INTERNATIONAL STANDARD

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

Navires et technologie maritime — Protection de l'environnement marin — Terminologie relative 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. www.iso.org/directives

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The committee responsible for this document is ISO/TC 8, *Ships and marine technology*, Subcommittee SC 2, *Marine environment protection* **STANDARD PREVIEW**

This second edition cancels and replaces the first edition (ISO 16165:2001) which has been technically revised.

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Introduction

Communication is important in the implementation of an effective oil spill response and this communication will be most effective if there is 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 — Terminology relating to oil spill response

1 Scope

This International Standard contains terms and definitions relating to oil spills and their control. This International Standard 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 Terms and definitions

NOTE In developing this International Standard, 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 International Standard, whenever another 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 Biblography.

iTeh STANDARD PREVIEW 2.1 Oil/oil slick properties

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2.1.1

crude oil

naturally occurring form of petroleum, manly occurring in a porous underground formation such as sandstone 6f1e79497940/iso-16165-2013

[ISO 1998-99:2000]

2.1.2

emulsification

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

2.1.3

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 or oil-in-water emulsions. Water-in-oil emulsions are sometimes referred to as a "mousse".

2.1.4

environmental fate

form and location of a material resulting from transport and transformation

[ASTM E 943-08]

2.1.5

heavy shoreline oiling

pooled deposits or a layer of surface oil

2.1.6

moderate/light shoreline oiling

sheen or film of surface oil

2.1.7

petroleum oil

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

[ISO 1998-99:2000]

2.1.8

pour point

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

[ISO 3016:1994, definition 2.1]

2.1.9

relative viscosity

measured viscosity of an emulsion (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.

[ASTM F 873-84:2003]

2.1.10

sheen

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

2.1.11

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specific gravity ratio of the mass of a given volume of liquid at 15_{15} to the mass of an equal volume of fresh water at the same temperature https://standards.iteh.ai/catalog/standards/sist/125686b0-9f55-4653-b2dcffl e79497940/iso-16165-2013

[ASTM D 4410-03]

2.1.12

viscosity

measure of the resistance to flow or deformation of a liquid

[ISO 3104:1994]

2.1.13

windrows

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

2.2 Oil classification

2.2.1

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

2.2.2

group II oil

persistent oil with a specific gravity of less than 0,85

2.2.3

group III oil

persistent oil with a specific gravity equal to or greater than 0,85 and less than 0,95

2.2.4

group IV oil

persistent oil with a specific gravity equal to or greater than 0,95 and less than 1,00

2.2.5

group V oil

persistent oil with a specific gravity equal to or greater than 1,00

2.2.6

persistent oil

petroleum-based oil that does not meet the distillation criteria for a group I oil

2.3 Environmental conditions

2.3.1

air temperature

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

[ASTM F 625-94:2006]

2.3.2

current

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

[ASTM F 625-94:2006]

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2.3.3

debris (standards.iteh.ai) solid or semisolid substance that could interfere with the operation of a spill control system

[ASTM F 625-94:2006]

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2.3.4

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 for a period less than ten seconds (m).

[ASTM F 625-94:2006]

2.3.5

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)

[ASTM F 625-94:2006]

2.3.6

water temperature

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

[ASTM F 625-94:2006]

2.3.7 wind direction

direction from which the wind is blowing

[ASTM F 625-94:2006]

2.4 Assessment techniques

2.4.1

ladder search

aerial surveillance to find and delineate oil slicks, carried out in a direction perpendicular to the wind in order to increase the probability of locating slicks and windrows

2.4.2

oil spill modelling

mathematical prediction of the environmental fate and/or behaviour of an oil spill

2.4.3

remote sensing

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

2.4.4

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

2.5 Sampling

2.5.1

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 standards.iteh.ai)

[ASTM D 4840-99:2004]

2.5.2

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custody physical possession or control

Note 1 to entry: A sample is under custody if it is in an individual's possession or under the immediate control of an individual to prevent alteration of characteristics.

