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IMO 2020 SULPHUR LIMIT

A Guide For Ships Calling To Port Of Singapore



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Part of:



01

Background

02

IMO REGULATIONS
AND GUIDELINES

04

GUIDE TO SHIPS
CALLING TO PORT OF
SINGAPORE

05

FUEL OIL AVAILABILITY

06

RECEPTION FACILITIES
FOR HYBRID/CLOSED-
LOOP SCRUBBER
RESIDUE

06

SUPPLY OF NEUTRALISING
AGENTS FOR HYBRID/
CLOSED-LOOP SCRUBBERS

07

PROHIBITION OF
OPEN-LOOP SCRUBBER
WASHWATER DISCHARGE

08

ENFORCEMENT

BACKGROUND

ON IMO 2020 SULPHUR LIMIT

On October 27, 2016 the International Maritime Organisation (IMO) agreed that the sulphur content of fuel oils used on board ships shall not exceed 0.50%*m/m* from 1 January, 2020. This Sulphur Limit was made mandatory under Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL).

IMO is a specialised agency of the United Nations, responsible for the safety and security of shipping and the prevention of marine pollution by ships. MARPOL, developed by IMO, is one of the most important international marine environmental conventions, which aims to preserve the marine environment by minimising pollution of the oceans and seas.

REFERENCES

TECHNICAL UPDATE 13-2014 / NOVEMBER - PREPARING FOR
LOW SULPHUR OPERATION

DNVGL

MARINE FUEL OIL ADVISORY 2018

ABS

PREVENTING LOSS OF PROPULSION AFTER FUEL SWITCH TO
LOW SULFUR DISTILLATE FUEL OIL

California Air Resources Board (ARB)

RESOLUTION MEPC.259(68)- 2015 GUIDELINES
FOR EXHAUST GAS CLEANING SYSTEMS

IMO

ENVIRONMENTAL PUBLIC HEALTH (TOXIC
INDUSTRIAL WASTE) REGULATIONS

Singapore National Environment Agency (NEA)

PREVENTION OF POLLUTION OF THE SEA ACT
(CHAPTER 243)

Maritime and Port Authority of Singapore (MPA)

PREVENTION OF POLLUTION OF THE SEA
(AIR) REGULATIONS

MPA

IMO REGULATIONS AND GUIDELINES

MARPOL AMENDMENTS

Besides the 0.50%*m/m* sulphur limit of fuel oils used on board ships, IMO agreed to impose a carriage ban on non-compliant fuel (i.e. fuel with sulphur content of more than 0.50%*m/m*) from March 1, 2020.

*Regulation 14.1 of MARPOL Annex VI: "The sulphur content of fuel oil used or carried for use on board a ship shall not exceed 0.50%*m/m*."*

The carriage ban is intended to facilitate the enforcement of the sulphur limit by preventing ships from burning non-compliant fuel while at sea. This ban will not apply to:

- i) ships that use abatement technology such as scrubbers as equivalent means of compliance;
- ii) ships conducting tests for abatement technology; and
- iii) ships reporting non-availability of fuel.

Ships are still permitted to carry non-compliant fuel as cargo.

GUIDELINES FOR PORT STATE CONTROL (PSC)

IMO is currently developing amendments to the 2009 Guidelines for port state control under the revised MARPOL Annex VI (resolution MEPC.181(59)). These amendments are expected to be completed by May 2019.

The draft amendments essentially stipulate that the Port State should conduct initial inspections based on documents and other possible materials, including remote sensing and portable devices. Given "clear grounds" to conduct a more detailed inspection, the Port State may conduct sample analysis and other detailed inspections to verify compliance to the regulation, as appropriate.

GUIDELINES FOR EXHAUST GAS CLEANING SYSTEMS (EGCS)

The acceptance of exhaust gas cleaning systems (scrubbers) as an equivalent arrangement under Regulation 4 of MARPOL Annex VI for compliance with the sulphur limit is currently based on the criteria stipulated in the 2015 Guidelines for Exhaust Gas Cleaning Systems (resolution MEPC.259(68)). The 2015 Guidelines sets limit on four parameters of the washwater discharge, namely pH, polyaromatic hydrocarbons (PAHs), turbidity, and suspended particle matter and nitrates. The 2015 Guidelines is currently under review at IMO and is expected to be completed by May 2019.

