

Small crafts – Floating jackets

1. Scope This Japanese Industrial Standard specifies the requirements for floating jackets (1) (hereinafter referred to as “floating jacket”) to be donned for supporting human bodies engaged in water sports (1).

Notes: (1) Sports using dinghies, canoes, sailing boards, etc., vulnerable to water risk.

(2) Floating jackets differ from lifejackets prescribed by the Ship Safety Law.

Remarks: This standard makes reference to the following standards.

JIS K 2204 – Gas oil

JIS Z 2371 – Methods of neutral salt spray testing

JIS Z 8721 – Colour specification – Specification according to their three attributes

JIS Z 9015 – Sampling inspection procedures and tables by attributes with severity adjustment (receiving inspection where a consumer can select suppliers)

2. Definitions For the purposes of this standard, the following definitions apply.

(1) **Non-inflatable type** Type of floating jacket using an inherently buoyant material such as polyethylene foam to provide buoyancy.

(2) **Inflatable type** Type of floating jacket using a gas such as carbon dioxide gas to provide buoyancy.

(3) **Buoyancy** Force capable of floating a piece of iron in fresh water.

(4) **Cover** Cloth etc., covering a buoyancy object.

(5) **Retroreflective material** A material which reflects in the opposite direction a beam of light directed on it.

Remark: Retroreflective materials referred to in this standard shall conform to the requirements of SOLAS 1983.

3. Classification Floating jackets shall be classified as given in Table 1.

Table 1 Class

Class	Main scope of application
Type A	Floating jackets used in relatively enclosed water areas such as rivers, lakes, in-harbour waters where detection or rescue operation is easy.
Type B	Floating jackets used in waters within a range visible from shore.
Type C	Floating jackets used in off-shore waters.

4. Product quality

4.1 Type A

4.1.1 Appearance Appearance of floating jackets shall be as follows:

(1) Appearance of floating jackets shall be verified with a tape measure and by visual inspection. There shall be no defects that are detrimental to use such as cracks. Other particulars of the product shall be in accordance with the purchaser's specifications.

Permissible deviations of weight and dimensions shall be $\pm 5\%$.

(2) A whistle shall be attached with a cord.

(3) A retroreflective material with an area of 100 cm^2 or more shall be fitted. The fitted position should desirably be as high as practicable.

4.1.2 Buoyancy The buoyancy of the floating jacket shall be measured before and after 24 hours submersion in fresh water. The initial buoyancy shall be 69 N or more (50 N or more in the cases of a child-size floating jacket), and the difference between the initial buoyancy and the final buoyancy shall not exceed 5%.

4.1.3 Jumping When a person in an upright position wearing a floating jacket jumps into the water from a height of one metre above the water, there shall be no damage to the person and the floating jacket. The floating jacket shall not be dislodged.

4.1.4 Loading A load of 750 N (520 N in the case of a child-size floating jacket) shall be applied for 30 min to the shoulder section or lifting loop of the floating jacket. The cover, lifting loop, cords, fasteners and their fitted parts shall have no abnormalities as a result of this loading.

4.1.5 Floatation A person in fresh water wearing a swimming suit and a floating jacket shall be able to turn from a face-down to a face-up position in not more than five seconds with his mouth clear of the water.

4.2 Type B

4.2.1 Appearance Appearance shall be as follows:

- (1) Appearance of floating jackets shall be verified with a tape measure and by visual inspection. There shall be no defects that are detrimental to use such as cracks. Other particulars of the product shall be in accordance with the purchaser's specifications.
- (2) A whistle shall be attached with a cord.
- (3) A retroreflective material with an area of 100 cm² or more shall be fitted. The fitted position should desirably be as high as practicable.

4.2.2 Colour The surface area of one-third or more of a floating jacket shall have a distinctive colour of reddish orange, orange or yellow.

Remark: See JIS Z 8721 for colour reference.

4.2.3 Buoyancy The buoyancy of the floating jacket shall be measured before and after 24 hours submersion in fresh water. The initial buoyancy shall be 74 N or more (50 N or more in the cases of a child-size floating jacket), and the difference between the initial buoyancy and the final buoyancy shall not exceed 5%.

4.2.4 Jumping When a person in an upright position wearing a floating jacket jumps into the water from a height of one metre above the water, there shall be no damage to the person and the floating jacket. The floating jacket shall not be dislodged.

4.2.5 Loading A load of 750 N (520 N in the case of a child-size floating jacket) shall be applied for 30 min to the shoulder section or lifting loop of the floating jacket. The cover, lifting loop, cords, fasteners and their fitted parts shall have no abnormalities as a result of this loading.

4.2.6 Flotation A person in fresh water wearing a swimming suit and a floating jacket shall be able to turn from a face-down to a face-up position in not more than five seconds with his mouth clear of the water.

