भारत सरकार / GOVERNMENT OF INDIA
पत्तन, पोत परिवहन और जलमार्ग मंत्रालय
MINISTRY OF PORTS, SHIPPING AND WATERWAYS
नौवहन महानिदेशालय, मुंबई
DIRECTORATE GENERAL OF SHIPPING,MUMBAI

Draft DGS (Engineering) Circular on Biofuel bunkering Guidelines.

Kindly send comments/inputs by 18/07/2025 to : mahesh.korade@gov.in and cc to : cs-dgs@nic.in

DGS (Engineering) Circular No. XX of 2025

File No.	Date:
Subject: Bio Fuel Bunkering Guidelines	
References:	(1) Merchant Shipping Notice No. 03 of 2014 (2) Merchant Shipping Notice No. 14 of 2023

1. Background

1.1 Increasing global emphasis on decarbonising the maritime sector has accelerated the adoption of biofuels as a sustainable alternative to conventional marine fuels. **Biofuels, particularly drop-in types such as Fatty Acid Methyl Esters (FAME), Fatty Acid Ethyl Esters (FAEE), Straight Vegetable Oils (SVO), Hydrotreated Vegetable Oils (HVO), Bio-FT-diesel (bio-Fischer-Tropsch diesel) and Biomass-to-Liquid (BTL) fuels,** offer considerable benefits by reducing lifecycle greenhouse gas emissions without necessitating major modifications to existing shipboard fuel systems. However, the absence of standardised national guidelines for biofuel bunkering operations in India introduces potential challenges related to safety, fuel quality assurance, environmental protection, and operational consistency.

1.2 This proposed circular aims to bridge these gaps by establishing a clear regulatory framework for permitting, operational protocols, safety management, documentation, environmental safeguards, training requirements, and enforcement mechanisms specific to biofuel bunkering. By implementing these guidelines, the Directorate seeks to ensure safe and reliable bunkering practices, promote the use of cleaner fuels in alignment with India's environmental commitments, and support the growth of sustainable maritime infrastructure.

1.3 These guidelines are crucial for facilitating the responsible uptake of biofuels in the shipping sector,

aligning Indian practices with international conventions, and contributing to a modern, resilient, and environmentally conscious maritime ecosystem.

1.4 The Directorate General of Shipping (DGS), recognizing the critical need to reduce greenhouse gas emissions and improve air quality in Indian coastal waters and port regions, issues this circular to enable and regulate biofuel bunkering activities in accordance with established global standards and best practices.

2. Scope

2.1 These guidelines apply to all biofuel bunkering operations within Indian ports, anchorages, offshore facilities, and territorial waters. They cover Indian and foreign-flagged vessels receiving biofuels, as well as all entities involved in the supply, handling, storage, and delivery of biofuels.

2.2 The guidelines are applicable to various modes of bunkering, including Tank Truck-to-Ship, Shore-to-Ship, and Ship-to-Ship transfers. Covered fuels include FAME, FAEE, SVO, HVO, Bio-FT-diesel (bio-Fischer-Tropsch diesel), and approved blends upto B30.

2.3 These provisions are to be read in conjunction with applicable IMO conventions, BIS fuel standards, and other national and international regulatory frameworks.

3. Current State in Bio Fuel Bunkering

3.1 The use of biofuels in shipping is at a nascent stage in India, with limited but growing interest among ship operators and bunker suppliers. Trials and pilot programs involving drop-in biofuels such as FAME and HVO have been conducted, demonstrating technical feasibility and emission reduction potential. However, large-scale adoption remains constrained due to the absence of a unified regulatory framework, fuel quality standardisation, and structured operational procedures for bunkering.

3.2 Globally, certain ports and operators have begun offering certified biofuels through established supply chains, often in blended forms such as B20 or B30. These practices have highlighted the need for compatibility checks, robust documentation, and enhanced safety protocols during bunkering operations.

3.3 In India, existing regulations under MS Notice 14 of 2023 provide broad guidance on the use of biofuels on ships, but there are currently no dedicated procedures or safety requirements governing bunkering activities. As such, a gap exists in ensuring uniformity in operational execution, personnel training, and environmental safeguards during biofuel transfers at Indian ports and terminals.

This circular seeks to address these issues by establishing a consistent framework to facilitate safe, transparent, and scalable biofuel bunkering operations across the Indian maritime ecosystem.

4. Objectives

The primary goal of these proposed guidelines is to establish a comprehensive and consistent regulatory framework for biofuel bunkering, promoting safety, environmental sustainability, and operational

integrity.

