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## **Ships and marine technology — Dredgers — Vocabulary**

*Navires et technologie maritime — Dragues — Vocabulaire*



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## Foreword

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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 on 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 the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 7, *Inland navigation vessels*.

This third edition cancels and replaces the second edition (ISO 8384:2000), which has been technically revised.

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

- terms on trailing suction hopper dredger, cutter suction dredger and bucket type dredgers have been added;
- terms on bucket chain dredger have been added under “Terms relating to bucket chain dredger and to bucket assembly”;
- terms for supervisory and control system have been added;
- the structure of the document has been revised in accordance with the ISO/IEC Directives, Part 2:2018.

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).

# Ships and marine technology — Dredgers — Vocabulary

## 1 Scope

This document specifies terms and definitions relating to dredgers, with the aim of giving clear enough definitions for every term for them to be understood by all specialists.

This document is applicable only to equipment which is used for the construction and maintenance of navigable waterways and the extraction of soil and rocks.

The terms specified in this document are intended to be used in documentation of all kinds. Certain standardized terms are also given with their abridged version; these can be used in cases where no possibility of misinterpretation can arise.

A combination of terms is allowed in application.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

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

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

### 3.1 Terms relating to general concepts applicable to dredgers

#### 3.1.1

##### **dredging**

loosening, collecting, transporting and disposing of *dredged mixture* (3.6.1)

#### 3.1.2

##### **hopper loading**

process of the *dredged mixture* (3.6.1) filled into the *hopper hold* (3.4.18) of the *hopper barge* (3.4.13) or *hopper dredger* (3.3.1.1.1)

#### 3.1.3

##### **soil**

river/seabed material, which may contain sludge, sand, rocks and other material

#### 3.1.4

##### **dredging site**

geographical site where excavation or extraction of the *soil* (3.1.3) is carried out

#### 3.1.5

##### **dredger**

vessel or piece of equipment intended for *dredging* (3.1.1)

#### 3.1.6

##### **dredging unit**

*dredger* (3.1.5) and its service vessels, which is used for extraction, transportation and disposal of *soil* (3.1.3) for *dredging* (3.1.1)

### 3.1.7

#### **dredging fleet**

composition of related *dredging units* (3.1.6) for the accomplishment of *dredging* (3.1.1)

### 3.1.8

#### **dredging equipment**

devices, installation and systems of a *dredger* (3.1.5) for the accomplishment of *dredging* (3.1.1)

### 3.1.9

#### **dredging apparatus**

equipment, installation or tool for excavating the *soil* (3.1.3), separating it from the bottom of water and raising it

### 3.1.10

#### **gantry**

rigid steel structure used to suspend or support the *dredging equipment* (3.1.8)

### 3.1.11

#### **soil discharge installation**

installation for discharging the *soil* (3.1.3) from the *dredger* (3.1.5)

### 3.1.12

#### **spud installation**

equipment comprising *spuds* (3.5.4) and mechanisms for hoisting, lowering, locating and fixing the *spuds* (3.5.4)

### 3.1.13

#### **swell compensator**

device ensuring a *dredger's* (3.1.5) operation to cope with waves and uneven sea/riverbed at the *dredging site* (3.1.4)

## 3.2 Terms relating to basic parameters of dredgers

### 3.2.1

#### **total installed power**

sum of the power of all the *prime movers* (3.3.2.1) installed in a *dredger* (3.1.5)

### 3.2.2

#### **dredging output**

volume/mass of *soil* (3.1.3) extracted by a *dredger* (3.1.5) per unit of time or per vessel

### 3.2.3

#### **dredging production**

accumulated quantity of the *soil* (3.1.3) dredged by a *dredger* (3.1.5) in a period of time

### 3.2.4

#### **sailing speed**

*dredger* (3.1.5) speed over ground at full load draught during free sailing

### 3.2.5

#### **dredging speed**

*dredger* (3.1.5) speed over ground during *dredging* (3.1.1)

### 3.2.6

#### **dredging depth**

vertical distance from the water surface to the lower edge of the *dredging equipment* (3.1.8) of the *dredger* (3.1.5) which is operating

### 3.2.7

#### **maximum dredging depth**

maximum depth at which a *dredger* (3.1.5) can operate

**3.2.8****minimum dredging depth**

minimum depth at which a *dredger* (3.1.5) can operate

**3.2.9****discharge distance**

straight line distance from the outlet of the *dredge pump* (3.6.2) to the outlet of the *delivery pipeline* (3.4.4)

**3.2.10****hopper hold capacity**

maximum volume of the *hopper hold* (3.4.18) of a *dredger* (3.1.5) with a *hopper hold* (3.4.18) or a *hopper barge* (3.4.13)

**3.2.11****effective hopper hold capacity**

volume of dredged material that can be placed and retained in the *hopper holds* (3.4.18) of a *hopper barge* (3.4.13) or a *hopper dredger* (3.3.1.1.1)

**3.2.12****hopper content density**

mass per unit of volume of the *dredged mixture* (3.6.1) dredged and filled in the *hopper hold* (3.4.18)

**3.2.13****hopper solid content**

volume of dry soil (3.1.3) loaded in the *hopper hold* (3.4.18) at the full load draught of the *hopper dredger* (3.3.1.1.1) or *hopper barge* (3.4.13)

**3.2.14****hopper load**

mass of the *dredged mixture* (3.6.1) loaded in the *hopper hold* (3.4.18) at full load draught of a *hopper dredger* (3.3.1.1.1) or *hopper barge* (3.4.13)

**3.2.15****hopper loading time**

time needed for the filling of the *dredged mixture* (3.6.1) into the *hopper hold* (3.4.18) up to full load draught of a *dredger* (3.1.5)

**3.2.16****transportation distance**

distance from *dredging site* (3.1.4) to disposal area, when the dredged material is transported by a *hopper dredger* (3.3.1.1.1) or *hopper barge* (3.4.13)

**3.3 Terms relating to types of dredger****3.3.1 Types of dredgers depending on methods of soil extraction or treatment****3.3.1.1 Hydraulic suction dredgers****3.3.1.1.1****hopper dredger**

*self-propelled dredger* (3.3.3.1) with its own integrated *hopper hold* (3.4.18)

Note 1 to entry: Hopper dredger can be trailing suction hopper dredger or grab hopper dredger.

