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**Ships and marine technology —  
Marine environment protection  
— Vocabulary relating to oil spill  
response**

*Navires et technologie maritime — Protection de l'environnement  
marin — Vocabulaire relatif à la réponse aux déversements de pétrole*

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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)).

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)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 ISO/TC 8, *Ships and marine technology*, Subcommittee SC 2, *Marine environment protection*.

This third edition cancels and replaces the second edition (ISO 16165:2013), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

- the ASTM references have been updated;
- minor typographical corrections;
- removal of “mud” from term and definition 3.10.2.5 to reflect ISO 14688-1:2017;
- modifications in line with the latest edition of the ISO/IEC Directives, Part 2 (2018 ed):
  - the title is changed from "terminology" to "vocabulary",
  - new [Clause 2](#), Normative references, is inserted, and
  - former [Clause 2](#), and all the entries, are consistently renumbered.

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

Communication is important in the implementation of an effective oil spill response and this communication will be most effective if there is a common understanding of the terms used. Many of the terms and definitions listed here have been widely used for many years, while others are the result of recent experience. The gradual evolution of our understanding of oil spill behaviour and response measures means that oil spill terminology will continue to develop.

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# Ships and marine technology — Marine environment protection — Vocabulary relating to oil spill response

## 1 Scope

This document contains terms and definitions relating to oil spills and their control. This document provides standardized terminology relating to oil spill response, defined as the broad range of activities related to spill cleanup, including surveillance and assessment, containment, recovery, dispersant use, *in situ* burning, shoreline cleanup and disposal.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

In developing this document, an attempt was made to use existing definitions wherever possible. For example, comprehensive terminology is available on containment booms, performance of recovery skimmers and on bioremediation, as provided by the publications of the American Society for Testing and Materials (ASTM), Committee F20, on Hazardous Substances and Oil Spill Response. Other areas had less coverage by standards organizations and gaps were filled through a review of a variety of sources. In this document, whenever a published source serves as the primary basis for a definition, this source is indicated by an abbreviated code. The complete citations for these codes are provided in the Bibliography.

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 Oil/oil slick properties

#### 3.1.1

##### **crude oil**

naturally occurring form of petroleum, mainly occurring in a porous underground formation such as sandstone

[SOURCE: ISO 1998-1:1998, 1.05.005]

#### 3.1.2

##### **emulsification**

process in which microscopic droplets of water are mixed in the oil, or vice versa

#### 3.1.3

##### **emulsion**

mixture of oil and water in which droplets are interspersed in varying concentrations throughout the oil, or vice versa, formed when these fluids are mixed by mechanical or hydraulic action

Note 1 to entry: Emulsions are more precisely referred to as water-in-oil emulsions. Water-in-oil emulsions are sometimes referred to as a "mousse."

3.1.4

**environmental fate**

form and location of a material resulting from transport and transformation

[SOURCE: ASTM E943-08(2014), 2.1]

3.1.5

**heavy shoreline oiling**

pooled deposits or a layer of surface oil

3.1.6

**moderate/light shoreline oiling**

*sheen* (3.1.10) or film of surface oil

3.1.7

**petroleum oil**

material consisting of, or derived from, a mixture of liquid or semi-solid organic compounds, principally hydrocarbons

[SOURCE: ISO 1998-1:1998, 1.05.000]

3.1.8

**pour point**

lowest temperature at which a sample of petroleum product will continue to flow when it is cooled under specified standard conditions

[SOURCE: ISO 1998-2:1998, 2.10.080]

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3.1.9

**relative viscosity**

measured viscosity of an *emulsion* (3.1.3) (in any convenient unit) at a given shear rate divided by the measured viscosity of the oil at the same shear rate

Note 1 to entry: It is important to report the shear rate used in the viscosity measurements of the emulsion and the water-free oil.

3.1.10

**sheen**

very thin *oil slick* (3.7.3.1) with a silvery or rainbow-coloured appearance and a thickness of less than 0,001 mm

3.1.11

**specific gravity**

ratio of the mass of a given volume of liquid at 15 °C to the mass of an equal volume of fresh water at the same temperature

[SOURCE: ASTM D4410-16, 3.1]

3.1.12

**viscosity**

measure of the resistance to flow or deformation of a liquid

[SOURCE: ISO 1998-2:1998, 2.10.030]

3.1.13

**windrows**

narrow bands of oil, generally aligned with the *wind direction* (3.3.7), typical of an *oil slick* (3.7.3.1) after several hours of exposure (or days for very large spills)