The specific objectives include:

(i) Providing clear guidance for implementing a regulatory mechanism for biofuel bunkering activities and infrastructure.
(ii) Establishing robust safety standards and operational protocols for the transfer, handling, and storage of biofuels.
(iii) Implementing effective environmental protection measures to mitigate risks to air and water quality during bunkering operations.
(iv) Developing workforce training and competency programs to ensure qualified personnel conduct bunkering operations.
(v) Creating enforcement and compliance mechanisms , establish an auditable documentation trail for all custody transfer processes within the biofuel supply chain, to ensure adherence to national and international regulations.
(vi) Promoting the adoption of sustainable marine fuels in line with India's decarbonisation goals and global climate commitments.
(vii) Stimulating investment in biofuel bunkering infrastructure, enabling economic growth and generating employment opportunities across the maritime sector.

By achieving these objectives, the guidelines aim to create a safe, predictable and enabling environment for the use of biofuels as marine fuel, supporting a more sustainable and economically resilient maritime industry.

5. Regulatory Framework

These guidelines, as detailed in Appendix-I, establish a structured and transparent regulatory framework for the approval and oversight of biofuel bunker suppliers. The regulatory process shall include the following key components:
(i) Submission of a comprehensive application to the Directorate, containing detailed information on the design of the supply infrastructure, operational and safety procedures, quality control mechanisms, and emergency response plans, in accordance with applicable international and national standards.
(ii) Authorisation granted to the Indian Register of Shipping (IRS) or other Recognised Organisations (ROs) to conduct interim, initial, annual and renewal audits of the facilities and associated systems.
(iii) Issuance of an Interim or Full-Term Biofuel Bunker Supplier Registration Certificate by the Directorate, subject to satisfactory audit findings and compliance with prescribed criteria.
(iv) Periodic inspections and compliance audits to ensure continued conformity with the conditions of approval, including adherence to safety, environmental, and documentation requirements.

This permitting and licensing regime is designed to ensure that all biofuel bunkering operations are undertaken in a safe, environmentally responsible, and technically compliant manner by qualified and authorised entities.

This Circular is issued with the approval of the competent authority.

sd/-

(Mahesh Korade)

Engineer & Ship Surveyor cum Dy.DG(Tech)

Encl. Appendix - 1

To

1. The Principal Officers, Mercantile Marine Department, Mumbai/Kolkata/Chennai/Kandla/Kochi.

2. The Surveyor-in-Charge, Mercantile Marine Department, Goa/Jamnagar/Port Blair/Visakhapatnam/Tuticorin/Noida/Haldia/Paradip/Mangalore

3. Indian National Shipowner's Association (INSA), Mumbai. 4. Foreign Owner and Ship-Managers Association (FOSMA)

5. The Maritime Association of Ship Owners, Ship Managers and Agents (MASSA)

6. Indian Coastal Conference Shipping Association (ICCSA), Mumbai

7. Institute of Marine Engineers (India)

8. Hindi cell

9. Computer cell

Copy to:

10. PS to DG (S)

11. PS to the Chief Surveyor with the Govt. of India

12. PS to the Nautical Advisor (i/c) to the Govt. of India

13. PS to the Chief Ship Surveyor (i/c)

14. DDG (SD)

15. DDG (Admin).

Appendix 1
DGS (Engg) Circular No. XX Of 2025
Bio Fuel Bunkering Guidelines

1. Introduction

This circular prescribes the safety, environmental and operational guidelines governing the conduct of biofuel bunkering operations within Indian waters. The scope includes ship-to-ship, tank truck-to-ship, and shore-to-ship (including pipeline and terminal-based) bunkering activities. The provisions herein are applicable to ship owners, ship managers, bunker suppliers, bunker receivers, terminal operators, trucking agencies, port authorities and all other entities engaged in the planning, facilitation or execution of biofuel bunkering operations. This circular seeks to establish a uniform regulatory framework to ensure the safe, efficient, and environmentally compliant implementation of biofuel bunkering across Indian ports and maritime zones.

1.1 The guidelines set forth in this circular shall be read in conjunction with all applicable Indian maritime laws, port authority regulations, environmental protection statutes, and fuel quality standards prescribed by the Bureau of Indian Standards (BIS), as well as relevant international instruments issued by the International Maritime Organization (IMO).

1.2 This circular has been formulated in consultation with relevant stakeholders in the Indian maritime domain, including regulatory authorities, classification societies, industry representatives, and subject-matter experts in marine fuel handling and safety.

