



DEPARTMENT OF ECONOMIC DEVELOPMENT

MARPOL ANNEX IV

The Merchant Shipping (MARPOL Annex IV - Prevention of Pollution by Sewage from Ships) Order 2014 (SD 2014/0063) implements Annex IV of MARPOL 73/78 - Regulations for the Prevention of Pollution by Sewage from Ships and this Notice should be read with that Order.

This Notice also provides the interpretation of 'special circumstances' in which a new Certificate need not be dated from the date of expiry of the existing Certificate, but from the date of completion of the survey.

In addition, this Notice provides information on the technical requirements, where Annex IV provides discretion to the Administration, for ships to comply with the Isle of Man implementation of Annex IV of MARPOL 73/78, the key requirements being:

Acceptable sewage systems, standard dimensions of flanges for discharge connections and the Isle of Man "moderate rate of discharge of sewage from a holding tank".

Documents referred to in this notice:

Merchant Shipping (MARPOL Annex IV - Prevention of Pollution by Sewage from Ships) Order 2014. ("the Order")

MARPOL Annex IV – Regulations for the Prevention of Pollution by Sewage from Ships ('the Annex')

Most regulations and notices are available on the Isle of Man Government web site:

www.iomshipregistry.com or by contacting marine.survey@gov.im

1. Special Circumstances

1.1. For the purposes of Article 14(6)¹ of the Order, 'special circumstances' are where the owner of the ship:

- requests the change of date;
- satisfies the Ship Registry that the owner has a very good reason for making the request; and
- complies with any reasonable additional survey requirements which the Ship Registry may impose.

Examples of an owner having "very good reason" might include:

- where a ship has been laid up for an extended period; or
- where the nature of a ship's business would make a different date much more convenient (such as in the case of a passenger ferry constructed in the summer and whose main trade is in the summer, where the owner may want to have the refit and survey work done in the winter months).

¹ Regulation 8.7 of the Annex

- 1.2. In the latter case of a request to change the anniversary date for the sake of convenience, the request will only be considered if such a request has not been made before for the ship in question, and the owner confirms in writing to the Ship Registry that this is a one off request for that ship.

2. Sewage Systems

- 2.1. Regulation 9.1 of the Annex requires vessels to which that regulation applies to be equipped with at least one of the following: an approved sewage treatment plant; an approved comminuting and disinfecting system with holding tank; or an approved holding tank.
 - 2.1.1. Sewage treatment plants must meet the international standard on 'the implementation of effluent standards and performance tests'² and should be of a type approved by a Recognised Organisation acceptable to the Ship Registry³.
 - 2.1.2. As there are no international standards for comminuting and disinfecting system the required standard is set out in 3 below;
 - 2.1.3. As there are no international standards for holding tanks the required standard is outlined in 4 below.
- 2.2. Regulation 9.2 of the Annex requires that every passenger ship which must comply with the Annex is equipped with at least one of the following; an approved sewage treatment plant or an approved holding tank.
 - 2.2.1. Sewage treatment plants must meet the international standard on 'the implementation of effluent standards and performance tests'⁴ and should be of a type approved by a Recognised Organisation acceptable to the Ship Registry⁵;
 - 2.2.2. As there are no international standards for holding tanks the required standard is outlined in 4 below.

3. Comminuting and Disinfecting Systems

- 3.1. For Manx ships, the standards for sewage comminuting and disinfecting systems, referred to in the Annex, are as follows:
 - 3.1.1. Faecal Coliform Standard⁶: Faecal coliform bacteria in the effluent should not exceed 1000/100 cm³ Most Probable Number (M.P.N.);
 - 3.1.2. Chlorine residual level to be no more than 0.5mg/l, (by test) post maceration;
 - 3.1.3. Comminuting Standard: A sample of 1 litre is passed through a US Sieve No. 12 (with openings of 1.68 mm). The weight of the material retained on the screen after it has been dried to a constant weight in an oven at 103°C must

² Recommendations on International Effluent Standards and Guidelines for Performance Tests for Sewage Treatment Plants adopted by MEPC.2(VI).

³ See MSN020

⁴ Guidelines on Implementation of Effluent Standards and Performance Tests for Sewage Treatment Plants adopted by MEPC.159(55)

⁵ See MSN020

⁶ This level may be subject to amendment as further research material becomes available.

not exceed 10% of the total suspended solids and shall not be more than 50 mg; and,

3.1.4. Temporary storage of sewage will be by holding tank and the standard for the capacity and construction of a holding tank is set out in 4.

3.1.5. The ship owner should ensure the chlorine residual levels are tested on a regular basis, records of this testing are kept on board and that this testing is included in the ship's operating procedures.

3.2. Owners applying for approval should submit schematic drawings of the intended system, together with the technical specifications of the dosing unit and maceration pump. There should also be a covering letter explaining how the system meets the standards set above. Applications for approval should be submitted to the vessel's Recognised Organisation and copied to the Ship Registry. Comminuting and disinfecting systems which meet the standards and requirements above will be issued with an official stamped Acceptance Form.

4. Holding Tanks

4.1. The capacity of a holding tank shall be sufficient when approved by the vessel's Recognised Organisation, having regard to the operation of the vessel, the number of persons the vessel is certified to carry and taking any other relevant factors into account.

4.2. The standard for the construction for a sewage holding tank as referred to in regulation 9.1.3 of the Annex is that the tank must be constructed to prevent leakage of its contents under the normal operation of the ship and in all likely weather conditions, until such times as it can be discharged in accordance to the Annex.