**3.3.1.1.2****plain suction dredger**

*dredger* (3.1.5) using *suction mouth* (3.4.30) only and *dredge pumps* (3.6.2) for extracting and discharging the *dredged mixture* (3.6.1) through pipelines

### 3.3.1.1.3

#### **cutter suction dredger**

*dredger* (3.1.5) which uses *cutter head* (3.8.3.14) and *dredge pumps* (3.6.2) for excavating, extracting and discharging the *dredged mixture* (3.6.1) of *soil* (3.1.3) through pipelines

Note 1 to entry: Cutter suction dredgers can be non-propelled or self-propelled.

### 3.3.1.1.4

#### **bucket/cutting wheel suction dredger**

*cutter suction dredger* (3.3.1.1.3) that excavates *soil* (3.1.3) with a bucket wheel/cutting wheel

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### 3.3.1.1.5

#### **trailing suction hopper dredger**

*self-propelled dredger* (3.3.3.1), which trails the *draghead* (3.8.2.4) on the ground to excavate, extract and fill the *soil* (3.1.3) into its own integrated hopper with a *dredge pump* (3.6.2)

### 3.3.1.1.6

#### **split trailing suction hopper dredger**

*hull of a trailing suction hopper dredger* (3.3.1.1.5) with a hull that can be opened along the longitudinal axis of the vessel to dump the *dredged mixture* (3.6.1) from the *hopper hold* (3.4.18)

### 3.3.1.1.7

#### **trailing suction side-casting dredger**

*trailing suction hopper dredger* (3.3.1.1.5) equipped with the *side casting installation* (3.4.36) for pumping the *dredged mixture* (3.6.1) over board directly

### 3.3.1.1.8

#### **dustpan suction dredger**

kind of *plain suction dredger* (3.3.1.1.2) which is equipped with a prolate box type *suction mouth* (3.4.30) with *jet water* (3.6.26) nozzle fitted in the front of the *suction mouth* (3.4.30)

### 3.3.1.1.9

#### **deep suction dredger**

*dredger* (3.1.5) having a long suction pipe equipped with a submersible *dredge pump* (3.6.2)

Note 1 to entry: Normally the *dredging depth* (3.2.6) of a deep suction dredger exceeds 30 m.

### 3.3.1.1.10

#### **barge unloading suction dredger**

kind of *plain suction dredger* (3.3.1.1.2) which extracts and pumps the *dredged mixture* (3.6.1) out of the *hopper hold* (3.4.18) to the shore with *dredge pump* (3.6.2) and suction pipe which is able to stick out and lower into the *hopper hold* (3.4.18) of the hopper

### 3.3.1.1.11

#### **auger suction dredger**

*dustpan suction dredger* (3.3.1.1.8) with a rotary auger installed in the *dustpan* (3.6.8), the movement of which is a combination of moving ahead automatically plus swinging from right to left

### 3.3.1.1.12

#### **jet ejector dredger**

*dredger* (3.1.5) using pressure water for loosening, extracting and transporting the *dredged mixture* (3.6.1)

### 3.3.1.1.13

#### **air-lift dredger**

*dredger* (3.1.5) using air-lift pump unit for collecting and transporting the *dredged mixture* (3.6.1)

### 3.3.1.2 Mechanical excavating dredger

#### 3.3.1.2.1

##### **bucket chain dredger**

*dredger* (3.1.5) equipped with serial buckets forming a bucket chain moving along the bucket ladder, excavating the *soil* (3.1.3) underwater and loading into the alongside *hopper barge* (3.4.13) through a *chute* (3.8.1.17)

#### 3.3.1.2.2

##### **dipper dredger**

*dredger* (3.1.5) with a single *bucket* (3.8.1.3) on an arm which moves away from the *dredger* (3.1.5) while the *bucket* (3.8.1.3) excavates the *soil* (3.1.3)

#### 3.3.1.2.3

##### **backhoe dredger**

*dredger* (3.1.5) with a single *bucket* (3.8.1.3) on an arm which moves towards the *dredger* (3.1.5) while the *bucket* (3.8.1.3) excavates the *soil* (3.1.3)

#### 3.3.1.2.4

##### **grab dredger**

*dredger* (3.1.5) which excavates the *soil* (3.1.3) with one or more *grabs* (3.8.4.13)

#### 3.3.1.2.5

##### **dragline dredger**

*dredger* (3.1.5) which excavates the *soil* (3.1.3) with a single bucket moved by dragline

#### 3.3.1.2.6

##### **rock-breaker**

*dredger* (3.1.5) or other unit fitted with equipment for crushing and fragmenting rock under the water as a pre-treatment for *dredging* (3.1.1)

#### 3.3.1.2.7

##### **rock-breaker with freely falling chisel**

*rock-breaker* (3.3.1.2.6) with a chisel which falls under gravity only

#### 3.3.1.2.8

##### **rock-breaker with powered chisel**

*rock-breaker* (3.3.1.2.6) with a chisel activated by a power source

#### 3.3.1.2.9

##### **rock-drilling and blasting vessel**

vessel for drilling rocks under water and placing explosives into the drilling hole to smash the rocks into fragments

#### 3.3.1.2.10

##### **agitation dredger**

vessel used for *dredging* (3.1.1) by loosening the *soil* (3.1.3) which is then washed away by the current in the basin so that loosened, suspended material is taken away by the current and settled in deeper areas

#### 3.3.1.2.11

##### **bed leveller**

vessel used to level the river/seabed at the *dredging site* (3.1.4)

#### 3.3.1.2.12

##### **self-unloading bucket chain dredger**

*dredger* (3.1.5) which uses the chained buckets to excavate the *soil* (3.1.3) underwater and dilutes the dredged material into *dredged mixture* (3.6.1) and pumps it out through the *discharge pipeline* (3.4.2).

Note 1 to entry: A self-unloading bucket chain dredger is an obsolete type of dredger.

