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First published in the Government Gazette, Electronic Edition, on 25 March 2022 at 5 pm.

## No. S 209

### PREVENTION OF POLLUTION OF THE SEA ACT 1990

#### PREVENTION OF POLLUTION OF THE SEA (AIR) (AMENDMENT NO. 2) REGULATIONS 2022

In exercise of the powers conferred by section 34 of the Prevention of Pollution of the Sea Act 1990, the Maritime and Port Authority of Singapore, with the approval of the Minister for Transport, makes the following Regulations:

#### **Citation and commencement**

1. These Regulations are the Prevention of Pollution of the Sea (Air) (Amendment No. 2) Regulations 2022 and come into operation on 1 April 2022.

#### **Amendment of First Schedule**

2. The First Schedule to the Prevention of Pollution of the Sea (Air) Regulations 2005 (G.N. No. S 134/2005) is amended —

- (a) by deleting the words “in regulations 3, 5, 6, 13, 15, 16, 18, 19, 20, 21, 22 and 22A of this Annex” in regulation 1;
- (b) by inserting, immediately after paragraph 51 of regulation 2, the following paragraphs:

“52 *Sulphur content of fuel oil* means the concentration of sulphur in a fuel oil, measured in % m/m as tested in accordance with a standard acceptable to the Organization.\*

53 *Low-flashpoint fuel* means gaseous or liquid fuel oil having a flashpoint lower than otherwise permitted under paragraph 2.1.1 of regulation 4 of chapter II-2 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended.

54 *MARPOL delivered sample* means the sample of fuel oil delivered in accordance with regulation 18.8.1 of this Annex.

55 *In-use sample* means a sample of fuel oil in use on a ship.

56 *Onboard sample* means a sample of fuel oil intended to be used or carried for use on board that ship.

\* Refer to ISO 8754:2003 Petroleum products — Determination of sulphur content — Energy-dispersive X-ray fluorescence spectrometry.”;

(c) by inserting, immediately after paragraph 7 of regulation 14, the following sub-headings and paragraphs:

“In-use and onboard fuel oil sampling and testing

8 If the competent authority of a Party requires the in-use or onboard sample to be analysed, it shall be done in accordance with the verification procedure set forth in Appendix VI to this Annex to determine whether the fuel oil being used or carried for use on board meets the requirements in paragraph 1 or paragraph 4 of this regulation. The in-use sample shall be drawn taking into account the guidelines developed by the Organization.\* The onboard sample shall be drawn taking into account the guidelines developed by the Organization.†

9 The sample shall be sealed by the representative of the competent authority with a unique means of identification installed in the presence of the ship’s representative. The ship shall be given the option of retaining a duplicate sample.

In-use fuel oil sampling point

10 For each ship subject to regulations 5 and 6 of this Annex, sampling point(s) shall be fitted or designated for the purpose of taking representative samples of the fuel oil being used on board the ship taking into account the guidelines developed by the Organization.\*

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11 For a ship constructed before 1 April 2022, the sampling point(s) referred to in paragraph 10 shall be fitted or designated not later than the first renewal survey as identified in regulation 5.1.2 of this Annex on or after 1 April 2023.

12 The requirements of paragraphs 10 and 11 above are not applicable to a fuel oil service system for a low-flashpoint fuel for combustion purposes for propulsion or operation on board the ship.

13 The competent authority of a Party shall, as appropriate, utilise the sampling point(s) which is(are) fitted or designated for the purpose of taking representative sample(s) of the fuel oil being used on board in order to verify that the fuel oil complies with this regulation. Taking fuel oil samples by the competent authority of the Party shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

\* Refer to the 2019 Guidelines for on board sampling for the verification of the sulphur content of the fuel oil used on board ships (MEPC.1/Circ.864/Rev.1).

† Refer to the 2020 Guidelines for on board sampling of fuel oil intended to be used or carried for use on board a ship (MEPC.1/Circ.889).”;

(d) by deleting paragraph 8.2 of regulation 18 and substituting the following paragraph:

“8.2 If a Party requires the representative sample to be analysed, it shall be done in accordance with the verification procedure set forth in Appendix VI to this Annex to determine whether the fuel oil meets the requirements of this Annex.”;

(e) by inserting, immediately after paragraph 2 of regulation 20, the following paragraph:

“3 For each ship subject to regulation 21 of this Annex, the Administration or any organization duly authorized by it shall report to the Organization the required and attained EEDI values and relevant information, taking into account the guidelines developed by the Organization,\* via electronic communication:

- .1 within 7 months of completing the survey required under regulation 5.4 of this Annex; or
- .2 within 7 months following 1 April 2022 for a ship delivered prior to 1 April 2022.

