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## Tourism and related services — Dry stack boat storage — Minimum requirements for operations and service provision

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## 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)).

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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 228, *Tourism and related services*.

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

Most dry stacks are a professional operation dedicated to store power boats on racks. Dry stacks can be operated on their own or as part of a larger operation (full yacht harbour or marina). Dry stack operation can be a commercial enterprise or part of a non-profit association (yacht club).

Dry stacks are an efficient way to store boats in small footprint areas, needing a minimum of logistics to operate. These characteristics make them cheap to set up, and affordable to the nautical tourists that otherwise will have to pay for a wet berth and be exposed to the consequences of sea growth and bad weather.

Dry stack storage is itself an environmental control facility because the stored boats do not need to protect their hull bottom with antifouling paints which often contain diverse biocides that, diluted in the water, affect both water flora and fauna.

- Another environmental advantage is that having the hull bottom permanently clean, fuel consumption is reduced to the minimum.
- Automatic and semi-automatic facilities can be run from alternative power sources, mainly solar panels fitted on the roof of the shed.
- Boat cleaning (de-salting) water can be collected, treated and used for WC and gardening.
- The external aspect of the sheds can be presented as a building, with countless possible styles and colors. This reduces the negative visual impact which is also an environmental subject.

This document does not cover dry storage of boats (hard stand) or shipyards and boatyards.

Dry stack types can be:

Fully enclosed dry stack buildings

- Rectangular sheet metal steel or (lately) concrete structures with central aisle and racks on either side.
- Semi-enclosed structures or sheds.
- Roof and three walls, usually sheet metal steel as the fully enclosed ones.

Free standing

- Columns support the stacking structure. Some have a roof.
- Boat storage and handling.

Dry stacks are operated in the following ways:

- By forklift alone: Usually forklifts which are able to pick up boats from low water level. The forklift carries the boat and through the dry stack main aisle or exposed area, lifts the boat to the designated rack.
- Two-step operation: A fixed structure to retrieve and launch boats (platform lift), combined with a forklift to transport and fit the boat in the designated rack.
- Crane: A fixed or travelling crane distributes boats in and out of the racks.

Dry stacks need some auxiliary boarding arrangements to accommodate boats waiting for the user's arrival or for the time slot to proceed to their racks by the handling equipment. The arrangement can be piers, floating pontoons, or a combination of both.



# Tourism and related services — Dry stack boat storage — Minimum requirements for operations and service provision

## 1 Scope

This document establishes the minimum requirements for the operation of and service provision for dry stack boat storage.

The document excludes the land storage of boats that do not use racks.

The scope does not cover specifics of boat yards and docking areas.

NOTE Dry stacks can be part of a yacht harbour facility or a stand-alone facility.

## 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 13687-1:2017, *Tourism and related services — Yacht harbours — Part 1: Minimum requirements for basic service level harbours*

## 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 <http://www.electropedia.org/>

### 3.1

#### **boarding dock**

pier or pontoon used for embarkation and disembarkation from the craft in the water, with pedestrian access to parking and public areas

### 3.2

#### **boat service area**

dedicated place outside the *launching area* (3.5) for professionals to carry out works on the craft without interrupting the launching and hoisting of other craft

### 3.3

#### **dry stack**

#### **dry stack boat storage**

facility purposely built to handle and store boats on racks on land

### 3.4

#### **forklift**

powered industrial truck used to lift and move materials over short distances

### 3.5

#### launching area

*forklift* (3.4) and other machinery working area between shed and water, and adjacent to the *boat service area* (3.2)

### 3.6

#### readily accessible

capable of being reached without the use of tools

[SOURCE: ISO 21406:2020, 3.14 modified — the note has been removed.]

## 4 General requirements

### 4.1 Legal requirements

The dry stack operator shall ensure that all applicable legal requirements are considered when offering its services.

### 4.2 Staff

The dry stack staff shall:

- a) Be able to provide information regarding local facilities and appropriate tourist information.
- b) Have knowledge of this document.
- c) Be competent to fulfil their day-to-day tasks.
- d) Be competent to execute the action plans defined in this document.