## 3.2 Oil classification

### 3.2.1

#### **group I oil non-persistent oil**

petroleum-based oil that consists of hydrocarbon fractions, at least 50% of which distil at a temperature of 340 °C and at least 95% of which distil at a temperature of 370 °C

### 3.2.2

#### **group II oil**

*persistent oil* (3.2.6) with a *specific gravity* (3.1.11) of less than 0,85

### 3.2.3

#### **group III oil**

*persistent oil* (3.2.6) with a *specific gravity* (3.1.11) equal to or greater than 0,85 and less than 0,95

### 3.2.4

#### **group IV oil**

*persistent oil* (3.2.6) with a *specific gravity* (3.1.11) equal to or greater than 0,95 and less than 1,00

### 3.2.5

#### **group V oil**

*persistent oil* (3.2.6) with a *specific gravity* (3.1.11) greater than 1,00

### 3.2.6

#### **persistent oil**

petroleum-based oil that does not meet the distillation criteria for a *group I oil* (3.2.1)

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## 3.3 Environmental conditions

### 3.3.1

#### **air temperature**

average or point temperature of the air measured at or near the ground or water surface (°C)

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[SOURCE: ASTM F625-94(2017), 2.1.2]

### 3.3.2

#### **current**

average water speed and direction (i.e. velocity) relative to a fixed reference point (m/s)

[SOURCE: ASTM F625-94(2017), 2.1.3]

### 3.3.3

#### **debris**

solid or semisolid substance that could interfere with the operation of a spill control system

[SOURCE: ASTM F625-94(2017), 2.1.4]

### 3.3.4

#### **significant wave height**

average height, measured crest to trough, of one-third highest waves, considering only short-period waves

Note 1 to entry: Short period waves are for a period less than ten seconds (s).

[SOURCE: ASTM F625-94(2017), 2.1.7]

### 3.3.5

#### **significant wave period**

average period of the one-third highest waves, measured in seconds as the elapsed time between crests of succeeding waves past a fixed point(s)

[SOURCE: ASTM F625-94(2017), 2.1.8]

3.3.6

**water temperature**

average or point temperature (°C) of a water body as measured within the top 300 mm

[SOURCE: ASTM F625-94(2017), 2.1.6]

3.3.7

**wind direction**

direction from which the wind is blowing

3.4 Assessment techniques

3.4.1

**ladder search**

aerial *surveillance* (3.4.4) to find and delineate *oil slicks* (3.7.3.1), carried out in a direction perpendicular to the wind in order to increase the probability of locating slicks and *windrows* (3.1.13)

3.4.2

**oil spill modelling**

mathematical prediction of the *environmental fate* (3.1.4) and/or behaviour of an oil spill

3.4.3

**remote sensing**

use of sensors to find or delineate *oil slicks* (3.7.3.1), potentially utilising mounted sources, such as on ships, aircraft and satellites

3.4.4

**surveillance**

response activities with the purpose of detecting a spill, determining the extent and behaviour of a spill, optimising countermeasures and/or predicting spill movements and effects

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3.5 Sampling

3.5.1

**chain-of-custody documentation**

chronological evidence defining the history of an item, such as a sample, and identifying an individual responsible for custody of the item at each point in time

3.5.2

**custody**

physical possession or control

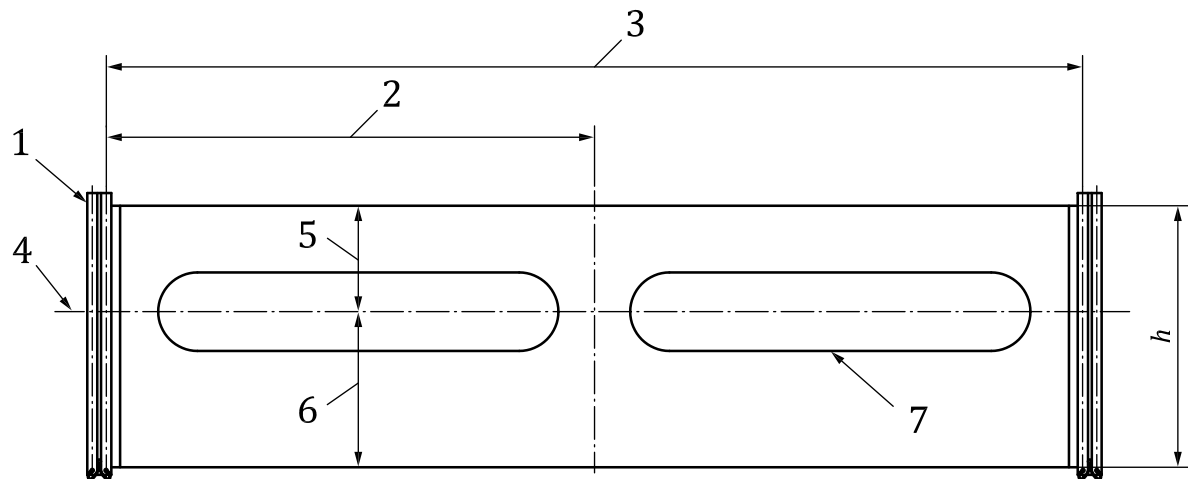
Note 1 to entry: A sample is under custody if it is in possession or under control so as to prevent tampering or alteration of its characteristics.