\* Refer to the *2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships* (resolution MEPC.308(73)), as amended by the Organization.”;

(f) by deleting Table 1 (including the footnotes) of regulation 21 and substituting the following table and footnotes:

“Table 1. Reduction factors (in percentage) for the EEDI relative to the EEDI reference line

<i>Ship Type</i>	<i>Size</i>	<i>Phase 0</i>	<i>Phase 1</i>	<i>Phase 2</i>	<i>Phase 2</i>	<i>Phase 3</i>	<i>Phase 3</i>
		<i>1 Jan 2013 – 31 Dec 2014</i>	<i>1 Jan 2015 – 31 Dec 2019</i>	<i>1 Jan 2020 – 31 Mar 2022</i>	<i>1 Jan 2020 – 31 Dec 2024</i>	<i>1 Apr 2022 and onwards</i>	<i>1 Jan 2025 and onwards</i>
Bulk carrier	20,000 DWT and above	0	10		20		30
	10,000 and above but less than 20,000 DWT	n/a	0-10*		0-20*		0-30*

Gas carrier	15,000 DWT and above	0	10	20		30	
	10,000 and above but less than 15,000 DWT	0	10		20		30
	2,000 and above but less than 10,000 DWT	n/a	0-10*		0-20*		0-30*
Tanker	20,000 DWT and above	0	10		20		30
	4,000 and above but less than 20,000 DWT	n/a	0-10*		0-20*		0-30*
Container ship	200,000 DWT and above	0	10	20		50	
	120,000 and above but less than 200,000 DWT	0	10	20		45	
	80,000 and above but less than 120,000 DWT	0	10	20		40	

	40,000 and above but less than 80,000 DWT	0	10	20		35	
	15,000 and above but less than 40,000 DWT	0	10	20		30	
	10,000 and above but less than 15,000 DWT	n/a	0-10*	0-20*		15-30*	
General cargo ship	15,000 DWT and above	0	10	15		30	
	3,000 and above but less than 15,000 DWT	n/a	0-10*	0-15*		0-30*	
Refrigerated cargo carrier	5,000 DWT and above	0	10		15		30
	3,000 and above but less than 5,000 DWT	n/a	0-10*		0-15*		0-30*
Combination carrier	20,000 DWT and above	0	10		20		30
	4,000 and above but less than 20,000 DWT	n/a	0-10*		0-20*		0-30*

LNG carrier***	10,000 DWT and above	n/a	10**	20		30	
Ro-ro cargo ship (vehicle carrier)***	10,000 DWT and above	n/a	5**		15		30
Ro-ro cargo ship***	2,000 DWT and above	n/a	5**		20		30
	1,000 and above but less than 2,000 DWT	n/a	0-5*, **		0-20*		0-30*
Ro-ro passenger ship***	1,000 DWT and above	n/a	5**		20		30
	250 and above but less than 1,000 DWT	n/a	0-5*, **		0-20*		0-30*
Cruise passenger ship*** having non-conventional propulsion	85,000 GT and above	n/a	5**	20		30	
	25,000 and above but less than 85,000 GT	n/a	0-5*, **	0-20*		0-30*	

\* Reduction factor to be linearly interpolated between the two values dependent upon ship size. The lower value of the reduction factor is to be applied to the smaller ship size.

\*\* Phase 1 commences for those ships on 1 September 2015.

\*\*\* Reduction factor applies to those ships delivered on or after 1 September 2019, as defined in paragraph 43 of regulation 2.

Note: n/a means that no required EEDI applies.”;

(g) by deleting the item relating to 2.25 Bulk carrier in Table 2 of regulation 21 and substituting the following item:

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2.25 Bulk carrier	961.79	DWT of the ship where DWT ≤ 279,000  279,000 where DWT > 279,000	0.477
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(h) by inserting, immediately after sub-paragraph 2.3.3 of SUPPLEMENT TO INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE (IAPP CERTIFICATE) in Appendix I, the following sub-paragraphs:

“2.3.4 The ship is fitted with designated sampling point(s) in accordance with regulation 14.10 or 14.11.....□

2.3.5 In accordance with regulation 14.12, the requirement for fitting or designating sampling point(s) in accordance with regulation 14.10 or 14.11 is not applicable for a fuel oil service system for a low-flashpoint fuel for combustion purposes for propulsion or operation on board the ship.....□”; and

(i) by deleting Appendix VI and substituting the following Appendix:

“APPENDIX VI  
VERIFICATION PROCEDURES  
FOR A MARPOL ANNEX VI FUEL OIL SAMPLE  
(Regulation 14.8 or Regulation 18.8.2)

The following relevant verification procedure shall be used to determine whether the fuel oil delivered to, in use or carried for use on board a ship has met the applicable sulphur limit of regulation 14 of this Annex.

