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ANNEXES 1 to 2

## **ANNEXES**

**to the**

**COMMISSION IMPLEMENTING REGULATION (EU) .../...**

**laying down rules for the application of Directive (EU) 2019/883 of the European Parliament and of the Council as regards the method to be used for the calculation of sufficient dedicated storage capacity**

## ANNEX I

### Calculation method for sufficient dedicated waste storage capacity

1. The method uses an arithmetic calculation based on the estimated amounts of waste retained on board in relation to the maximum dedicated storage capacity.
2. The Used Waste Capacity ('UWC'), estimated at the time of sending the advance waste notification to the port of call and expressed as a percentage of the maximum dedicated storage capacity, shall not exceed a predefined threshold.
3. The UWC shall be calculated with the following formula:

$$UWC (\%) = \frac{A*100}{M}$$

4. The UWC shall comply with the following condition:

$$UWC (\%) < \text{Threshold}$$

Where:

A is the estimated amount of waste type to be retained on board at the time of departure from the port of call (expressed in m<sup>3</sup>);

M is the Maximum dedicated storage capacity (expressed in m<sup>3</sup>);

Threshold is the value set out in Table 1, for the corresponding type of waste and type of next port of call.

5. For the purpose of using the calculation method for sufficient dedicated waste storage capacity, the following shall apply:
  - (a) Port of call, as indicated in the advance waste notification form set out in Annex 2 to Directive (EU) 2019/883, is the port where the ship is heading and where the advanced waste notification is sent to, in accordance with Article 6 of Directive (EU) 2019/883;
  - (b) Next port of call is the port to be called after departure, as indicated in point 2.5 of the advance waste notification form set out in Annex 2 to Directive (EU) 2019/883;
  - (c) The amount indicated in the sixth column 'Estimated amount of waste to be generated between notification and next port of call' of point 3 of the advance waste notification form set out in Annex 2 to Directive (EU) 2019/883 refers to waste generated and intended to be disposed at a port reception facility. Amounts that may be legally discharged shall not be included in the reported value.

**Table 1 – Thresholds**

Next port of call	Annex I to the Marpol	Annex IV to the	Annex V to the Marpol	Annex VI to the
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	<b>Convention</b>	<b>Marpol Convention</b>	<b>Convention</b>	<b>Marpol Convention</b>
<b>Next port of call is an EU-port or is in the 'Group of Additional Selected Ports'</b>	50%	50%	25%	75%
<b>Next port of call is not an EU-port, nor is in the 'Group of Additional Selected Ports'</b>	25%	50%	20%	25%

6. The 'Group of Additional Selected Ports' includes those ports that are to be considered as EU-ports for the purpose of the application of the thresholds set out in Table 1. The ports included in this group are all ports located in: Iceland, Norway, United Kingdom (including Isle of Man, Channel Islands and Gibraltar) and Russian ports located in the Baltic Sea.
7. During the first two years of application of this Regulation, the UWC as calculated in the third paragraph of this Annex may be treated as indicative for the following cargo residues waste types:
  - (a) MARPOL Annex I – Oil: Oily tank washings;
  - (b) MARPOL Annex I – Oil: Dirty Ballast Water;
  - (c) MARPOL Annex V – Garbage: Cargo Residues (HME);
  - (d) MARPOL Annex V – Garbage: Cargo Residues (non-HME).

## ANNEX II

**Table 1: Waste Generation Rates for Annexes I, IV and V to the MARPOL Convention<sup>1</sup>**

Type of waste	Generation rate	Driver	On-board treatment
Oily bilge water	0.01-13 m <sup>3</sup> per day, larger ships generate larger quantities.	Condensation and leakages in the engine room; size of the ship.	The amount can be reduced by 65-85% by using an oil water separator and discharging the water fraction into the sea.
Oily residues (sludge)	0.01 to 0.03 m <sup>3</sup> of sludge per tonne of HFO. 0 and 0.01 m <sup>3</sup> per tonne of MGO.	Type of fuel; fuel consumption.	Evaporation can reduce the amount of sludge by up to 75% <sup>2</sup> . Incineration can reduce the amount of sludge by 99% or more.
Tank washings (slops)	20 to hundreds of m <sup>3</sup>	Number of tank cleanings; Size of loading capacity.	After settling, the water fraction may be discharged at sea.
Sewage	0.01 to 0.06 m <sup>3</sup> per person per day. Sewage is sometimes mixed with other waste water. The total amount ranges from 0.04 to 0.45 m <sup>3</sup> per day per person.	Number of persons on-board; type of toilets; length of voyage; type of treatment: the operation of a sewage treatment plant, or comminuting and disinfection system provides different quantities of waste	Effluent from treatment plants is often discharged at sea where permitted under MARPOL Annex IV.
Plastics	0.001 to 0.008 m <sup>3</sup> of plastics per person per day.	Number of persons on-board.	Often not incinerated. Dirty plastics (plastics that have been in contact with food) are often treated as a separate waste stream.
Food wastes	0.001 to 0.003 m <sup>3</sup> per person per day.	Number of persons on-board; provisions.	Where permitted under MARPOL Annex V, food waste is often discharged at sea.
Domestic wastes	0.001 to 0.02 m <sup>3</sup> per day per person.	Number of persons on-board; type of products used.	
Cooking oil	0.01 to 0.08 litres per person per day.	Number of persons on-board; type of food prepared.	Although not permitted, cooking oil is sometimes still added to the sludge tank.
Incinerator ashes	0.004 and 0.06 m <sup>3</sup> per month.	Use of incinerator; cost of using incinerator.	The incinerator is not used for all types of waste, mostly for paper sometimes for oily sludge.
Operational wastes	0.001 to 0.1 m <sup>3</sup> per person per day.	Size of the ship; type of cargo.	
Cargo residues	0.001 - 2 % of cargo load.	Type of cargo. Size of ship.	

<sup>1</sup> Extracted from EMSA's study 'The Management of Ship-Generated Waste On-board Ships', January 2017.

<sup>2</sup> Evaporation of the water fraction in oil sludge is a process that must be carefully managed and should only be done to the extent to allow combustibility of the sludge intended for incineration.

**Table 2: Waste Generation Rates for Annex VI to the MARPOL Convention on waste (exhaust gas cleaning systems, ‘EGCS’)**

Type of EGCS	Coefficient	Unit	Examples (10 MW engine or HFO consumption 40 t/day)
<b>Manufacturer 1</b>			
Open loop sludge amount	0.1	kg/MWh	$0.1 \times 10 \text{ MW} \times 24 = 24 \text{ kg/day}$
Closed loop sludge amount (DAF- BOTU)	3.5 - 7.0	kg/MWh. depending on SFOC, MCR and fuel quality	$3.5 \times 10 \text{ MW} \times 24 = 840 \text{ kg/day}$
Closed loop sludge amount (BOTU-M)	3.0	l/MWh/S%. depending on SFOC, MCR and fuel quality	$3.0 \times 10 \text{ MW} \times 24 \times 2.5\% = 1800 \text{ l/day}$
<b>Manufacturer 2</b>			
Closed loop sludge amount	2.5-3.0	Kg/consumed HFO t	$2.5 \times 40 \text{ t/day} = 100 \text{ kg/day}$

**NB:** The amount of exhaust gas cleaning system sludge generated depends ultimately also on the individual installation specifics: the exhaust gas cleaning system manual provided by the manufacturer should therefore be consulted. Information in the tables provided by stakeholder companies.