### 3.3.2 Types of dredgers defined by power plant

#### 3.3.2.1

##### **prime mover**

engine that produces the power to *dredging equipment* (3.1.8) for *dredging* (3.1.1) and discharging the *dredged mixture* (3.6.1), and to other users

#### 3.3.2.2

##### **diesel dredger**

*dredger* (3.1.5) using diesel engine(s) as a *prime mover* (3.3.2.1)

#### 3.3.2.3

##### **dual-fuel dredger**

*dredger* (3.1.5) using a dual-fuel engine as a *prime mover* (3.3.2.1)

#### 3.3.2.4

##### **diesel-electric dredger**

*dredger* (3.1.5) using diesel engine(s) as *prime mover(s)* (3.3.2.1) driving electric generators to supply all the electric motors driving *dredging equipment* (3.1.8) and propulsion machinery where applicable

#### 3.3.2.5

##### **diesel-hydraulic dredger**

*dredger* (3.1.5) using diesel engine(s) as *prime mover(s)* (3.3.2.1) to drive hydraulic pumps supplying all hydraulic motors which driving *dredging equipment* (3.1.8) and propulsion machinery where applicable

#### 3.3.2.6

##### **steam dredger**

*dredger* (3.1.5) using a steam turbine or steam reciprocating engine as a *prime mover* (3.3.2.1)

Note 1 to entry: Steam dredgers are obsolete types of dredgers.

#### 3.3.2.7

##### **gas-turbine dredger**

*dredger* (3.1.5) using a gas turbine as a *prime mover* (3.3.2.1)

#### 3.3.2.8

##### **electric dredger**

*dredger* (3.1.5) using an electric power plant as a *prime mover* (3.3.2.1) or fed from external electric supply

#### 3.3.2.9

##### **electric-hydraulic dredger**

*dredger* (3.1.5) using external electric supply to power electric motors which drive hydraulic pumps for hydraulic power transmission of the *dredging equipment* (3.1.8)

### 3.3.3 Types of dredgers defined by their propulsion or manoeuvrability

#### 3.3.3.1

##### **self-propelled dredger**

*dredger* (3.1.5) having propelling devices to allow independent movement

#### 3.3.3.2

##### **non-self-propelled dredger**

*dredger* (3.1.5) without propelling devices

#### 3.3.3.3

##### **self-maneuvrable dredger**

*non-self-propelled dredger* (3.3.3.2) equipped with propulsor(s) for positioning at the *dredging site* (3.1.4)

### 3.3.4 Types of dredger defined by way of assembly

#### 3.3.4.1

##### **non-dismountable dredger**

*dredger* (3.1.5) readily assembled on the shipyard for full service use

#### 3.3.4.2

##### **partly dismountable dredger**

*dredger* (3.1.5) partly assembled on the shipyard for final assembly at the place of operation

#### 3.3.4.3

##### **dismountable dredger**

*dredger* (3.1.5) consisting of a number of pontoons with engine and *dredging equipment* (3.1.8) that can be assembled with bolts and hooks to form a complete dredger

## 3.4 Terms relating to methods and equipment for removal of soil

### 3.4.1

#### **suction pipeline**

pipeline through which the *dredged mixture* (3.6.1) passes from the *suction head* (3.6.7) to the inlet of *dredge pump* (3.6.2)

### 3.4.2

#### **discharge pipeline**

pipeline through which the *dredged mixture* (3.6.1) is transported from the outlet of the *dredge pump* (3.6.2) to the outlet of the *discharge pipeline* (3.4.2)

### 3.4.3

#### **discharge pipeline on board**

part of the *discharge pipe* (3.4.2) located on the discharge side of the *dredge pump* (3.6.2), inside or on the hull of the *dredger* (3.1.5)

### 3.4.4

#### **delivery pipeline**

pipeline through which the *dredged mixture* (3.6.1) is transported from the aft end of the *dredger* (3.1.5) to the outlet of the *delivery pipeline* (3.4.4)

### 3.4.5

#### **floating delivery pipeline**

part of the *delivery pipeline* (3.4.4) which crosses the water and is supported either by its own inbuilt buoyancy or by use of *pipeline pontoons* (3.4.8) or *pipeline floaters* (3.4.9)

### 3.4.6

#### **self-floating pipeline**

pipeline covered by floatable material and protecting layer, which can float in the water without any other floater

### 3.4.7

#### **submersible pipeline**

part of the *delivery pipeline* (3.4.4) which is laid down under water

### 3.4.8

#### **pipeline pontoon**

small square barge for supporting a *floating delivery pipeline* (3.4.5)

### 3.4.9

#### **pipeline floater**

equipment for supporting a *floating delivery pipeline* (3.4.5)

Note 1 to entry: A typical design of a pipeline floater is a construction of two round barrels connected with steel members.

**3.4.10**

**diffuser**

device placed on the end of a *discharge pipeline* (3.4.2) to reduce the velocity of the *dredged mixture* (3.6.1) at the disposal site

**3.4.11**

**discharge orifice**

tapered nozzle located at the end of the *delivery pipeline* (3.4.4) to reduce the flowrate of the *dredged mixture* (3.6.1)

**3.4.12**

**bow coupling unit**

installation comprised of a steel frame for supporting the dredge pipe, ball joint connector and winch, used for pumping ashore

**3.4.13**

**hopper barge**

special kind of vessel, self-propelled, towed or pushed, for the transportation of the *soil* (3.1.3) extracted by *dredging* (3.1.1)

**3.4.14**

**split hopper barge**

*hopper barge* (3.4.13) which can be opened along the full length of the vessel to dump the dredged material from the *hopper hold* (3.4.18)

Note 1 to entry: Split hopper barge can be self-propelled or non-self-propelled.

