

4 ALBERT EMBANKMENT
LONDON SE1 7SR
Telephone: +44 (0)20 7735 7611 Fax: +44 (0)20 7587 3210

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**EARLY APPLICATION OF THE VERIFICATION PROCEDURES FOR A
MARPOL ANNEX VI FUEL OIL SAMPLE
(REGULATION 18.8.2 OR REGULATION 14.8)**

1 The Marine Environment Protection Committee, at its seventy-fourth session (13 to 17 May 2019), approved amendments to appendix VI of MARPOL Annex VI on Verification procedures for a MARPOL Annex VI fuel oil sample (regulation 18.8.2 or regulation 14.8), providing an agreed method to determine whether the fuel oil delivered to, in-use or carried for use on board a ship is in accordance with the applicable sulphur limit of regulation 14 of MARPOL Annex VI.

2 To ensure a consistent approach to verifying the sulphur limit of the fuel oil delivered to, in-use or carried for use on board a ship until the entry into force of the approved amendments, Member Governments are invited to apply the approved amendments to appendix VI of MARPOL Annex VI related to the verification procedure for a MARPOL Annex VI fuel oil sample (regulation 18.8.2 or regulation 14.8), as contained in the annex to this Circular, in advance of their entry into force.

3 Member Governments are invited to bring the annexed Guidance to the attention of Administrations, port State control authorities, industry, fuel oil suppliers, relevant shipping organizations, shipping companies and other stakeholders concerned.

4 This circular expires on entry into force of the amendments.

ANNEX

THE APPROVED AMENDMENTS TO THE VERIFICATION PROCEDURES FOR A MARPOL ANNEX VI FUEL OIL SAMPLE (REGULATION 18.8.2 OR REGULATION 14.8)

Regulation 2

Definitions

1 New paragraphs 52, 53, 54, 55 and 56 are added as follows:

"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.¹

53 *Low-flashpoint fuel* means gaseous or liquid fuel oil having a flashpoint lower than otherwise permitted under paragraph 2.1.1 of SOLAS regulation II-2/4.

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

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

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

Regulation 14

Sulphur oxides (SO_x) and particulate matter

2 "In-use and on board fuel oil sampling and testing" and a new paragraph 8 and 9 are added at the end of regulation 14 as follows:

"In-use and on board fuel oil sampling and testing

8 If the competent authority of a Party requires the in-use or on board fuel oil sample to be analysed, it shall be done in accordance with the verification procedure set forth in appendix VI 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 fuel oil sample shall be drawn taking into account the guidelines developed by the Organization.² The on board fuel oil sample shall be drawn taking into account the guidelines to be developed by the Organization.³

¹ Refer to ISO 8754: 2003 Petroleum products – Determination of sulfur content – Energy-dispersive X-ray fluorescence spectrometry."

² 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)."

³ Refer to the Guidelines to be developed prior to entry into force of the provision."

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."

3 "In-use fuel oil sampling point" and new paragraphs 10, 11, 12 and 13 are added at the end of regulation 14 as follows:

"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 guidelines developed by the Organization.²

11 For a ship constructed before entry into force of these requirements, the sampling point(s) referred to in paragraph 10 shall be fitted or designated no later than the first renewal survey that occurs 12 months or more after the entry into force of this regulation.

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, utilize the sampling point(s) which is fitted or designated for the purpose of taking representative sample(s) of the fuel oil being used on board in order to verify 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."

Regulation 18

Fuel oil availability and quality

4 Paragraph 8.2 is replaced with the following:

"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 determine whether the fuel oil meets the requirements of this Annex."

Appendix VI

Fuel verification procedure for MARPOL Annex VI fuel oil samples (regulation 18.8.2)

5 Appendix VI is replaced with the following:

"Verification procedures for a MARPOL Annex VI fuel oil sample (regulation 18.8.2 or regulation 14.8)

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 delivered⁴ in accordance with regulation 18.8.1, hereafter referred to as the "MARPOL delivered sample" as defined in regulation 2.54.

Part 2 – sample of fuel oil in use,⁵ 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 "on board sample"⁶ as defined in regulation 2.56.

Part 1 – MARPOL delivered fuel oil sample

1 General Requirements

1.1 The representative fuel oil sample, 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 accreditation⁷ in respect of the test method to be used.

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;
- .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 homogenized;

⁴ 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))."

⁵ Samples taken in accordance with the *2019 Guidelines for onboard sampling for the verification of the sulphur content of the fuel oil used on board ships* (MEPC.1/Circ.864/Rev.1)."

⁶ Refer to the Guidelines to be developed by the Organization prior to entry into force of the provision."

⁷ 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."

- .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)⁸ 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.

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 fuel oil 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	

⁸ Repeatability (r) calculation in accordance with ISO 4259:2017-2 and as defined in the test method used."

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 fuel oil samples

3 General Requirements

3.1 The in-use or onboard fuel oil 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 accreditation⁹ in respect of the test method to be used.

4 Verification Procedure Part 2

4.1 The in-use or onboard fuel oil 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 homogenized;
- .3 draw two subsamples from the sample; and
- .4 reseal the sample and record the new reseal details on the test record.

⁹ 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."

4.4 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)¹⁰ 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.
- .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.

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 reproducibility¹¹ 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.

$$0.5\% + 0.59 \times 0.5 = 0.53\%$$

¹⁰ Repeatability (r) calculation in accordance with ISO 4259:2017-2 and as defined in the test method used."

¹¹ Reproducibility (R) calculation in accordance with ISO 4259:2017-2 and as defined in the test method."

Table 2: Summary of in-use or onboard fuel oil sample procedure¹²

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				

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."

¹² "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."