GUIDELINES FOR FUEL OIL SAMPLING POINTS

In order to establish an agreed method for fuel oil sampling so as to enable effective control and enforcement of fuel oil being used on board ships, IMO has developed the Guidelines for on board sampling for the verification of the sulphur content of the fuel oil used on board ships (MEPC.1/Circ.864).

IMO is currently also developing amendments to Regulation 14 of MARPOL Annex VI to require a designated sampling point for fuel oil. Decision on a designated sampling point is expected to be reached by May 2019. It is expected that the amendments will require ships to have a "designated" sampling point. It is up to the ship to decide on the location to be designated as the sampling point. The number and location of designated fuel oil sampling points are not required to be approved by the flag Administration.

GUIDELINES FOR FUEL SUPPLIERS

IMO is currently developing a best practice guidance for suppliers for assuring the quality of bunkers delivered to ships.

This guidance covers best practices such as quality control during production of bunkers, quality control in the supply chain, cargo transport, storage and transfer, delivery to ship (bunkering operations), representative sampling, testing and interpretation of test results, documentation, contracting, and dispute resolution. The Guidelines is expected to be completed by May 2019.

GUIDELINES FOR FUEL PURCHASERS

IMO has developed the Guidance on best practice for fuel oil purchasers/users for assuring the quality of fuel oil used on board ships (MEPC.1/Circ.875).

This guidance covers the following best practices:

- i) choice of fuel oil supplier;
- ii) contracting;
- iii) documentation;
- iii) fuel oil receiving on board, sampling and testing; and
- iv) dispute resolution.

For more information on the guidelines, please scan or click on the QR codes below



Exhaust Gas Cleaning Systems



Fuel Oil Sampling Points



Fuel Purchasers

GUIDE TO SHIPS CALLING TO PORT OF SINGAPORE



SHIP IMPLEMENTATION PLAN

IMO has developed the Guidance on the Development of a Ship Implementation Plan (SIP) for the consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI (MEPC.1/Circ.878). This MEPC Circular consists of a guidance on developing the non-mandatory SIP, which also includes a sample format for the implementation plan, potential impacts of low sulphur fuel oil on machinery systems and guidance for fuel oil tank cleaning.

It should be emphasized that the SIP is not mandatory. However, the SIP can be utilised by ship operators to help them plan and demonstrate

the actions taken by their ships to prepare for compliance with the 0.50% m/m sulphur limit come January 1, 2020. Preparatory measures such as modifications to fuel oil systems, fuel oil capacity and segregation capability, tank cleaning and bunkering plans, complemented with the record of implementation in the lead-up to the compliance date would serve to facilitate the documentation check by inspectors.

CHANGEOVER TO COMPLIANT FUEL

Ships that use compliant fuel are required to changeover from high sulphur fuel oil (HSFO) to compliant fuel oil prior to January 1, 2020.



FUEL OIL AVAILABILITY

COMPLIANT FUEL WILL BE AVAILABLE IN SINGAPORE COME 2020

As the world's largest bunkering port, Singapore continuously strives to ensure that we remain a trusted and reliable bunkering hub. MPA is working closely with our licensed bunker suppliers to ensure the availability of compliant fuel. Come January 1, 2020, the range of fuel oils that will be available in Singapore are as follows:

MGO	LSFO <i>Low sulphur fuel oil (includes blended products distillates or residual fuel oil-based)</i>
LNG	HSFO <i>(for ships fitted with scrubbers)</i>

For ships that continue to use HSFO in combination with open-loop scrubber, they are required to changeover from HSFO to compliant fuel oil whenever they enter ports that prohibit discharge of washwater from open-loop scrubber.

Ships calling port of Singapore and intending to changeover to compliant fuel are strongly encouraged to follow their own SIP and do so as early as practicable, taking into consideration traffic density, manoeuvring space and engine manufacturer's guidelines. This will help to identify any issues early and allows time for rectification before the ships enter into the busy waterways.

