
**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 document 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).

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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.

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.

Introduction

Most dry stacks are a professional operation dedicated to storing 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 areas with a small footprint, needing a minimum of logistics to operate. These characteristics make them cheap to set up and affordable to the nautical tourists who would otherwise 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 their hull protected with antifouling paints, which often contain biocides that, dissolved in the water, affect both water flora and fauna. Other environmental advantages include the following:

- Having the hull permanently clean reduces fuel consumption.
- Automatic and semi-automatic facilities can be run from alternative power sources, in particular solar panels fitted on the roof of the shed.
- Boat cleaning (desalting) water can be collected, treated and used for WCs and gardening.
- The external aspect of the dry stack can be presented as a building with countless possible styles and colours, thus reducing the negative visual impact.

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

Dry stack types can be:

- a) fully enclosed dry stack buildings:
 - rectangular sheet metal steel or (lately) concrete structures with a central aisle and racks on either side;
 - semi-enclosed structures or sheds;
 - roof and three walls, usually sheet metal steel as with the fully enclosed ones;
- b) free-standing:
 - columns support the stacking structure and some have a roof.

Dry stacks are operated in the following ways:

- Forklift alone: usually forklifts which are able to pick up boats from a low water level. The forklift carries the boat through the dry stack main aisle or exposed area then lifts it into 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 into the designated rack.
- Crane: a fixed or travelling crane distributes boats into and out of the racks.

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

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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 terminology 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

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* (3.6) for professionals to carry out work on the craft without interrupting the launching and hoisting of other craft

3.3

dry stack

dry stack boat storage

purpose-built facility to store boats on racks on land

3.4

forklift

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

3.5

fresh water

water with a low concentration of dissolved salts used typically for sanitation, showering, washing, bathing, boiling and similar, but not for direct human consumption purposes

[SOURCE: ISO 13687-1:2017, 3.4]

3.6

launching area

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

3.7

readily accessible

capable of being reached without the use of tools

[SOURCE: ISO 21406:2020, 3.14, modified — Note to entry removed.]

4 General requirements and recommendations

4.1 Regulations

The dry stack operator should be aware of all applicable legal requirements and ensure that these 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 plan 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 craft;
- d) a record of each craft, stating:
 - size and type;
 - name;
 - flag, homeport and registration number, if applicable;
 - allocated place in the dry stack;
 - owner's name, address, ID, email and telephone number;
 - evidence and particulars of the insurance policy.

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, 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 and 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 via a service provided 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 at the information point. Additionally, the code of conduct should be made available to users by further means (e.g. leaflet, website).

The code shall give, as a minimum, advice on the following topics:

- 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 can be specified in national legislation.

The location of the first aid kit(s) shall be shown on a marina diagram 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 marina diagram displayed at the information point. The firefighting equipment shall be individually indicated by signs; its maintenance can be specified in national legislation.

6.3 Lifesaving equipment

The 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 include, for example:

- a) lifesaving pole and hoop;
- b) 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 and identify responsible persons for each:

- a) firefighting;
- b) evacuation;
- c) medical emergency;
- d) natural disasters;
- e) spillage of hazardous fluids and liquids.

7 Signage

7.1 General

The dry stack shall indicate, if applicable with graphical symbols, the location of:

- 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;
- k) risk of electrical shock;
- l) first aid kit;
- m) fresh water;
- n) potable water;
- o) accessible facilities for people with disabilities;
- p) emergency assembly point;
- q) machinery working area;
- r) trailer parking places;
- s) embarkation area.

NOTE Pictograms (graphical symbols) are shown in ISO 7000, ISO 7001 and ISO 7010.

7.2 Information point

There shall be at least one information point at a place accessible by the public. The information shall be visible at all times. Additionally, the information can be displayed by electronic means. A quick response (QR) code can be used to assist in sharing the information to all.

The information shall be up to date, in the language(s) most relevant for users, and shall show at least the following content:

- a) information showing regular service hours;
- b) fee structure and ways of payment;
- c) directions to the next public telephone, if any;
- d) marina diagram showing location of first aid kit, firefighting equipment and waste disposal points;
- e) weather forecast;
- f) local tourist information and address of the nearest tourist office;
- g) emergency services contact and description (24 h/7 d);
- h) nearest fuel supply with opening hours and contact telephone number;
- i) food provisioning;
- j) potable water;
- k) environmental code of conduct;
- l) emergency assembly point;
- m) telephone number, information about Wi-Fi and VHF channel of the dry stack.

7.3 Entrances

All entrances of the dry stack on both the water side and the land side shall be marked with signs for clear identification by users.

8 Services

8.1 Fresh water

The facility shall have a freshwater system, supplying at least:

- a) washrooms and toilets;
- b) boat-washing equipment in the boat-washing area;
- c) each embarkation point.

8.2 Toilets

The dry stack facility shall have at least two toilets (one of them for people with disabilities), each with a wash basin, per every 100 boat places or part thereof.

8.3 Parking

If the dry stack can be accessed by vehicles:

- a) One car parking space per five berths shall be provided. A valet parking or an offsite parking with a shuttle service is an acceptable alternative.
- b) Parking spaces shall be marked on the ground.
- c) 2 % of the car parking spaces, but not less than two places, shall be suitable for, and for exclusive use by, persons with disabilities.

9 Maintenance and cleaning

9.1 General

The dry stack shall have a maintenance and cleaning programme to ensure that all facilities are safe for human use and to avoid the spread of diseases. This shall include the inspection and maintenance described in the user manual for each set of equipment.

9.2 Maintenance and cleaning programme

The maintenance and cleaning programme shall include the following, if applicable:

- a) all safety and security equipment;
- b) boat-washing area;
- c) toilet facilities;
- d) electrical system;
- e) freshwater system;
- f) waste collection and disposal system;
- g) pontoons, piers and access ramps and gangways;
- h) rainwater system;
- i) hazardous substances disposal;
- j) lifting equipment;