency. June 2016

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