4.3 Type C

4.3.1 Appearance Appearance shall be as follows:

- (1) Appearance of floating jackets shall be verified with a tape measure and by visual inspection. There shall be no defects that are detrimental to use such as cracks. Other particulars of the product shall be in accordance with the purchaser's specifications.
- (2) Permissible deviations of weight and dimensions shall be $\pm 5\%$.
- (3) A whistle shall be attached with a cord.
- (4) A retroreflective material with an area of 200 cm² or more shall be fitted. The fitted position shall desirably be as high as practicable.

4.3.2 Colour The surface area of half or more of a floating jacket shall have a distinctive colour of reddish orange, orange or yellow.

Remark: See JIS Z 8721 for colour reference.

4.3.3 Buoyancy The buoyancy of the floating jacket shall be measured before and after 24 hours submersion in fresh water. The initial buoyancy shall be 157 N or more, and the difference between the initial buoyancy and the final buoyancy shall not exceed 5%.

4.3.4 Jumping When a person in an upright position wearing a floating jacket jumps into the water from a height of one metre above the water, there shall be no damage to the person and the floating jacket. The floating jacket shall not be dislodged.

4.3.5 Loading A load of 1 350 N shall be applied for 30 min to the shoulder section or lifting loop of the floating jacket. The cover, lifting loop, cords, fasteners and their fitted parts shall have no abnormalities as a result of this loading.

4.3.6 Flotation The flotation shall be as follows:

- (1) The test subject shall swim at least three gentle strokes (breast stroke) and then with minimum headway relax, with the head down and the lungs partially filled, simulating a state of utter exhaustion. The mouth of the test subject shall be able to clear the water in not more than five seconds if the period is measured from the completion of the last stroke.
- (2) The test subject shall come to rest with the trunk inclined backwards.

5. Construction Floating jackets shall meet the following requirements:

- (1) When donned, a floating jacket shall not restrict in-water motions of the wearer.
- (2) The construction of floating jackets shall be such that no bodily injury is caused when donned.
- (3) Floating jackets shall be capable of being donned in a short time.
- (4) Floating jackets shall be capable of being secured with cords, tapes or fasteners.

6. Materials The materials of floating jackets shall be sufficiently resistant to corrosion.

7. Tests and inspection

7.1 Test subjects The requirements for test subjects shall be as follows:

- (1) The individual adults chosen shall have heights in the range from 150 to 180 cm.
- (2) The individual children chosen shall have heights in the range from 110 to 150 cm.
- (3) The only clothing allowed shall be swimming suits.

7.2 Product tests and inspection The test methods shall be in accordance with Annex 1.

7.2.1 Visual inspection Visual inspections shall be carried out in accordance with 4.1.1, 4.2.1 or 4.3.1 and the results shall meet the requirements specified therein.

7.2.2 Colour inspection Colour inspections shall be carried out in accordance with 4.2.2 or 4.3.2 and the results shall meet the requirements specified therein.

7.2.3 Buoyancy inspection Buoyancy inspections shall be carried out in accordance with Annex 1 and the results shall meet the requirements specified in 4.1.2, 4.2.3 or 4.3.3.

7.2.4 Load inspection Load inspections shall be carried out in accordance with Annex 1 and the results shall meet the requirements specified in 4.1.4, 4.2.5 or 4.3.5.

7.2.5 Sampling The sampling systems to be employed in visual inspections, colour inspections, buoyancy inspections and load inspections shall be in accordance with Annex 1.

7.3 Donning inspection

7.3.1 Test subjects Test subjects shall number two or more for both adult and child individuals.

7.3.2 Jumping inspection Jumping inspections shall be carried out in accordance with 4.1.3, 4.2.4 or 4.3.4, and the results shall meet the requirements specified therein.

7.3.3 Flotation inspection Flotation inspections shall be carried out in accordance with 4.1.5, 4.2.6 or 4.3.6 and the results shall meet the requirements specified therein.

7.4 Material inspection

7.4.1 Non-inflatable buoyant materials Inspections of non-inflatable buoyant materials shall be as follows:

- (1) **Test for oil resistance** Three or more test specimens each with a volume of 125 cm³ or more shall be taken, the initial buoyancy of test specimens immersed in gas oil (JIS K 2204) and the buoyancy after being immersed for 24 hours shall be measured after taking them out of the oil, and the rate of reduction of buoyancy shall be not more than 5%.

The test method shall be in accordance with Annex 2.

- (2) **Salt water spray test** Three or more test specimens each with a volume of 125 cm³ or more shall be taken, the initial buoyancy of test specimens immersed in fresh water and the buoyancy after being subjected to a salt water spray test in accordance with JIS Z 2371 for 24 hours shall be measured, and the rate of reduction of buoyancy shall be not more than 5%.

- (3) **Cold weather test** Three or more test specimens each with a volume of 125 cm³ or more shall be taken, the initial buoyancy of test specimens immersed in fresh water and the buoyancy after being left in a thermostatic chamber kept at a temperature of -30±5°C for one hour, removed from the chamber, and the rate of reduction of buoyancy shall be not more than 5%.