[SOURCE: ASTM D4840-99(2018)e1, 3.2.1]

3.6 Containment

3.6.1 Floating boom equipment terminology

Figure 1 shows equipment and terminology associated with a floating boom (3.6.1.3).

**Key**

1	boom end connector	5	freeboard
2	boom segment	6	draught
3	boom section	7	buoyancy chamber
4	water line	<i>h</i>	overall height

**Figure 1 — Containment boom equipment**

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**3.6.1.1****anchor point**

structural point on the *end connector* (3.6.1.8) or along the length of a *boom* (3.6.1.3) section designed for the attachment of anchor or mooring lines

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**3.6.1.2****barrier**

means of controlling the movement of oil or other substances on the water or in the water column

**3.6.1.3****boom**

floating *barrier* (3.6.1.2) used to control the movement of substances that float

**3.6.1.4****boom section**

length of *boom* (3.6.1.3) between two *end connectors* (3.6.1.8)

**3.6.1.5****boom segment**

repetitive and similar portion of the *boom section* (3.6.1.4)

**3.6.1.6****bridle**

device attached to a *boom* (3.6.1.3) to distribute the load exerted by towing or anchoring the boom

**3.6.1.7****curtain boom**

*boom* (3.6.1.3) consisting of a flexible skirt supported by vertical centreline floatation

**3.6.1.8****end connector**

device attached to the *boom* (3.6.1.3) used for joining *boom sections* (3.6.1.4) to one another or to accessory devices

**3.6.1.9**

**fence boom**

*boom* (3.6.1.3) consisting of a self-supporting or stiffened membrane supported by floating devices

**3.6.1.10**

**fire resistant boom**

*boom* (3.6.1.3) intended for containment of burning *oil slicks* (3.7.3.1)

**3.6.1.11**

**inflatable boom**

*boom* (3.6.1.3) that uses inflatable chambers, self- or manually-inflatable, as the floatation devices

**3.6.1.12**

**shore sealing boom**

*boom* (3.6.1.3) that, when grounded, seals against the shoreline

**3.6.1.13**

**sorbent boom**

*boom* (3.6.1.3) containing material or arranged in a form that has absorptive or adsorptive capabilities

Note 1 to entry: See 3.7.1.3 for definitions of sorbent, absorbent and adsorbent.

**3.6.1.14**

**special purpose boom**

*boom* (3.6.1.3) which differs in design and/or purpose from a *curtain boom* (3.6.1.7), *fence boom* (3.6.1.9), *fire resistant boom* (3.6.1.10), *inflatable boom* (3.6.1.11), *shore sealing boom* (3.6.1.12) or *sorbent boom* (3.6.1.13)

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**3.6.2 Other containment equipment terminology**

**3.6.2.1**

**bubble barrier**

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in-water *barrier* (3.6.1.2) created by the use of compressed air delivered through a perforated air hose and/or pipe laid sub-surface to produce a controlled stream of air bubbles that rise and expand to form a subsurface air curtain

Note 1 to entry: This produces a disturbed surface which combined with the air curtain contains and/or deflects the oil both on the surface and/or in the water column.

**3.6.3 Engineering terminology**

**3.6.3.1**

**buoyancy chamber**

enclosed compartment of air or other buoyant material providing floatation for the *boom* (3.6.1.3)

**3.6.3.2**

**gross buoyancy**

weight of fresh water displaced by an entire *boom section* (3.6.1.4) when totally submerged

**3.6.3.3**

**gross buoyancy to weight ratio**

*gross buoyancy* (3.6.3.2) divided by *boom* (3.6.1.3) weight

**3.6.3.4**

**operational draught**

minimum vertical depth of the *boom* (3.6.1.3) below the water-line in the working condition

**3.6.3.5**

**operational freeboard**

minimum vertical height of the *boom* (3.6.1.3) above the water-line in the working condition