



# SURFACE VEHICLE STANDARD

J1973™

FEB2023

Issued 1991-04  
Revised 2023-02

Superseding J1973 AUG2008

(R) Personal Watercraft - Floatation

## RATIONALE

Alignment with Section 10 of ISO 13590:2022. Most changes in this document are verbiage and document layout for increased clarification. There are some minor technical changes to be aligned with ISO standards. The ASTM D471 oil and gasoline resistance is replaced by ISO 1817:2015, Tables A.2.2 and A.1.

### 1. SCOPE

This SAE Standard establishes a uniform test procedure and performance requirements for personal watercraft floatation.

This SAE Standard does not apply to outboard powered personal watercraft and jet powered surfboards.

#### 1.1 Purpose

This document is intended to provide manufacturers of personal watercraft with specific guidelines for determining the amount of floatation necessary to keep a portion of the personal watercraft above the surface of the water after it has been swamped and safely support each person it is rated to carry.

### 2. REFERENCES

#### 2.1 Applicable Publications

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

##### 2.1.1 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, [www.astm.org](http://www.astm.org).

ASTM D2842 Standard Test Method for Water Absorption of Rigid Cellular Plastics

##### 2.1.2 ISO Publications

Available from International Organization for Standardization, ISO Central Secretariat, 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland, Tel: +41 22 749 01 11, [www.iso.org](http://www.iso.org).

ISO 1817:2015 Rubber, vulcanized or thermoplastic - Determination of the effect of liquids

ISO 8666 Small craft - Principal data

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### 3. DEFINITIONS

#### 3.1 BILGE

The area, excluding engine compartment, in the personal watercraft below a height of 100 mm measured from the lowest point in the personal watercraft where liquid can collect when the personal watercraft is in its static floating position.

#### 3.2 ENGINE COMPARTMENT BILGE

The space in the engine compartment or a connected compartment below a height of 300 mm measured from the lowest point where liquid can collect when the personal watercraft is in its static floating position.

#### 3.3 ENGINE COMPARTMENT

Space where the engine is permanently installed.

#### 3.4 OPEN TO THE ATMOSPHERE

Space or compartment that has at least 0.34 m<sup>2</sup> of open area directly exposed to the atmosphere for each cubic meter of net compartment volume.

#### 3.5 PERSONAL WATERCRAFT

Watercraft intended for sports and leisure purposes, of less than 4 m in hull length, which uses a propulsion engine having a water jet pump as its primary source of propulsion and is designed to be operated by a person or persons sitting, standing, or kneeling on, rather than within the confines of a hull.

NOTE: The measurement methodology for the length of hull is defined in ISO 8666.

#### 3.6 STATIC FLOATING POSITION

Condition in which a personal watercraft floats in calm water, with each fuel tank filled to its rated capacity, but with no person or items of portable equipment on board.

### 4. FLOATATION TEST

#### 4.1 Test Conditions

4.1.1 Each personal watercraft shall be loaded with its permanent equipment or with a weight equivalent to its permanent equipment.

4.1.2 The fuel and/or oil tanks shall be full.

4.1.3 An additional weight of 10 kg shall be added for each person that the personal watercraft is rated to carry. The additional weight shall be secured to a portion of the personal watercraft that is submerged during the test.

#### 4.2 Test Procedure

4.2.1 The personal watercraft shall be swamped, allowing calm, fresh water to flow between the inside and outside of the personal watercraft, either over the sides, through a hull opening, or both. Entrapped air in the flooded portion of the personal watercraft shall be eliminated.

4.2.2 If air chambers are used to provide floatation on the personal watercraft, water shall flood the two largest air chambers and all chambers that are integral with the hull.

#### 4.3 Acceptance Level

4.3.1 The personal watercraft shall have enough floatation to keep part of the personal watercraft above the surface of the water when it has been submerged for at least 18 hours.

## 5. FLOATATION MATERIAL

- 5.1 Floatation materials shall meet the requirements in 5.2 through 5.9 as listed in Table 1 when used in the engine-compartment bilge, and engine compartment or bilge, unless located in a sealed compartment.

**Table 1 - Floatation performance tests**

Tests	Areas		
	Engine-Compartment Bilge	Engine Compartment Unless Open to Atmosphere	Bilge
5.2 Vapour Test		X	
5.3 Petrol Test lasting 24 hours			X
5.4 Petrol Test lasting 30 days	X		
5.5 Oil Test lasting 24 hours			X
5.6 Oil Test lasting 30 days	X		
5.7 Bilge-Cleaner Test lasting 24 hours			X
5.8 Bilge-Cleaner Test lasting 30 days	X		

### 5.2 Vapour Test

The floatation material shall not lose more than 5% of its buoyant force after being immersed in a fully saturated petrol-vapour atmosphere for 30 days at a minimum temperature of 38 °C.

### 5.3 Petrol Test Lasting 24 Hours

The floatation material shall not lose more than 5% of its buoyant force after being immersed for 24 hours at 23 °C ± 2 °C in reference fuel B of ISO 1817:2015 Table A.1.

### 5.4 Petrol Test Lasting 30 Days

The floatation material shall not lose more than 5% of its buoyant force after being immersed for 30 days at 23 °C ± 2 °C in reference fuel B of ISO 1817:2015 Table A.1.

### 5.5 Oil Test Lasting 24 Hours

The floatation material shall not lose more than 5% of its buoyant force after being immersed for 24 hours at 23 °C ± 2 °C in reference oil No. 2 of ISO 1817:2015 A.2.2.

### 5.6 Oil Test Lasting 30 Days

The floatation material shall not lose more than 5% of its buoyant force after being immersed for 30 days at 23 °C ± 2 °C in reference oil No. 2 of ISO 1817:2015 A.2.2.

### 5.7 Bilge Cleaner Test Lasting 24 Hours

The floatation material shall not lose more than 5% of its buoyant force after being immersed for 24 hours at 23 °C ± 2 °C in a 5% solution of trisodium phosphate in water.

### 5.8 Bilge Cleaner Test Lasting 30 Days

The floatation material shall not lose more than 5% of its buoyant force after being immersed for 30 days at 23 °C ± 2 °C in a 5% solution of trisodium phosphate in water.

- 5.9 The buoyant force reduction in 5.2 to 5.8 can be measured in accordance with ASTM D2842.