



UIM Manufacturing Guidelines for Racing Vests

1. SCOPE

1.1 These requirements cover personal safety devices protecting crew from impacts and giving buoyancy in water which are used in power boat racing under the authority of the Union of International Motor boating (UIM). The devices include Race Vest used with both open unrestrained cockpits and closed restrained cockpit boats. Closed cockpit with unrestrained occupant is not considered.

1.2 Personal safety devices are called by many different names. Within the boat racing community, the term “life jacket” is most common. Personal Floatation Device (PFD), life vest, boating vest, racing vest, and buoyant devices are other terms.

2. GENERAL

2.1 The race vest covered by this document must be provided with impact protection and inherently buoyant material and shall not depend upon granulated or loose materials or use air/gas as a primary means of obtaining buoyancy. If air/gas auxiliary buoyancy is provided it will not be automatically employed by contact with water, and require discretionary use by the wearer. The impact protection and the buoyancy material may be separated into two different parts, but if so it must be tested and sold together to ensure its performance.

2.2 The racing vest may or may not comply with specifications written by other organizations or agencies. This Guideline outlines a specification of minimum requirements. This specification is not intended to limit design innovations nor the use of new and or better materials. This specification is intended to try to eliminate the use of unsatisfactory materials and unsuitable designs and provide acceptable levels of performance.

This specification is not intended to guarantee all properties and a level of safety as required for a life vest in general navigation. It is the sole responsibility of the manufacturer and of the wearer to provide a level of safety that is required for the intended use. They must be aware that racing vests are available which might meet this specification but which may not be safe against unconsciousness and which may be designed for the exclusive use in specific type of boats in secured waters and with rescue teams in place. It is strongly recommended and in particular for the use outside secured waters and with no rescue team in place not to rely exclusively on such racing vests.

2.3 All racing vests shall be designed for the purpose of racing and shall possess the following: The design of the racing vest must be such that the proper method of donning and wearing the jacket is obvious and no special method of training is required for proper use. Manufacturer instruction sheets are encouraged.

2.4 Maximum lifetime for a race vests should be maximum 10 years from date of manufacturing as legal for racing, with an inspection of the race vest together with other safety gear before each race. After a severe accident (incident) and during the investigation by the safety commission of the accident, and also when it is clear that the material, straps, threads, and buckles of the race vest have been exposed to sever forces which could result in the weakening race vest, the race vest may not be acceptable for racing.

2.5 Fitting. It is very important that the wearer has the correct size of the race vest and that all strap adjustments are done so the race vest is as tight and snug as possible to the body, otherwise there is a risk that the race vest will not function in the way it is intended to.

3. DEFINITIONS

For the purpose of this specification, the following terms shall apply:

3.1 Personal Safety Devices (race vest). The following defines race vest covered by these guide line specification:

Type “A” race vest is designed to be used in open cockpits with unrestrained crew. These devices are intended to turn an unconscious person from face down position to a position where the wearer’s respiration is not impaired. There are two versions, type A100 Newton race vest and type A150 Newton Marathon race vest

For a Type A100 Newton race vest the minimum buoyancy is 100 Newton (22.5 pounds), if the wearer is a small person up to 60 kg (132 pounds), the minimum buoyancy required shall be 70 Newton (15.7 pounds). EN ISO 12402-4:2006 paragraph 5.3.4.2.

For Type A150 Newton Marathon race vest the minimum buoyancy is 150 Newton (33.7pounds) if the wearer is a small person up to 60 kg (132 pounds), the minimum buoyancy required shall be 110 Newton (24.7 pounds). EN ISO 12402-3:2006 paragraph 5.3.4.2.

Type “C” race vest is designed and intended to be worn by persons in a reinforced cockpit where the crew is restrained in the cockpit and have other supplemental life support systems eg air system. *Important – This device does not turn an unconscious person from face down nor does it give free respiration.*

3.2 BUOANCY: The amount of buoyant material required to be available to the wearer. Any part of the race vest or attachments which will not float must have additional buoyant material added to the race vest to compensate for the loss of buoyancy.

3.3 CLOSURES

A. Primary: A means of securing the device on the body that causes the device to function in its intended manner without employing any other means of fastening the device to the body.

B. Secondary: A closure that, when used on the device by itself, does not make the device appear to be donned as intended and is not required to be closed to comply with the requirements of this document.

4. MATERIAL AND CONSTRUCTION

4.1 FOAM: A closed cell foamed polymeric material.

4.2 No “fungus nutrient” materials (cotton, linen, silk, hemp, sisal, cork etc.) may be used.

4.3 All outer fabrics shall be nylon, polyurethane backed or equivalent. with a minimum strength of 400 denier with a minimum breaking strength of, SS-EN ISO 1421, warp 1800N, weft 1800N. Tear strength warp 160N, weft 160N, SS-EN ISO 4674 (or equivalent values using ASTM D5034 and ASTM D2261 respectfully).

4.4 No materials shall be used which will be degraded more than 2% by prolonged exposure to either fresh or salt water.

4.5 All materials used in the racing vest must withstand storage temperatures from – 35° C to + 55° C without degradation.

4.6 All material used in racing vest jackets must be oil, grease, gasoline and alcohol resistant.

4.7 All race vests must have at least 70% of the upper surfaces, both front and back, international orange, yellow, or red in color.