**3.4.15**

**soil transportation by hopper barge**

transportation of the *soil* (3.1.3) extracted by *dredging* (3.1.1), carried out by *hopper barges* (3.4.13)

**3.4.16**

**conveyor**

moving belt for the disposal of the *soil* (3.1.3) extracted by *dredging* (3.1.1)

**3.4.17**

**soil transportation with conveyor**

transportation of the *soil* (3.1.3) extracted by *dredging* (3.1.1) with removal *conveyors* (3.4.16) of sufficient length to the place of discharge

**3.4.18**

**hopper hold**

compartment of a *hopper dredger* (3.3.1.1.1) used to contain the *dredged mixture* (3.6.1) during *dredging* (3.1.1) in the *dredging site* (3.1.4)

**3.4.19**

**overflow arrangement**

arrangement to remove the light density mixture to increase the density of the *dredged mixture* (3.6.1) in the *hopper hold* (3.4.18)

**3.4.20**

**bottom discharge openings**

openings in the bottom of the hull of a *hopper dredger* (3.3.1.1.1) or a *hopper barge* (3.4.13) for disposal of the *dredged mixture* (3.6.1) via either *bottom doors* (3.4.21) or valves

**3.4.21****bottom door**

device mounted at the *bottom discharge openings* (3.4.20) for dumping the *dredged mixture* (3.6.1) in the *hopper hold* (3.4.18)

Note 1 to entry: Bottom door is a general term for types of bottom doors such as box bottom door, conical bottom valve, etc.

**3.4.22****box bottom door**

box shaped *bottom door* (3.4.21), equipped with an actuating mechanism for opening and closing the door for disposal of the *soil* (3.1.3)

**3.4.23****conical bottom valve**

kind of bottom door consisting of a valve installed at a circular opening frame in the bottom of a *hopper hold* (3.4.18) for disposal of the *dredged mixture* (3.6.1)

Note 1 to entry: A conical bottom valve consists of a conical valve disc and a valve rod and it is driven usually by a hydraulic cylinder.

**3.4.24****door-operating device**

device for opening, closing and securing the *bottom doors* (3.4.21) covering *bottom discharge openings* (3.4.20)

**3.4.25****rock collector**

device for separating rocks from the *dredged mixture* (3.6.1) on the suction side of the *dredge pump* (3.6.2)

**3.4.26****screen**

device designed to separate the various grain sizes of the solid material out of the *dredged mixture* (3.6.1)

**3.4.27****hopper chute**

device designed to direct the *soil* (3.1.3) onto the *conveyors* (3.4.16)

**3.4.28****dredged mixture separator**

device for separating water from the *dredged mixture* (3.6.1)

**3.4.29****pipeline swivel joint**

hinged or flexible joint of separate elements of the pipeline

**3.4.30****suction mouth**

removable front part of the *suction pipeline* (3.4.1)

**3.4.31****ball swivel unit**

equipment that can be swivelled within a certain angle, mounted at the aft end of the suction dredger for connecting the *floating delivery pipeline* (3.4.5)

**3.4.32****flexible connector**

connector that can be bent easily within a certain angle and without breaking

**3.4.33****rock hopper barge**

vessel having a *hopper hold* (3.4.18) of strong structure, suitable for loading and transporting rocks

#### 3.4.34

##### **barge loading installation**

installation of a gantry frame, winches and a dredge pipe which can be stuck out and lowered into the *hopper hold* (3.4.18) of a *hopper barge* (3.4.13) at the side of the *dredger* (3.1.5)

#### 3.4.35

##### **hopper diluting system**

system of *jet water* (3.6.26) pipes and nozzles arranged in the *hopper hold* (3.4.18) to dilute the *dredged mixture* (3.6.1) in the hopper with *jet water* (3.6.26)

#### 3.4.36

##### **side casting installation**

large swivelled jib carrying a boom pipe connected to the *dredge pump* (3.6.2) that can turn overboard to discharge the *dredged mixture* (3.6.1)

### 3.5 Terms relating to methods and equipment for operating movement

#### 3.5.1

##### **operating movements**

movements of a *dredger* (3.1.5) during *dredging* (3.1.1)

#### 3.5.2

##### **dredge anchor**

anchors used for *operating movements* (3.5.1) of a *dredger* (3.1.5)

#### 3.5.3

##### **anchor boat**

self-propelled vessel used for placing and repositioning the *dredge anchors* (3.5.2), deployment of *floating delivery pipeline* (3.4.5) and the execution of other auxiliary tasks

#### 3.5.4

##### **spud**

steel pile for fixing and locating the position of different types of *dredger* (3.1.5) during operation

#### 3.5.5

##### **anchor spud**

pile for locating a *dredger* (3.1.5) at the *dredging site* (3.1.4)

#### 3.5.6

##### **working spud**

*spud* (3.5.4) allowing the swing movement of the *dredger* (3.1.5)

#### 3.5.7

##### **walking spud**

*anchor spud* (3.5.5) allowing the forward movement of the *spud carrier* (3.5.9) along the guide rail of the *dredger* (3.1.5)

#### 3.5.8

##### **lifting spud**

*anchor spud* (3.5.5) used for the safe support of the *dredger* (3.1.5) on the river/sea bottom

Note 1 to entry: For a safe support, the lift spuds can lift the dredger out of the water above the waterline.

#### 3.5.9

##### **spud carrier**

movable device located at the stern of a *dredger* (3.1.5) for the accommodation of a *spud* (3.5.4) which fixes the *dredger* (3.1.5) during operation and changes its position according to the *dredging* (3.1.1) progress

**3.5.10****longitudinal operating movements**

method of *operating movements* (3.5.1) when a *dredger* (3.1.5) or *dredging apparatus* (3.1.9) moves in fore and aft direction at the *dredging site* (3.1.4)

**3.5.11****transverse operating movements**

method of *operating movements* (3.5.1) when a *dredger* (3.1.5) or *dredging apparatus* (3.1.9) moves across the *dredging site* (3.1.4)

**3.5.12****head line winch**

winch for moving/holding a *dredger* (3.1.5) along the *dredging site* (3.1.4) in the forward direction

Note 1 to entry: The term "head line winch" applies only when the dredging apparatus is at the bow of a dredger.

**3.5.13****stern line winch**

winch for moving/holding a *dredger* (3.1.5) along the *dredging site* (3.1.4) in the aft direction

Note 1 to entry: The term "stern line winch" applies only when the dredging apparatus is at the bow of a dredger.