1.3 All legislative references made within this document shall be interpreted in accordance with the authoritative text of the corresponding legislative instruments, including any subsequent amendments or revisions in force at the time of application.

2. Applicable Standards and Reference Documents

This circular has been developed with reference to international conventions, technical standards, safety codes, and guidance notes issued by competent authorities and recognised bodies engaged in maritime safety, fuel quality, and environmental protection. These documents serve to inform the regulatory framework for the safe conduct of biofuel bunkering operations. Some of the key references include:

i) **MARPOL Annex I –** International Convention for the Prevention of Pollution by oil from Ships.

ii) **MEPC.1/Circ.917** – Interim guidance on the use and carriage of biofuel blends under MARPOL Annex

I.

iii) **MSC-MEPC.2/Circ.17** – Guidelines for the carriage of blends of biofuels and MARPOL Annex I cargoes.

iv) **A unified Interpretation MARPOL Reg. 18.3 (MEPC .1/Circ.795/Rev.8) from IMO**: Blends that contain up to 30% biofuel (B30) will be treated the same way as fossil fuel oils – no NOx emission assessment is required.

v) **MS Notice No. 14 of 2023** – Directorate General of Shipping, India: Use of Biofuels and their blends on Indian ships.

vi) **IRS Guidelines on Use of Biofuels (IRS-G-ENV-03) December 2023** – Indian Register of Shipping's safety and environmental guidelines for biofuel usage.

vii) **National Policy on Biofuels 2018**

viii) **ISO 8217:2024** – International standard for specifications of marine diesel fuels, including biofuel blends.

ix) **ISO/IEC 17025:** Standard sets the requirements for the competence of testing and calibration laboratories, including sampling, to ensure they are capable of producing reliable and accurate results

x) **ISO 13032 (ASTM D 5453) /(ASTM D4294)**: Determination of low-level sulphur content in fuel. Applicable to monitoring sulphur compliance in biofuels.

xi) **EMSA Guidance (2024)** – Safe Bunkering of Biofuels: operational guidance, checklists, and risk control recommendations.

xii) **ISGOTT (6th Edition)** – International Safety Guide for Oil Tankers and Terminals: Applicable where biofuels are handled as cargo or fuel. [section 1.4.10 in ISGOTT – 6 MOC (Memorandum of Compliance) addresses procedures for handling and controlling specific types of bio-fuel. This section would detail the unique safety considerations, operational procedures and precautions necessary when dealing with biofuel cargo, taking into account its properties and potential hazards]

xiii) Relevant BIS Standards – Bureau of Indian Standards publications relating to biofuel properties, storage, transport, and safety.

xiv) IMO STCW Code – Standards of Training, Certification, and Watchkeeping: as applicable for personnel involved in bunkering operations.

xv) SOLAS Provisions – International Convention for the Safety of Life at Sea: Applicable provisions related to biofuel systems and bunkering safety (e.g. Flashpoint of biofuels, SOLAS chapter VI: Regulation 5-1 SDS).

xvi) MEPC.1/Circ.878 – Guidance on the development of a ship implementation plan for the consistent implementation of the 0.50% Sulphur Limit under MARPOL ANNEX VI. (Blended residual fuels)

xvii) EN 15751 / ISO 12205 – Oxidation Stability of Bio Fuels.

xviii) MEPC.1/Circ.875 – Guidance on Best Practice for Fuel Oil Purchasers/Users for Assuring the Quality of Fuel Oil Used on Board Ships

xix) IMO's MARPOL Annex 6, regulation 18 – covers fuel oil availability and quality, with a specific paragraph on non-petroleum-based fuel oils. Which should not:

- "Jeopardize the safety of ships or adversely affect the performance of the machinery, or
- be harmful to personnel, or
- contribute overall to additional air pollution."

xx) ISO 13739 – Specifies procedures and requirements for the transfer of bunkers to vessels.

3. Definitions

For the purposes of this circular, the following definitions shall apply:

3.1 Biofuel: A biofuel is a fuel oil which is derived from biomass and hence includes, but is not limited to, processed used cooking oils, fatty-acid-methyl-esters (FAME) or fatty-acid-ethyl-esters (FAEE), straight vegetable oils (SVO), hydro-treated vegetable oils (HVO), glycerol or other biomass to liquid (BTL) type products. and have capability to reduce CO2 emission by 65%.

3.2 Biofuel Blends: Mixtures of biofuels with conventional petroleum-based fuels in varying proportions (e.g., B20, B30, B50, B100), intended for use as marine fuels.