For more information on the guidelines, please scan or click on the QR code on the right



List of licensed bunker suppliers in the Port of Singapore



RECEPTION FACILITIES FOR HYBRID/ CLOSED-LOOP SCRUBBER RESIDUE

Regulation 17.2 of MARPOL Annex VI states that each Party to the Convention undertakes to ensure the provision of facilities adequate to meet the needs of ships using its ports, terminals or repair ports for the reception of exhaust gas cleaning residues from a scrubber, without causing undue delay to ships. The exhaust gas cleaning residues are produced as a result of the use of hybrid/closed-loop scrubber by ships to comply with the sulphur limit.

As a Party to the Convention, Singapore will provide reception facilities to receive the residues generated from the operation of hybrid/closed-loop scrubbers.

DISPOSABLE OF EXHAUST GAS CLEANING RESIDUE IN SINGAPORE

Under Singapore's Environmental Public Health (Toxic Industrial Waste) Regulations, exhaust gas cleaning residues generated by ships are classified as toxic industrial waste. Ships that wish to dispose exhaust gas cleaning residues in Singapore are required to dispose the residues to toxic industrial waste collectors licensed under the Environmental Public Health (Toxic Industrial Waste) Regulations.



When a ship is at berth, the residues can be offloaded in packaged form or in intermediate bulk container tanks directly to trucks operated by licensed toxic industrial waste collectors.

When a ship is at the anchorage, the residues can be offloaded in packaged form or in intermediate bulk container tanks to MPA-licensed craft to be brought ashore and transferred to the trucks operated by licensed toxic industrial waste collectors.

For more information on the guidelines, please scan or click on the QR code on the right

List of licensed toxic waste collectors



SUPPLY OF NEUTRALISING AGENTS FOR HYBRID/CLOSED-LOOP SCRUBBERS

Exhaust gas cleaning systems which operate on the closed-loop mode rely on the dosage of chemicals into its washwater medium so as to provide the alkalinity required to neutralise the sulphur oxides in the exhaust gas being

"scrubbed". The neutralising agents/chemicals used are typically Sodium Hydroxide/Caustic Soda (NaOH), Sodium Carbonate (Na₂CO₃) or Magnesium Oxide (MgO).



It is expected that come January 1, 2020, ships fitted with hybrid/closed-loop scrubbers would need to receive supplies of these neutralising agents at Singapore.

Supply of these chemicals at shipyard, berth and terminals are permitted as ship stores with prior approval of the terminal operator. Supply at anchorage in packaged form is permitted as ship stores.

Ship masters are advised to liaise with their designated local agents for the above.

PROHIBITION OF OPEN-LOOP SCRUBBER WASHWATER DISCHARGE

PROHIBITION ON DISCHARGE OF WASHWATER FROM OPEN-LOOP SCRUBBERS IN PORT OF SINGAPORE

The discharge of washwater from open-loop scrubbers is prohibited in Port of Singapore. This is to maintain Singapore Port's marine water quality standard.

COMPLIANCE OPTION IN PORT

While in the Port of Singapore, vessels fitted with hybrid type of scrubbers should switch to the closed-loop mode of operation. As for vessels fitted with open-loop scrubbers, they would need to switch over to compliant fuel instead.

It would be advisable to carry out the switch to either closed-loop mode or to compliant fuel well in advance of the vessel's arrival at the port waters, so that any operational issues can be

identified and dealt with before the ship starts manoeuvring in heavy traffic.

Please refer to section on Ship Implementation Plan above in page 4 of this guide.



ENFORCEMENT

FUEL OIL NON-AVAILABILITY REPORT FORM

From January 1, 2020, a ship which has to procure non-compliant fuel due to the unavailability of compliant fuel would need to complete and submit a fuel oil non-availability report form (FONAR) to the ship's flag Administration and her next port of call.

The intent of FONAR is to report non-availability of compliant fuel in the last port of call. It should not be misconstrued as an exemption from compliance with the sulphur limit.