This Appendix refers to the following representative MARPOL Annex VI fuel oil samples:

Part 1 — sample of fuel oil delivered\* in accordance with regulation 18.8.1, hereafter referred to as the “MARPOL delivered sample” as defined in regulation 2.54.



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Part 2 — sample of fuel oil in use,\*\* intended to be used or carried for use on board in accordance with regulation 14.8, hereafter referred to as the “in-use sample” as defined in regulation 2.55 and “onboard sample”† as defined in regulation 2.56.

\* Samples taken in accordance with the 2009 Guidelines for the sampling of fuel oil for determination of compliance with the revised MARPOL Annex VI (resolution MEPC.182(59)).

\*\* Samples taken in accordance with the 2019 Guidelines for on board sampling for the verification of the sulphur content of the fuel oil used on board ships (MEPC.1/Circ.864/Rev.1).

† Refer to the 2020 Guidelines for on board sampling of fuel oil intended to be used or carried for use on board a ship (MEPC.1/Circ.889).

## **Part 1 — MARPOL delivered sample**

### *1 General Requirements*

- 1.1 The representative sample of the fuel oil, which is required by regulation 18.8.1 (the MARPOL delivered sample) shall be used to verify the sulphur content of the fuel oil delivered to a ship.
- 1.2 A Party, through its competent authority, shall manage the verification procedure.
- 1.3 A laboratory undertaking the sulphur testing procedure given in this Appendix shall have valid accreditation\* in respect of the test method to be used.

\* The laboratory is to be accredited to ISO/IEC 17025:2017 or an equivalent standard for the performance of the given sulphur content test ISO 8754:2003.

### *2 Verification Procedure Part 1*

- 2.1 The MARPOL delivered sample shall be conveyed by the competent authority to the laboratory.
- 2.2 The laboratory shall:
  - .1 record the details of the seal number and the sample label on the test record;

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- .2 record the condition of the seal of the sample as received on the test record; and
    - .3 reject any sample where the seal has been broken prior to receipt and record that rejection on the test record.
  - 2.3 If the seal of the sample as received has not been broken, the laboratory shall proceed with the verification procedure and shall:
    - .1 unseal the sample;
    - .2 ensure that the sample is thoroughly homogenised;
    - .3 draw two subsamples from the sample; and
    - .4 reseal the sample and record the new reseal details on the test record.
  - 2.4 The two subsamples shall be tested in succession, in accordance with the specified test method referred to in regulation 2.52 of this Annex. For the purposes of this Part 1 verification procedure, the results of the test analysis shall be referred to as '1A' and '1B':
    - .1 results '1A' and '1B' shall be recorded on the test record in accordance with the requirements of the test method; and
    - .2 if the results of '1A' and '1B' are within the repeatability (r)\* of the test method, the results shall be considered valid; or
    - .3 if the results '1A' and '1B' are not within the repeatability (r) of the test method, both results shall be rejected and two new subsamples shall be taken by the laboratory and tested. The sample bottle shall be resealed in accordance with paragraph 2.3.4 after the new subsamples have been taken.

.4 in the case of two failures to achieve repeatability between '1A' and '1B', the cause of that failure shall be investigated by the laboratory and resolved before further testing of the sample is undertaken. On resolution of that repeatability issue, two new subsamples shall be taken in accordance with paragraph 2.3. The sample shall be resealed in accordance with paragraph 2.3.4 after the new subsamples have been taken.

\* Repeatability ( $r$ ) calculation in accordance with ISO 4259:2017-2 and as defined in the test method used.

2.5 If the test results of '1A' and '1B' are valid, an average of these two results shall be calculated. The average value shall be referred to as 'X' and shall be recorded on the test record:

- .1 if the result 'X' is equal to or less than the applicable limit required by regulation 14, the fuel oil shall be considered to have met the requirement; or
- .2 if the result 'X' is greater than the applicable limit required by regulation 14, the fuel oil shall be considered to have not met the requirement.

Table 1: Summary of Part 1 MARPOL delivered sample procedure

On the basis of the test method referred to in regulation 2.52 of this Annex		
Applicable limit % m/m: V	Result 2.5.1: $X \leq V$	Result 2.5.2: $X > V$
0.10	Met the requirement	Not met the requirement
0.50		
	Result 'X' reported to 2 decimal places	

2.6 The final results obtained from this verification procedure shall be evaluated by the competent authority.

- 2.7 The laboratory shall provide a copy of the test record to the competent authority managing the verification procedure.