5. Standard Discharge Connections

5.1. Regulation 10 of the Annex requires that the shore discharge pipes of a sewage system and the shore reception pipelines are to be fitted with flanges of specific sizes, in accordance with the following table:

Standard dimensions of flanges for discharge connections Description	Dimension
Outside diameter	210mm
Inner diameter	According to pipe outside diameter
Bolt circle diameter	170mm
Slots in flange	4 Holes, 18mm in diameter, equidistantly placed on a bolt circle of the above diameter, slotted to the flange periphery. The slot width to be 18mm
Flange thickness	16mm
Bolts and nuts: quantity and diameter	4, each of 16mm in diameter and of suitable length
The flange is designed to accept pipes up to a maximum internal diameter of 100mm and shall be of steel or other equivalent material having a flat face. This flange, together with a suitable gasket, shall be suitable for a service pressure of 600kPa	

- 5.2. For vessels having a moulded depth of 5m or less, the inner diameter of the discharge connection may be 38mm.
- 5.3. Regulation 10.2 allows for alternative connections for ships in dedicated trades. Applications for alternatives should be submitted to the vessel's Recognised Organisation and copied to the Ship Registry in the first instance.

6. Recommendation on standards for the rate of discharge of untreated sewage from ships

- 6.1. Regulation 11.1.1 of the Annex requires that untreated sewage previously stored in holding tanks, which may be discharged at more than 12 nautical miles from the nearest land, should not be discharged instantaneously but at a moderate rate of discharge when the ship is en route and proceeding at a speed not less than 4 knots, while the rate should be approved by the Administration based upon standards developed by the Organisation. This Recommendation provides the standard and guidance for the approval and calculation of a moderate rate of discharge.
- 6.2. A moderate rate of discharge applies to the discharge of untreated sewage that has been stored in holding tanks.
- 6.3. This standard does not incorporate the dilution of sewage with water or greywater into calculations of the discharge rate. Therefore the rate is a conservative estimate and it is recognised that discharges of sewage in accordance with this standard will present a higher level of protection to the marine environment due to mixing prior to the actual discharge in addition to the mixing action of the ship's wake.

6.4. Definitions

- 6.4.1. *Swept volume* means ship breadth x draft x distance travelled.
- 6.4.2. *Untreated sewage* means sewage that has not been treated by a type approved sewage treatment plant, or that has not been comminuted and disinfected.

6.5. Discharge Rate

- 6.5.1. The maximum permissible discharge rate is 1/200,000 (or one 200,000th part) of swept volume as follows:

$$DR_{max} = 0.00926 V D B$$

Where: DR_{max} is maximum permissible discharge rate (m³/h), V is ship's average speed (knots) over the period, D is Draft (m), B is Breadth (m).

- 6.5.2. The maximum permissible discharge rate specified in 6.5.1 refers to the average rate as calculated over any 24 hour period, or the period of discharge if that is less, and may be exceeded by no more than 20% when measured on an hourly basis.

6.5.3. The rate of discharge specified in 6.5.1, based upon the ship's maximum summer draft and maximum service speed⁷ is to be approved by the vessel's Recognised Organisation on behalf of the Ship Registry. Where sewage is to be discharged at a different combination of draft and speed one or more secondary discharge rates may also be approved⁸.

6.6. Method of Calculation

6.6.1. The calculated swept volume of the ship is to be determined for drafts up to and including the summer draft assigned in accordance with Article 3 of International Convention on Load Lines, 1966.

6.6.2. Where a ship is to discharge sewage from a holding tank using a pump calibrated at a fixed rate, the pump can either be:

- calibrated at a the rate permitted at 4 knots; or
- calibrated for a specific minimum ship's speed in excess of 4 knots.

6.6.3. Where the intended actual discharge rate exceeds that permissible at 4 knots, the actual discharge rate may need to be reduced or the speed increased. The rate and speed is to be detailed in the approval issued by the Recognised Organisation on behalf of the Ship Registry.

6.7. Compliance with the Rate

6.7.1. Before undertaking a sewage discharge in accordance with this standard, the crew member responsible for sewage operations should ensure that the ship is en route, is more than 12 nautical miles from the nearest land and the navigation speed is consistent with the discharge rate that has been approved by the Administration. Ships with high discharge requirements are encouraged to keep notes of calculations of the actual discharges to demonstrate compliance with the approved rate.

Isle of Man Ship Registry

Please note - The Isle of Man Ship Registry cannot give Legal Advice. Where this document provides guidance on the law it should not be regarded as definitive. The way the law applies to any particular case can vary according to circumstances - for example, from vessel to vessel. You should consider seeking independent legal advice if you are unsure of your own legal position.

⁷ The attention of ship operators and personnel is drawn to the reduction in permissible rate of discharge at reduced draft and/or speed

⁸ Presentation may be tabular, refer to table below. For ships other than those having a high requirement for untreated sewage discharge, such as passenger ships and livestock carriers, the discharge rate criterion will generally not be exceeded at ship speed of 4 knots.

		Discharge Rate (m ³ /h)					
		SPEED (kt)	4	6	8	10	12
DRAFT(m)	5	4.63	6.94	9.26	11.57	13.89	
	6	5.56	8.33	11.11	13.89	16.67	
	7	6.48	9.72	12.96	16.20	19.45	
	8	7.41	11.11	14.82	18.52	22.22	
	9	8.33	12.50	16.67	20.83	25.00	