**3.5.14****side line winch**

winch for moving (swinging) a *dredger* (3.1.5) across the *dredging site* (3.1.4) in lateral direction

**3.5.15****end pontoon winch**

winch on the end pontoon of a *floating delivery pipeline* (3.4.5) enabling it to move to spread the *soil* (3.1.3) being discharged

**3.5.16****mooring winch**

winch on the *dredger* (3.1.5) used for mooring and shifting a *hopper barge* (3.4.13) alongside the *dredger* (3.1.5)

**3.5.17****guide post**

piles arranged at foreship and/or aftship, with sheaves at the top and the lower part, which can be lowered into water in order to guide the anchor wire

**3.6 Terms relating to dredging pump unit and to soil-loosening equipment****3.6.1****dredged mixture**

fluid made by the mixing of *soil* (3.1.3) and water in the process of *dredging* (3.1.1)

**3.6.2****dredge pump**

pump for extraction and discharge of the *dredged mixture* (3.6.1)

**3.6.3****double-walled dredge pump**

*dredge pump* (3.6.2) equipped with outer casing and inner casing

**3.6.4****submersible dredge pump**

*dredge pump* (3.6.2) located outside the hull of the vessel, below the water level

**3.6.5**

**concentration of dredged mixture**

ratio of the volume of solids to the total volume of the *dredged mixture* (3.6.1)

**3.6.6**

**density of dredged mixture**

mass per unit volume of the *dredged mixture* (3.6.1)

**3.6.7**

**suction head**

inlet piece for extracting the *dredged mixture* (3.6.1) mounted at the fore end of suction pipeline of a *dredger* (3.1.5)

**3.6.8**

**dustpan**

prolate box with jet water nozzles mounted on the fore end of suction pipe of the *dustpan suction dredger* (3.3.1.1.8) for extracting the *dredged mixture* (3.6.1)

**3.6.9**

**jet suction assist**

device for improving the suction performance of a *dredge pump* (3.6.2)

**3.6.10**

**agitator**

device designed for loosening the *soil* (3.1.3) from its natural bed state before extracting it

**3.6.11**

**hydraulic agitator**

*agitator* (3.6.10) using the energy of *jet water* (3.6.26) to loosen the *soil* (3.1.3)

**3.6.12**

**mechanical agitator**

*agitator* (3.6.10) having one or more mechanical devices to loosen the *soil* (3.1.3)

**3.6.13**

**rotary agitator**

*mechanical agitator* (3.6.12) with one or more blades which rotate mainly about a vertical or horizontal axis

**3.6.14**

**flow rate of dredge pump**

volume of fluid discharged by a *dredge pump* (3.6.2) per unit of time

**3.6.15**

**velocity of dredged mixture**

average speed of the particles of the *dredged mixture* (3.6.1) in the *discharge pipeline* (3.4.2)

**3.6.16**

**pressure head of dredge pump**

difference in absolute pressure between the discharge outlet and suction inlet of the *dredge pump* (3.6.2)

**3.6.17**

**elevation head**

height from water level to the centreline of the outlet of the *delivery pipeline* (3.4.4)

**3.6.18**

**dredge pump efficiency**

ratio between the acquired power in a hydraulic system and the delivered power on the *dredge pump* (3.6.2) shaft

**3.6.19****cavitation of dredge pump**

formation and subsequent collapse of vapour-filled cavities in a liquid due to dynamic action

Note 1 to entry: Cavitation can damage the dredge pump and reduce pump pressure head and efficiency.

**3.6.20****decisive vacuum**

margin of vacuum at the inlet of the *dredge pump* (3.6.2) to be kept, to avoid the cavitation of the *dredge pump* (3.6.2)

**3.6.21****net positive suction head****NPSH**

fluid-specific energy or total absolute pressure head of the *dredge pump* (3.6.2) above the vapour pressure

**3.6.22****jet ejector pump**

*dredge pump* (3.6.2) injecting high pressure water through a nozzle into the Venturi pipe near the suction pipe to form the pressure difference between the inside and outside of the *suction mouth* (3.4.30) to extract the *dredged mixture* (3.6.1)

Note 1 to entry: A jet ejector pump consists of a suction pipe, a Venturi pipe and a feeder water pump.

**3.6.23****air lift pump**

*dredge pump* (3.6.2) using the annular high pressure air to form an upward air-water mixture flow to loosen and entrain the *soil* (3.1.3) on the river/sea bed through a dredging pipeline

**3.6.24****pneumatic system pump**

*dredge pump* (3.6.2) using the compressed air, filling in to extract and discharge the *dredged mixture* (3.6.1)

Note 1 to entry: A pneumatic system pump has a compressed air jar which is used as an air piston pump.

**3.6.25****gland water**

pressure water used for sealing and reducing abrasion of the *dredge pump* (3.6.2)

**3.6.26****jet water**

high pressure water used for loosening the *soil* (3.1.3) underwater or diluting the *soil* (3.1.3) in the *hopper hold* (3.4.18)

**3.6.27****booster unit**

*dredge pump* (3.6.2) with driving mechanism located in the *delivery pipeline* (3.4.4) for increasing the discharging pressure of the *dredged mixture* (3.6.1)

**3.7 Terms relating to controls and to monitoring and measuring instruments****3.7.1****dredging control system**

complex of technical devices ensuring the control of the dredging operation

**3.7.2****dredger position measuring system**

complex of technical devices ensuring the determination of the location of a *dredger* (3.1.5) and its orientation at the *dredging site* (3.1.4)

### 3.7.3

#### **dredger automatic control system**

complex of technical devices for automatic control and monitoring of the *dredging* (3.1.1) operation

### 3.7.4

#### **flow meter**

device that detects and indicates the average flowrate of the *dredged mixture* (3.6.1) produced by the *dredge pump(s)* (3.6.2)

### 3.7.5

#### **density meter**

device that detects the concentration of the *dredged mixture* (3.6.1) in the *discharge pipeline* (3.4.2) on board of a *dredger* (3.1.5)

### 3.7.6

#### **velocity meter**

device that detects and indicates the average speed of the *dredged mixture* (3.6.1) in the *discharge pipeline* (3.4.2) after the *dredge pump* (3.6.2)