4.8 Impact material is required in all A100N race vests and A150N race vests. The impact material must be a minimum of 1.6 mm thick low or medium density polypropylene, polycarbonate or equal type material and cover both crew members back and sides. The impact material must be the layer immediately under the outer cover and the soft material must be against the inner cover. The soft material has to be non-flotation material otherwise the race vest may not turn crew over.

4.9 There must be straps around the torso and around crotch/shoulder to hold the vest together. All straps shall be at least 40mm wide and have a minimum breaking strength of 10,000 Newton. All buckles, connections, connected to the main 40mm straps shall have a strength of minimum 10,000 Newton. Metal items such as buckles have to be stainless or non-corroding material.

4.10 Strap ends must be doubled and stitched or dipped so as to not be able to unthread through the buckle or snap.

4.11 Velcro must not be used as a primary means of closure, but may be used as a secondary means of closure. Velcro may be used on non-critical closures and strap ends to stop wind flap.

4.12 SEAM: A joint consisting of a sequence or series of stitches uniting two or more pieces of material.

4.13 LOCK TYPE STITCH: A stitch that will not unravel when a force is applied in the direction of the seam on any of the threads forming the stitch.

4.14 All structural seams shall use a lock type stitch or better and as illustrated below:



Lock Stitch Type

NOTE 1—This type of stitch shall be formed with two threads: one needle thread, A, and one bobbin thread, B. A loop of thread A shall be passed through the material and interlaced with thread B. Thread A shall be pulled back so that the interlacing shall be midway between surfaces of the material or materials being sewn.

Maximum allowed step length in stitches is 6 mm.

4.15 No monofilament thread shall be used.

4.16 Thread breaking force must be a minimum 3.800 cN OEKOTEX Standard 100 or satisfy Mil-VT-295, Type 2, Class A, Size E, 4.200 cN min.

4.17 Retroreflective material - two reflectors (100cm x 50cm) may be sewn in on the front shoulder. IMO resolution A.658 (16), Annex 2, Type A 100, Type A 150

4.18 The Race vest may have a whistle attached with a thin rope, see EN ISO 12402-4:2006 paragraph 5.2.3., Type A 100, Type A 150

4.19 An information tag must be sewn/attached in the inside back of the race vest, language in English, with the following mandatory information:

- Manufacturer's name
- Type of race vest (A100, A150, or C50)
- Buoyancy
- Size

- Date of manufacture
- Approval by the National Authority in the country where the race vest is manufactured, if required by NA.
- Wearing and maintenance instructions, if required by NA.

The tag shall also state if the race vest is intended to turn an unconscious person onto the back position. The marking letters must be at least 4 mm high and the method of marking must be functional throughout the life of the race vest.

5. Type A Race Vests for open cockpits (Includes A100, A150)

5.1 The design of the race vest shall be such that body padding and impact protection shall cover the back and sides of the torso. The design of the race vest must be such that body padding and/or impact protection cover the front of the torso. 5.2 The flotation material must be distributed in the design of the race vest to make it rotate the wearer and to keep the head above the surface in case of unconsciousness.

5.2 The flotation material must be distributed in the design of the race vest to make it rotate the wearer and keep the face above the surface in case of unconsciousness. (Ref. EN ISO 12402-4:2006).

5.3 Race vests equipped with leg straps shall not use a waist strap as a primary means of attachment to the race vest. The leg straps must take their primary stress over the wearer's shoulders.

5.4 SKID COLLAR: A device which is an integral part of a Type A100 and Type A150 race vest which deflects water from the base of a helmet upon a feet first entry by the wearer. Skid Collars shall be as follows:

- The skid collar shall be integral to the race vest by being stitched in place.
- The skid collar shall be covered with the same fabric as the rest of the race vest.
- The skid collar shall have a minimum of 6mm thick high density foam core (e.g. laminated polyethylene)
- The area of required coverage shall be minimum 120 degrees when measured from the midsagittal plane.
- The skid collar shall be sufficiently tall to provide some overlap of the helmet when the wearer is standing in a vertical, erect, relaxed stance.
- Additional flotation and / or padding in the skid collar is permissible.
- The skid collar must be international orange or yellow on all surfaces.

6. TYPE C Race Vest

6.1 Type C race vests must have straps on each shoulder area which allow a rescuer to have an easy and secure grasp. Type C Race Vest shall be designed in such a manner that the currently required retention system in the boats shall not be interfered with.

6.2 Type C race vests may be designed to hold or assist in holding other life support systems. Any such attachments must be designed in a manner so that there is no, interference with the current specified restraint system in the boat.

The life support system attachments must be so designed that they cannot be confused with the safety belt release mechanism when operated without the aid of eyesight. All life support attachments to the race vest must be the pull release type.

6.3 The flotation buoyancy for the Type C race vest must be 50-60 Newton. If the wearer is a small person up to 60 kg, the minimum buoyancy required shall be 40 Newton. ISO 12402-5:2006 paragraph 5.3.4.2.

6.4 Type C Race vest may be incorporated into a driving suit as long as the material and color requirements of paragraph 4.3 and 4.7 are complied with. The areas of special material and color coverage shall be from the upper most surface to the waist excluded.