[ASTM D 4840-99:2004]

2.6 Containment

2.6.1 Floating boom equipment terminology

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



Кеу

- 1 boom end connector
- 2 boom segment
- 3 boom section
- 4 water line

- 5 freeboard
- 6 draught
- 7 buoyancy chamber
- *h* overall height

Figure 1 – Containment boom equipment iTeh STANDARD PREVIEW

2.6.1.1 anchor point

(standards.iteh.ai)

structural point on the end connector or along the length of a boom section designed for the attachment of anchor or mooring lines ISO 16165:2013

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2.6.1.2 barrier

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

2.6.1.3

boom

floating barrier used to control the movement of substances that float

2.6.1.4

boom section length of boom between two end connectors

2.6.1.5

boom segment

repetitive and similar portion of the boom section

2.6.1.6

bridle

device attached to a boom to distribute the load exerted by towing or anchoring the boom

2.6.1.7

curtain boom

boom consisting of a flexible skirt supported by vertical centreline floatation

2.6.1.8

end connector

device attached to the boom used for joining boom sections to one another or to accessory devices

2.6.1.9

fence boom

boom consisting of a self-supporting or stiffened membrane supported by floating devices

2.6.1.10

fire resistant boom

boom intended for containment of burning oil slicks

2.6.1.11

inflatable boom

boom that uses inflatable chambers, self- or manually-inflatable, as the floatation devices

2.6.1.12

shore sealing boom

boom that, when grounded, seals against the shoreline

2.6.1.13

sorbent boom

boom containing material or arranged in a form that has absorptive or adsorptive capabilities

Note 1 to entry: See 2.7.1.3 for definitions of sorbent, absorbent and adsorbent.

2.6.1.14

special purpose boom

any boom which differs in design and/or purpose from curtain boom (2.6.1.7), fence boom (2.6.1.9), fire resistant boom (2.6.1.10), inflatable boom (2.6.1.11), shore sealing boom (2.6.1.12) or sorbet boom (2.6.1.13)

Other containment equipment terminology ds.iteh.ai) 2.6.2

2.6.2.1

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bubble barrier in-water barrier 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.

2.6.3 Engineering terminology

2.6.3.1

buoyancy chamber

enclosed compartment of air or other buoyant material providing floatation for the boom

2.6.3.2

gross buoyancy

weight of fresh water displaced by an entire boom section when totally submerged

2.6.3.3

gross buoyancy to weight ratio

gross buoyancy divided by boom weight

2.6.3.4

operational draught

minimum vertical depth of the boom below the water-line in the working condition

2.6.3.5

operational freeboard

minimum vertical height of the boom above the water-line in the working condition

2.6.3.6 operational height

sum of operational draught and operational freeboard

2.6.3.7

overall height

maximum vertical dimension of a boom

2.6.3.8 reserve buoyancy gross buoyancy minus boom weight

2.6.4 **Operational terminology**

2.6.4.1

boom planing heeling over of a boom with a resultant loss of draught

2.6.4.2

boom submergence containment failure due to loss of freeboard

2.6.4.3

bridging failure

portions of a boom emerging from the water due to poor wave conformance, with resulting containment failure **TEANDARD PREVIEW**

2.6.4.4

cascading booms

(standards.iteh.ai)

booming configuration formed by positioning two or more booms in a deflection mode such that successive booms progressively move oil into the desired area 955-4653-b2dc-

2.6.4.5

catenary configuration

booming configuration formed by towing or anchoring each end of a length of boom resulting in a characteristic "J" or "U" shape

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2.6.4.6

catenary drag force

longitudinal load imposed on a boom, deployed in a catenary configuration, resulting from towing, current and/or wind forces

2.6.4.7

diversion mode

placement of a boom to redirect the movement of an oil slick

2.6.4.8

drainage loss

oil lost due to the accumulation of oil against a boom pushing down and escaping under the skirt

2.6.4.9

entrainment loss

oil pulled under a boom by the flow of water

EXAMPLE An example of the flow of water are high current conditions.

2.6.4.10

exclusion booming

placement of a boom to protect an area from the entry of an oil slick