### 3.7.7

#### **vacuum indicator**

device that is installed in the *suction pipeline* (3.4.1) just before the *dredge pump* (3.6.2) for detecting the inlet pressure of the *dredge pump* (3.6.2)

### 3.7.8

#### **pressure indicator**

device that is installed in the *discharge pipeline* (3.4.2) after the *dredge pump* (3.6.2) for detecting the pressure of the *dredged mixture* (3.6.1) pumped out by the *dredge pump* (3.6.2)

### 3.7.9

#### **dredging depth indicator**

instrument indicating the *dredging depth* (3.2.6) while the dredger is operating

### 3.7.10

#### **rope meter**

instrument indicating the length of the hauling rope heaved in or paid out

### 3.7.11

#### **bucket counter**

instrument indicating the number of *buckets* (3.8.1.3) which have passed the *upper tumbler* (3.8.1.7) of a *bucket chain dredger* (3.3.1.2.1) within a fixed unit of time and/or the whole number of *buckets* (3.8.1.3)

### 3.7.12

#### **output indicator**

dual-indicator instrument indicating the density and velocity of the *dredged mixture* (3.6.1) enabling the operator to see at a glance the productivity during the dredging operation

### 3.7.13

#### **draught and loading measurement**

computerised monitoring system consisting of pressure transducers, a data processing unit and display and reporting instruments displaying the draught and actual load of a *hopper hold* (3.4.18)

Note 1 to entry: A draught and loading measurement system may show more detailed information than described above.

### 3.7.14

#### **load recorder**

instrument recording the *hopper hold* (3.4.18) load of the *dredger* (3.1.5) against time

**3.7.15****automatic pump controller**

controller that controls automatically the speed of the *dredge pump* (3.6.2) by means of velocity, density and pressure signals to maintain a high *dredging output* (3.2.2)

**3.7.16****dredging tracking and profile monitor**

system used for monitoring the position and heading of the *dredger* (3.1.5), the excavating device position and depth in plane and profile views

**3.7.17****machinery control and monitoring system**

system used for monitoring and controlling the driving system of the *dredging equipment* (3.1.8) of a *dredger* (3.1.5)

**3.7.18****dredging data logging system**

system used for storing and replaying the data created by monitoring and calculating through the *dredging control system* (3.7.1)

**3.7.19****dredging profile monitor**

complex measurement and displaying system which collects and processes the data during *dredging* (3.1.1), displaying water line, dredging depth, width, slope line, etc.

**3.7.20****supervisory control and data acquisition****SCADA**

system operating with coded signals over communication channels so as to provide control of a remote equipment and to acquire information about the status of the remote equipment for display or for recording functions

**3.7.21****dredger supervisory and control system**

supervisory and control system of dredging operations that uses *SCADA* (3.7.20)

**3.7.22****trailing suction pipe position monitor**

system used for supervision and control of the operation of the *trailing suction pipe* (3.8.2.1), displaying the movement and position of the *trailing suction pipe* (3.8.2.1)

**3.7.23****automatic light mixture overboard**

controller used to discharge the *dredged mixture* (3.6.1) overboard directly when its density is lower than the preset value

**3.7.24****trailing suction pipe automatic winch controller**

controller used to move the *trailing suction pipe* (3.8.2.1) to the specified position or to hold the position automatically

**3.7.25****automatic visor controller**

controller used to adjust the position of the visor of the *draghead* (3.8.2.4) automatically

**3.7.26****automatic draught controller**

control system used to control continuously the draught of a *trailing suction hopper dredger* (3.3.1.1.5) by adjusting the position of the moveable overflow duct(s) and the position of the environmental valves if applicable

### 3.7.27

#### **automatic cutting controller**

control system that controls automatically the *ladder winch* (3.8.3.9), *swing winches* (3.8.3.7), cutter drive and *spud carrier* (3.5.9) of the *cutter suction dredger* (3.3.1.1.3) by means of computer and PLC programs

### 3.7.28

#### **production measurement system**

system that calculates and displays the *dredging production* (3.2.2) and operational information during the operating of a *dredger* (3.1.5)

Note 1 to entry: The system consists of a concentration transducer, velocity transducer, production calculation and display unit.

### 3.7.29

#### **grab/bucket footprint**

horizontal projection geometry size and trajectory of the location when the *grab chain dredger* (3.3.1.2.4) or *bucket chain dredger* (3.3.1.2.1) closes its grab/bucket during operation

### 3.7.30

#### **opening value of the grab**

value of opening when the *grab* (3.8.4.13) opens or closes

Note 1 to entry: This is expressed by percentage (%).

EXAMPLE 0 % means closed completely and 100 % means opened fully.

## 3.8 Terms relating to special types of dredgers

### 3.8.1 Terms relating to bucket chain dredger and to bucket assembly

#### 3.8.1.1

##### **bucket assembly**

assembly of *buckets* (3.8.1.3) for raising the *soil* (3.1.3) and moving it to the place of discharge

#### 3.8.1.2

##### **bucket tower**

metal structure for accommodation of bucket drive elements and the *soil* (3.1.3) discharge equipment of a *bucket chain dredger* (3.3.1.2.1)

#### 3.8.1.3

##### **bucket**

digging element designed to cut, contain and raise the *soil* (3.1.3)

#### 3.8.1.4

##### **bucket capacity**

volume of a brimful *bucket* (3.8.1.3)

#### 3.8.1.5

##### **bucket chain**

endless chain consisting of *buckets* (3.8.1.3) and connecting parts

#### 3.8.1.6

##### **bucket chain pitch**

distance between two adjacent centres of corresponding mounting holes of adjacent *buckets* (3.8.1.3)

#### 3.8.1.7

##### **upper tumbler**

drum for supporting and driving the *bucket chain* (3.8.1.5) at the upper end of the *bucket ladder* (3.8.1.16)

**3.8.1.8****lower tumbler**

drum for supporting and guiding the *bucket chain* (3.8.1.5) at the lower end of the *bucket ladder* (3.8.1.16)

