



**SLOVENSKI STANDARD**  
**oSIST prEN ISO 21487:2021**  
**01-julij-2021**

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**Mala plovila - Trajno vgrajeni rezervoarji za bencinsko in dizelsko gorivo (ISO/DIS 21487:2021)**

Small craft - Permanently installed petrol and diesel fuel tanks (ISO/DIS 21487:2021)

Kleine Wasserfahrzeuge - Fest eingebaute Ottokraftstoff- und Dieselmotortanks (ISO/DIS 21487:2021)

Petits navires - Réservoirs à carburant à essence et diesel installés à demeure (ISO/DIS 21487:2021)

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**ICS:**

47.020.20	Ladijski motorji	Marine engines and propulsion systems
47.080	Čolni	Small craft

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# DRAFT INTERNATIONAL STANDARD

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## Small craft — Permanently installed petrol and diesel fuel tanks

*Petits navires — Réservoirs à carburant à essence et diesel installés à demeure*

ICS: 47.080

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## ISO/DIS 21487.2:2021(E)

### Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 188, *Small craft*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 464, *Small craft*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 21487:2012) and its Amendments (ISO 21487:2012/Amd 1:2014 and ISO 21487:2012/Amd 2:2015), which have been technically revised.

The main changes compared to the previous amended edition are as follows:

- added [Annex A](#), specifying a permeation test to determine the evaporative emissions from non-metallic tanks.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

This document specifies the requirements for the design, materials, installation and testing of permanently installed fuel tanks for small craft.

Some countries have environmental controls for evaporative emissions from petrol fuel systems and this document includes an informative [Annex A](#) describing limits and test procedures for the control of evaporative emissions from permanently installed petrol fuel tanks. The details in [Annex A](#) allow for future standardization and application of evaporative emissions on small craft.

As the international community further restricts fuel system emissions, it is anticipated that [Annex A](#) will have increased global acceptance.

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# Small craft — Permanently installed petrol and diesel fuel tanks

## 1 Scope

This document specifies requirements for the design, installation and testing of petrol and diesel fuel tanks for internal combustion engines, that are intended to be permanently installed in small craft.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 10088:2013, *Small craft — Permanently installed fuel systems*

ISO 12215-5:2019, *Small craft — Hull construction and scantlings — Part 5: Design pressures for monohulls, design stresses, scantlings determination*

ISO 12215-6:2008, *Small craft — Hull construction and scantlings — Part 6: Structural arrangements and details*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1

#### **petrol**

hydrocarbon fuel, or blend of hydrocarbon fuel and denatured ethanol, that is liquid at atmospheric pressure and is used in *spark ignition engines* (3.3)

### 3.2

#### **diesel**

hydrocarbon fuel, biofuel, or blend of these, that is liquid at atmospheric pressure and is used in *compression ignition engines* (3.4)

### 3.3

#### **spark ignition engine**

engine in which an electrical spark is produced to ignite the fuel/air mixture

### 3.4

#### **compression ignition engine**

engine in which ignition is obtained by means of compressing the fuel/air mixture

### 3.5

#### **permanently installed**

securely fastened by bolts, brackets, screws, paint, adhesive, welding, or other means so that it cannot be unattached without the use of tools or chemicals, or if intended at all

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### 3.6

#### **integral tank**

tank that forms part of the outer hull envelope, so that at least one boundary of the tank is formed by the hull

Note 1 to entry: Structural components, such as bulkheads, are not part of the hull.

### 3.7

#### **tank range**

fuel tanks that are characterized by the following attributes: general geometric shape, material, and wall thickness

### 3.8

#### **craft**

small craft

recreational boat, and other watercraft using similar equipment, of up to 24 m length of hull ( $L_H$ )

Note 1 to entry: The measurement methodology for length of hull is defined in ISO 8666.

[SOURCE: ISO 8666:2020, 3.15, modified – Note 1 to entry has been added]

### 3.9

#### **non-integral tank**

fuel tank that is a component that does not rely on any portion of the craft to retain fuel

## 4 General properties iTeh STANDARD PREVIEW

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### 4.1 Resistance to liquids in contact

4.1.1 All seals such as gaskets, O-rings and joint-rings shall be of non-wicking, i.e. non-fuel absorbent, material.

4.1.2 All materials used shall be resistant to deterioration by the fuel for which the system is designed and to other liquids or compounds with which the material can come in contact as installed under normal operating conditions, e.g. grease, lubricating oil, bilge solvents and sea water.

### 4.2 Copper-based alloys

Copper-based alloy fittings are not permitted on aluminium alloy fuel tanks unless a galvanic barrier is arranged between the fitting and the tank.

### 4.3 Provisions to tanks

4.3.1 There shall be provisions to determine the fuel level or quantity in the tank, considering the requirements in 5.1.2 for petrol fuel tanks and in 6.1.5 for diesel fuel tanks.

4.3.2 Metal tanks shall be designed and installed so that no exterior surface traps water.

4.3.3 All rigid tubes and pipes which extend near the tank bottom shall have sufficient clearance to prevent contact between the tube and the bottom of the tank during normal operation of the craft.

4.3.4 On metallic tanks, all metallic non-integral tank supports, chocks or hangers shall either be separated from the surface of the tank by a non-metallic, non-hygroscopic, non-abrasive material, or welded to the tank.

**4.3.5** If baffles are provided, the total open area provided in the baffles shall be not greater than 30 % of the tank cross-section in the plane of the baffle.

**4.3.6** Baffle openings shall be designed so that they do not trap vapour across the top of the tank and shall not prevent the fuel flow across the bottom of the tank.

**4.3.7** The fuel fill pipe on the tank shall have a minimum inside diameter of 28,5 mm.

**4.3.8** Each ventilation pipe on the tank shall have a minimum inside diameter of 11 mm (95 mm<sup>2</sup>) or a ventilation opening designed to prevent the tank pressure from exceeding 80 % of the maximum test pressure marked on the tank label when tested in accordance with ISO 10088:2013~~2021~~.

**4.3.9** Tanks shall be constructed using suitable metallic materials and shall meet the minimum material thicknesses required for corrosion resistance as listed in [Table 1](#).

NOTE Other materials are permitted if the tank manufacturer can demonstrate equivalent fuel and corrosion resistance.

**Table 1 — Metallic tank materials**

Material	Minimum nominal sheet thickness for corrosion resistance mm	Fuel
Copper, internally tin-coated	1,5	Petrol only
Aluminium alloys containing no more than 0,1 % copper	2,0	Diesel and petrol
Stainless steel, with all welding deposits removed	1	Diesel and petrol
Mild steel	2	Diesel only
Mild steel externally hot-dip zinc-coated after fabrication	1,5	Diesel only
Mild steel externally and internally hot-dip zinc-coated after fabrication	1,5	Petrol only
Aluminized steel	1,2	Diesel and petrol

## 4.4 Installation of tanks

### 4.4.1 Non-integral tank mechanical fixing

Non-integral tanks shall be installed so that the loads due to the mass of the tank when filled to its maximum capacity are safely distributed into the structure, with due consideration given to upward and downward acceleration due to the craft's movements at maximum speed.

Note: Continuous flexible supports spreading loads are preferable to rigid ones. Metal or textile hold-down straps are considered as a good practice provided that chafe and corrosion are kept to a minimum.

### 4.4.2 Other installation requirements

All other installation requirements (e.g. filling, vent lines, fuel circuit,) shall be in accordance with ISO 10088:2013.

## 5 Petrol fuel tanks: design, and type tests

### 5.1 Design

**5.1.1** Petrol fuel tanks shall not be integral with the hull.