The FONAR is structured to serve both purposes: SOx Emission Control Areas (SECA) compliant fuel oil non-availability and 0.50%*m/m* fuel oil non-availability elsewhere. The contents of FONAR cover the following:

Particulars of ship
Description of ship's voyage plan and information on entering a SECA (if applicable)
Evidence of attempts to purchase compliant fuel oil
Plans to obtain compliant fuel oil
Special circumstances
Company information

The report shall be sent as soon as it is determined that the ship/operator will be unable to procure compliant fuel and preferably before the ship leaves the port/terminal where

compliant fuel cannot be obtained. A copy of the FONAR should be kept on board for inspection for at least 12 months.

Ships calling into Singapore and submitting a FONAR would need to declare so in the Electronic Pre-Arrival Notice (EPAN) or the Electronic Notification of Arrival (ENOA) (see below section on EPAN/ENOA). Such ships would be required to bunker compliant fuel in Singapore. The remaining non-compliant fuel oil should be disposed to the appropriate reception facilities.

ENFORCEMENT FOR SHIPS CALLING SINGAPORE

Come January 1, 2020, ships that call Singapore may be subjected to verification on compliance with the sulphur limit, including the carriage ban, during Port State Control (PSC) and Flag State Control (FSC) inspections.

Ships are selected for PSC/FSC inspections based on a risk matrix, which takes into account whether a FONAR has been submitted.

The ship inspection will normally be carried out in 3 steps, starting from Step 1 and, should there be clear grounds, escalating to Steps 2 and 3.

STEP 1	Document check
STEP 2	Indicative fuel oil analysis (portable fuel oil sulphur content measurement tool)
STEP 3	Detailed fuel oil analysis (sampling for laboratory test)

For more information on the guidelines, please scan or click on the QR codes below



Prevention of Pollution of the Sea (Air) Regulations



Electronic Pre-Arrival Notification (EPAN)



Electronic Notice of Arrival (ENOA)

Legislations have been incorporated in the Prevention of Pollution of the Sea (Air) Regulations for ships found in violation of the sulphur limits.

PRE-ARRIVAL

ELECTRONIC PRE-ARRIVAL NOTIFICATION (EPAN) / ELECTRONIC NOTICE OF ARRIVAL (ENOA)

With effect from January 1, 2020, owners, agents and masters of;

A	Passenger ships including high-speed passenger craft,
B	Cargo ships, including high-speed craft, of 500 GT and above, and
C	Mobile offshore units, including mobile offshore drilling units,

shall complete the revised EPAN form incorporating the additional information as appended below, and submit it to the MPA Security Department via facsimile [(+65) 6221 3036] or email isps@mpa.gov.sg at least 24 hours before the ship's arrival in Singapore. The ship's agent based in Singapore may submit the EPAN through MPA Marinet. A ship coming from a nearby port, with less than 24 hours steaming time to Singapore, shall immediately on departure from such port complete this form and email to isps@mpa.gov.sg before arrival into Singapore. Vessels which are not required to declare EPAN as above will make the declaration in the ENOA to noa@mpa.gov.sg

Relevant section of the EPAN / ENOA on sulphur limit has been extracted for ready reference.

SULPHUR LIMIT

Please specify the method for compliance with Regulation 14 of MARPOL Annex VI with regard to fuel oil 0.50%*m/m* sulphur content limit throughout the vessel's stay in Singapore port waters.

- 1** Vessel will be using type-approved abatement/scrubber technology. Please specify the type of scrubbers installed.

OPEN-LOOP
(Note: Discharge of washwater from open-loop scrubbers is prohibited in Port of Singapore. Vessel shall use compliant fuel while in port.)

VESSEL HAS ENOUGH COMPLIANT FUEL ONBOARD THROUGHOUT THE VESSEL'S STAY IN SINGAPORE YES NO

CLOSED-LOOP

HYBRID TYPE
(Note: Scrubber should only be operated in closed-loop mode)
- 2** Vessel will be using compliant fuel. Please specify the type of compliant fuel being used.

VESSEL WILL BE USING LSFO
*(<0.50%*m/m* sulphur)*

VESSEL WILL BE USING MGO

VESSEL WILL BE USING LNG

VESSEL WILL BE USING OTHER CLEAN FUEL, PLEASE SPECIFY:

- 3** If none of the above, has the vessel completed the Fuel Oil Non-Availability Report (FONAR)?

YES NO