**3.8.1.9****auxiliary ladder**

additional frame installed between the *upper tumbler* (3.8.1.7) and the axis of suspension of the ladder

**3.8.1.10****bucket chain tightening device**

device to adjust the length of the sagging part of the *bucket chain* (3.8.1.5)

**3.8.1.11****bucket chain loop**

part of the sagging *bucket chain* (3.8.1.5) near the *lower tumbler* (3.8.1.8) where the *buckets* (3.8.1.3) start to touch the *soil* (3.1.3)

**3.8.1.12****bucket chain catenary**

course of the *bucket chain* (3.8.1.5) on the underside of the *bucket ladder* (3.8.1.16) and on the *auxiliary ladder* (3.8.1.9), if fitted, suspended between the *upper* (3.8.1.7) and *lower tumblers* (3.8.1.8)

**3.8.1.13****bucket roller**

roller supporting the *bucket chain* (3.8.1.5) on the *bucket ladder* (3.8.1.16) and on the *auxiliary ladder* (3.8.1.9) if fitted

**3.8.1.14****bucket chain drive**

assembly of the *bucket drive motor* (3.8.1.15) and the power transmission to the *upper tumbler* (3.8.1.7)

**3.8.1.15****bucket drive motor**

motor which drives the *upper tumbler* (3.8.1.7)

**3.8.1.16****bucket ladder**

rigid structure for accommodation and guidance of the *bucket chain* (3.8.1.5) of *bucket chain dredgers* (3.3.1.2.1)

**3.8.1.17****chute**

guide tray for the disposal of the *soil* (3.1.3) by gravity into the *hopper hold* (3.4.18) of a *hopper barge* (3.4.13)

**3.8.1.18****soil transportation by chutes**

transportation of the *soil* (3.1.3) extracted by *dredging* (3.1.1) through a *chute(s)* (3.8.1.17) of sufficient length to the place of disposal

**3.8.1.19****sump**

well inside the *bucket tower* (3.8.1.2) enabling the delivery of the *soil* (3.1.3) excavated to be diverted to one side or the other

**3.8.1.20****bucket ladder hoist**

device for changing the position of the *bucket ladder* (3.8.1.16) and fixing it in a determined position

**3.8.1.21**

**change-over flap**

device in the *sump* (3.8.1.19) for altering the direction of the *soil* (3.1.3) excavated by *dredging* (3.1.1)

**3.8.1.22**

**frequency of bucket pouring out**

number of the *bucket* (3.8.1.3) poured out per minute

**3.8.2 Terms relating to trailing suction hopper dredger and its dredging equipment**

**3.8.2.1**

**trailing suction pipe**

suction pipe that is hinge-jointed at its upper part on the side of a *trailing suction hopper dredger* (3.3.1.1.5) and has a *draghead* (3.8.2.4) which contacts the bottom of water during *dredging* (3.1.1) at its lower part

**3.8.2.2**

**cardan joint**

universal joint enabling the upper and lower pipe sections to turn freely in relation to each other horizontally or vertically

**3.8.2.3**

**cardan ring**

ring shape frame of steel having four pin pivots in horizontal and vertical plane, positioned in the middle of the *cardan joint* (3.8.2.2)

**3.8.2.4**

**draghead**

excavator consisting of a fixed part, a movable part, a *suction mouth* (3.4.30) and teeth points, mounted at the end of the *trailing suction pipe* (3.8.2.1)

**3.8.2.5**

**active draghead**

movable part of the *draghead* (3.8.2.4) which can be adjusted by the hydraulic cylinder fitted on the *draghead* (3.8.2.4) and controlled remotely from the wheel house

**3.8.2.6**

**trunnion**

unit consisting of a suction bend and a slide piece used for connecting the *trailing suction pipe* (3.8.2.1) to the hull and running along a vertical guide track on the side of the hull

**3.8.2.7**

**trunnion gantry**

unit consisting of a fixed part, two portal frames with apron and guide tracks for the *trunnion* (3.8.2.6) up and down and a hydraulic cylinder used for suspending, sticking out and taking back the *trailing suction pipe* (3.8.2.1)

**3.8.2.8**

**trunnion gantry winch**

winch installed on the fixed part of the *trunnion gantry* (3.8.2.7), used for hoisting and lowering the *trunnion* (3.8.2.6) assembly and the slide piece

**3.8.2.9**

**intermediate gantry**

unit consisting of a fixed part, A-frame pivoting to the fixed part, and a hydraulic cylinder used for suspending, hoisting and lowering the middle of the *trailing suction pipe* (3.8.2.1)

**3.8.2.10****intermediate winch**

winch, installed on deck, used to hoist and lower the *trailing suction pipe* (3.8.2.1) through the guide sheaves

**3.8.2.11****draghead gantry**

unit consisting of a fixed part, A-frame pivoting to the fixed part, and a hydraulic cylinder used for suspending, hoisting and lowering the *draghead* (3.8.2.4)

**3.8.2.12****draghead winch**

winch installed on deck, used to hoist and lower the *draghead* (3.8.2.4) through the guide sheaves

**3.8.2.13****loading box**

pipe or box situated beneath the hopper deck, for reducing the velocity of the *dredged mixture* (3.6.1) filling into the *hopper hold* (3.4.18)

**3.8.2.14****pumping ashore system**

system able to extract the *dredged mixture* (3.6.1) in the *hopper hold* (3.4.18) and deliver it to shore, consisting of the water inlet valves, a self-emptying suction channel or pipeline, dredge pumps and a *bow coupling unit* (3.4.12)

**3.8.2.15****hydraulic overflow installation**

installation that can be adjusted continuously for discharging the light *dredged mixture* (3.6.1) from the *hopper hold* (3.4.18) through the bottom of the ship

**3.8.3 Terms relating to cutter suction dredger and its dredging equipment****3.8.3.1****dredging width**

swinging width of the *cutter head* (3.8.3.14)

**3.8.3.2****power of cutter head**

power of the machinery for driving the *cutter head* (3.8.3.14)

**3.8.3.3****suction ladder gantry**

frame structure welded or hinge mounted on fore deck of ship for suspending and changing the position of the *cutter ladder* (3.8.3.15)

**3.8.3.4****vacuum released valve**

valve that automatically prevents an extra low pressure of the *dredged mixture* (3.6.1) in the *suction pipeline* (3.4.1) and in the *dredge pump* (3.6.2)

Note 1 to entry: The valve serves to protect the pipeline and the pump.