## **Part 2 — In-use and onboard samples**

### *3 General Requirements*

- 3.1 The in-use or onboard sample, as appropriate, shall be used to verify the sulphur content of the fuel oil as represented by that sample of fuel oil at the point of sampling.
- 3.2 A Party, through its competent authority, shall manage the verification procedure.
- 3.3 A laboratory undertaking the sulphur testing procedure given in this Appendix shall have valid accreditation\* in respect of the test method to be used.

\* The laboratory is to be accredited to ISO/IEC 17025:2017 or an equivalent standard for the performance of the given sulphur content test ISO 8754:2003.

### *4 Verification Procedure Part 2*

- 4.1 The in-use or onboard sample shall be conveyed by the competent authority to the laboratory.
- 4.2 The laboratory shall:
- .1 record the details of the seal number and the sample label on the test record;
  - .2 record the condition of the seal of the sample as received on the test record; and
  - .3 reject any sample where the seal has been broken prior to receipt and record that rejection on the test record.
- 4.3 If the seal of the sample as received has not been broken, the laboratory shall proceed with the verification procedure and shall:
- .1 unseal the sample;
  - .2 ensure that the sample is thoroughly homogenised;
  - .3 draw two subsamples from the sample; and

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- .4 reseal the sample and record the new reseal details on the test record.
- 4.4 The two subsamples shall be tested in succession, in accordance with the specified test method referred to in regulation 2.52 of this Annex. For the purposes of this Part 2 verification procedure, the results obtained shall be referred to as '2A' and '2B':
- .1 results '2A' and '2B' shall be recorded on the test record in accordance with requirements of the test method; and
  - .2 if the results of '2A' and '2B' are within the repeatability (r)\* of the test method, the results shall be considered valid; or
  - .3 if the results of '2A' and '2B' are not within the repeatability (r) of the test method, both results shall be rejected and two new subsamples shall be taken by the laboratory and tested. The sample bottle shall be resealed in accordance with paragraph 4.3.4 after the new subsamples have been taken; and
  - .4 in the case of two failures to achieve repeatability between '2A' and '2B', the cause of that failure shall be investigated by the laboratory and resolved before further testing of the sample is undertaken. On resolution of that repeatability issue, two new subsamples shall be taken in accordance with paragraph 4.3. The sample shall be resealed in accordance with paragraph 4.3.4 after the new subsamples have been taken.
- \* Repeatability (r) calculation in accordance with ISO 4259:2017-2 and as defined in the test method used.
- 4.5 If the test results of '2A' and '2B' are valid, an average of these two results shall be calculated. That average value shall be referred to as 'Z' and shall be recorded on the test record:
- .1 if 'Z' is equal to or less than the applicable limit required by regulation 14, the sulphur content of the fuel oil as represented by the tested sample shall be considered to have met the requirement;

- .2 if 'Z' is greater than the applicable limit required by regulation 14 but less than or equal to that applicable limit + 0.59R (where R is the reproducibility of the test method),\* the sulphur content of the fuel oil as represented by the tested sample shall be considered to have met the requirement; or
- .3 if 'Z' is greater than the applicable limit required by regulation 14 + 0.59R, the sulphur content of the fuel oil as represented by the tested sample shall be considered to have not met the requirement.

\* Reproducibility (R) calculation in accordance with ISO 4259:2017-2 and as defined in the test method used.

Table 2: Summary of in-use or onboard sample procedure\*

On the basis of the test method referred to in regulation 2.52 of this Annex				
Applicable limit % m/m: V	Test margin value: W	Result 4.5.1: $Z \leq V$	Result 4.5.2: $V < Z \leq W$	Result 4.5.3: $Z > W$
0.10	0.11	Met the requirement	Met the requirement	Not met the requirement
0.50	0.53			
Result 'Z' reported to 2 decimal places				

\* Results of testing undertaken by the Company or other entities are outside the MARPOL process and hence should be considered within the approach given by ISO 4259:2017-2 regarding recipient drawn samples.

- 4.6 The final results obtained from this verification procedure shall be evaluated by the competent authority.

4.7 The laboratory shall provide a copy of the test record to the competent authority managing the verification procedure.”.

*[G.N. Nos. S 620/2006; S 331/2010; S 398/2011;  
S 21/2012; S 661/2012; S 467/2013; S 376/2015;  
S 799/2015; S 78/2016; S 492/2017; S 113/2018;  
S 904/2018; S 563/2019; S 144/2020; S 804/2020;  
S 117/2022]*

Made on 24 March 2022.

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[MPA 46/06.O11/CO; AG/LEGIS/SL/243/2020/4 Vol. 1]