### 4.3 Administration

The dry stack staff shall have available:

- a) Local information concerning nautical rules and regulations, navigational restrictions, and environmental restricted areas and other zones.
- b) A list of services provided and their description.
- c) A list of approved professionals to execute work on board of craft.
- d) A display showing regular service hours
- e) A record of each craft, stating:
  - Size and type.
  - Name of craft.
  - Flag, place and registration number if applicable.
  - Allocated place in the dry stack.
  - Craft owner's name, address, ID, e-mail and telephone.
  - Evidence and particulars of the craft insurance.

### 4.4 Insurance

Each dry stack shall have third party liability insurance.



## 5 Environmental requirements

### 5.1 Waste control

There shall be an organized waste control system in place, including selective collection (to be done matching the requirements of the local government), storage and disposal.

### 5.2 Oil and fuel spill

The dry stack shall have means to contain the spread of oil and fuel spill on land or water.

### 5.3 Black water, bilge water, grey water, and hazardous substances

The requirements of ISO 13687-1:2017, 5.3, and the following shall apply:

- a) There shall be an organized control system for black water, bilge water, grey water and hazardous substances in place including collection, secure storage, and disposal.
- b) Appropriate facilities to discharge these substances shall be provided at the dry stack or within a radius of 1 000 m or through the service by a qualified sub-contractor.
- c) Material Safety Data Sheets (MSDS) for hazardous materials shall be available for the staff.

### 5.4 Environmental code of conduct

The dry stack shall have an environmental code of conduct addressed to users. It shall be posted on the information point. Additionally, the code of conduct should be made available to the users by further means (i.e. leaflet, website, etc.).

The code shall give as a minimum the following advice:

- a) Respect for nature, wildlife, and especially sensitive protected natural areas.
- b) Use of the dry stack's collection system for waste.
- c) Use of the boat washing areas.

## 6 Safety requirements

### 6.1 First Aid kit

There shall be a readily accessible first aid kit and its location shall be clearly displayed. The contents of a first aid kit equipment box shall meet the standards set by the national or international life saving organization.

The location of the first aid kit(s) shall be shown on a map displayed at the information point.

### 6.2 Fire fighting

There shall be readily accessible firefighting equipment and its location shall be clearly identified. All firefighting points shall be shown on a map displayed at the information point. The firefighting equipment shall be individually indicated by signs, and it shall be approved by the domestic firefighting authorities.

### 6.3 Lifesaving equipment

Boarding dock shall be fitted with a safety ladder. Additionally, equipment to maintain buoyancy of people and to retrieve them from the water shall be available.

Such equipment can be, for example:

- a) a lifesaving pole and hoop, or
- b) a lifebuoy with safety line.

#### **6.4 Illumination**

The dry stack facility shall have illumination to ensure the use of all areas where people can move around including all parking areas, escape paths and emergency facilities.

#### **6.5 Electricity**

No electricity shall be made available inside the dry stack storage facility other than for general illumination or operation of the dry stack.

NOTE This is to avoid hazards caused by electrical tools and battery chargers.

#### **6.6 Emergency action plan**

The dry stack shall have and maintain an emergency action plan, including staff training and the identification of a general assembly point. The plan shall address the following sections and identify responsible persons for each:

- a) Firefighting.
- b) Evacuation.
- c) Medical emergency.
- d) Natural disasters.
- e) Spillage of hazardous fluids and liquids.

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### **7 Signage**

#### **7.1 General**

The dry stack shall indicate, if applicable with pictograms (preferably following ISO 7000, ISO 7001 and ISO 7010), the place or the direction to the next available:

- a) Firefighting equipment.
- b) Toilets.
- c) Emergency ladders.
- d) Waste disposal points.
- e) Information point(s).
- f) Exits from buildings, piers, pontoons and the facility.
- g) Vehicle parking.
- h) Risk of falling into the water.
- i) Slippery surface.
- j) Lifesaving equipment.