**3.8.3.5****swing wire**

wire rope connecting the *swing winch* (3.8.3.7) on board and the anchor under water, used for the swing of the *cutter suction dredger* (3.3.1.1.3)

**3.8.3.6****swing sheave**

two sheaves fixed to the front part of the *cutter ladder* (3.8.3.15) on both sides, through which the *swing wires* (3.8.3.5) pass and which change their direction by pulling forces

### 3.8.3.7

#### **swing winch**

winch installed on the fore deck to drive the swing of the *dredger* (3.1.5)

Note 1 to entry: Swing winches have high torque performance, high pulling force and wide speed variation.

### 3.8.3.8

#### **swing anchor**

anchor connected to a *swing winch* (3.8.3.7) with a *swing wire* (3.8.3.5) anchoring under water to enable movement of the *cutter suction dredger* (3.3.1.1.3) to port and starboard

### 3.8.3.9

#### **ladder winch**

winch for hoisting, lowering and suspending the *cutter ladder* (3.8.3.15)

### 3.8.3.10

#### **anchor hoisting winch**

winch for hoisting or casting the *dredge anchor* (3.5.2)

### 3.8.3.11

#### **guy winch**

winch used for traction and pull of the guy rope attached on the *anchor boom* (3.8.3.12)

### 3.8.3.12

#### **anchor boom**

boom on the *cutter suction dredger* (3.3.1.1.3) for placing and repositioning the *dredge anchor* (3.5.2)

### 3.8.3.13

#### **Christmas tree installation**

system for positioning the *cutter suction dredger* (3.3.1.1.3) without spuds applied that consists of 3 anchors, 3 winches and a post as well as wire ropes

Note 1 to entry: The system looks like a sort of reversed Christmas tree outline.

### 3.8.3.14

#### **cutter head**

crown-shaped *mechanical agitator* (3.6.12) which rotates about the longitudinal central line of the *dredger* (3.1.5) for cutting the soil (3.1.3)

Note 1 to entry: A cutter head consists of a steel ring, a hub and cutting blades of optional shape.

### 3.8.3.15

#### **cutter ladder**

rigid and heavy steel structure hinge-jointed to the hull in the fore well of the *cutter suction dredger* (3.3.1.1.3), equipped with *cutter head* (3.8.3.14), suction pipes, submersible *dredge pump* (3.6.2) (if any), shafting, etc.

### 3.8.3.16

#### **bucket wheel**

*mechanical agitator* (3.6.12) which rotates about the vertical to the longitudinal central line of the *dredger* (3.1.5) having a cutting member in the form of multiple bottomless *buckets* (3.8.1.3) on the circumference

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### 3.8.3.17

#### **cutting wheel**

*mechanical agitator* (3.6.12) which rotates about the vertical to the longitudinal central line of the *dredger* (3.1.5) having a cutting member in the form of multiple bottomless bows with cutting edges on the circumference

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**3.8.3.18****cutter ladder hoist**

device for changing the position of the *cutter ladder* (3.8.3.15) and fixing it in a determined position

**3.8.4 Terms relating to grab/dipper/backhoe dredger and their dredging equipment****3.8.4.1****dipper dredger outreach**

maximum distance from the *bucket* (3.8.1.3) cutting edge to the axis of rotation of the *dipper actor* (3.8.4.6)

**3.8.4.2****grab outreach**

maximum distance from the axis of the *grab* (3.8.4.13) suspension to the axis of rotation of the crane

**3.8.4.3****grab crane**

crane installed on the deck of *grab dredger* (3.3.1.2.4) used for lifting and lowering the grab for *dredging* (3.1.1) operation

**3.8.4.4****penetration capacity**

digging force of the *bucket* (3.8.1.3) of the *dipper bucket* (3.8.4.14) or *backhoe bucket* (3.8.4.9)

**3.8.4.5****grab capacity**

volume of *grab* (3.8.4.13)

Note 1 to entry: There are three types of grab capacity: effective volume, brimful volume and piled up volume.

**3.8.4.6****dipper actor**

dredging machinery for lifting, turning, pushing and digging the *soil* (3.1.3)

Note 1 to entry: A dipper actor consists of a bucket boom, an A-type frame derrick and a pull rod.

**3.8.4.7****backhoe actor**

dredging machinery similar to *dipper actor* (3.8.4.6), which pulls the bucket to the *dredger* (3.1.5) when *dredging* (3.1.1)

**3.8.4.8****front shovel**

digging tool like a *bucket* (3.8.1.3) which is mounted at the fore end of the *bucket boom* (3.8.4.10) of the *dipper dredger* (3.3.1.2.2), and pushed forward to dig the *soil* (3.1.3)

**3.8.4.9****backhoe bucket**

digging tool like a *bucket* (3.8.1.3) which is mounted at the fore end of the *bucket boom* (3.8.4.10) of a *backhoe dredger* (3.3.1.2.3), and pulled back for digging the *soil* (3.1.3)

**3.8.4.10****bucket boom**

long box type structure guiding the *backhoe buckets* (3.8.4.9)

Note 1 to entry: A bucket boom is driven by hydraulic cylinders.

**3.8.4.11****powered chisel**

chisel activated by a power source and installed on the *backhoe dredger* (3.3.1.2.3) for smashing the rock into pieces

**3.8.4.12**

**free-falling chisel**

equipment which is installed on the *grab crane* ([3.8.4.3](#)) and which is dropping freely onto the rocks to crash them into pieces

**3.8.4.13**

**grab**

*mechanical agitator* ([3.6.12](#)) installed at the *grab crane* ([3.8.4.3](#)) of a *grab dredger* ([3.3.1.2.4](#))

**3.8.4.14**

**dipper bucket**

*mechanical agitator* ([3.6.12](#)) like bucket installed at the *dipper actor* ([3.8.4.6](#)) of a dipper dredger