3.3 Blend Ratio: The volumetric percentage of biofuel in a fuel blend, eg., B20 contains 20% biofuel and 80% conventional marine fuel.

3.4 Biofuel Bunkering: The process of transferring biofuel or biofuel blends from a supply source [tank truck, shore (terminal) or vessel] to a receiving ship for use as fuel in propulsion or auxiliary machinery.

3.5 Biofuel Bunker Supplier (BBS): Company registered in India and undertakes the responsibility for delivering the supply of biofuel or biofuel blends to the ship or installation by barge/ship, OSV, tank truck or direct from shore (terminal) within Indian waters and is in possession of a valid 'Bunker Supplier Registration Certificate (BSRC)' issued by the Directorate General of Shipping (DGS). The Bunker Supplier is responsible for providing the Bunker Delivery Note (BDN) ships along with the proof of sustainability.

3.6 Biofuel Bunker Receiver (BBR): The vessel, its master, or the authorised representative of the ship receiving biofuel or biofuel blends through a bunkering operation.

3.7 Bunker Delivery Note (BDN): A document signed by the supplier and the receiver detailing the quantity and specifications of the biofuel delivered, in accordance with MARPOL Annex VI and ISO standards.

3.8 FAME (Fatty Acid Methyl Esters): A type of biodiesel (chemically identical to fossil derived diesel) produced by the transesterification of vegetable oils or animal fats, Used cooking Oil (UCO), lipids (derived from algae, oleaginous yeast), commonly blended with conventional diesel fuels.

3.9 FAEE (Fatty Acid Ethyl Esters): A type of biodiesel (chemically identical to fossil derived diesel) produced by the transesterification of vegetable oils or animal fats, (are reacted with ethanol) commonly blended with conventional diesel fuels.

3.10 HVO (Hydrotreated Vegetable Oil): A second-generation biofuel produced through the hydrotreatment of fats and oils, characterised by improved oxidation stability and higher energy content.

3.11 SVO (Straight Vegetable Oil): A biofuel derived directly (without intermediate processing)from plant seed oils like canola or sunflower, Tree Born Oil (TBO). The biofuel derived from tree borne oil seeds (TBO) are preferred over oil derived from oil seeds used as cooking oils.

3.12 Bio-FT-diesel (Bio-Fischer-Tropsch diesel): A renewable biofuel produced through the Fischer-Tropsch (FT) process, which converts synthesis gas (a mixture of carbon monoxide and hydrogen) into liquid hydrocarbons, including diesel fuel.

3.13 BTL, or Biomass to Liquid Fuel: This refers to a process that converts biomass, like wood, waste, or agricultural residues, into liquid fuels.

3.14 Drop-in Fuel: A bio-derived fuel (chemically identical to liquid hydrocarbons such as; gasoline, diesel, jet fuel) that are compatible with existing infrastructure and that can be used in existing marine engines without requiring substantial modifications.

3.15 Tank Truck-to-Ship Bunkering: The transfer of biofuel from a road tanker directly to a vessel at berth.

3.16 Shore(terminal)-to-Ship Bunkering: The transfer of biofuel from a storage terminal or fixed shore installation to a vessel via pipeline or hose connection.

3.17 Ship-to-Ship Bunkering: The transfer of biofuel from one vessel to another while at berth or anchor.

3.18 Recognised Organization (RO): An organization authorised by the Directorate General of Shipping to carry out inspections and audits towards issuance of certification related to biofuel bunkering.

3.19 Interim Certificate: A time-bound certificate issued by the Directorate General of Shipping, authorizing the applicant to conduct bunkering operations under specific conditions.

3.20 Full-Term Certificate: A certificate granted by the Directorate General of Shipping upon satisfactory

compliance, valid for a fixed term as specified, authorizing continued operation as a biofuel bunker supplier.

3.21 Bunkering Operation: The complete process involving the planning, preparation, documentation and execution of biofuel transfer from the supplier to the receiving vessel, including pre-transfer checks, fuel sampling and post-bunkering procedures.

3.22 Sustainability Certification: Documentation issued by recognized international bodies (e.g., ISCC, RSB) confirming that the biofuels have been produced and sourced in accordance with environmental, social, and traceability criteria.

Sustainability certificate to be provided by biofuel supplier. Blending to be done offsite not on board to ensure for proper blending

3.23 Safety Data Sheet (SDS): A mandatory document provided by the bunker supplier outlining the chemical composition, handling precautions, health and safety information, and emergency response guidance for the specific biofuel being supplied.

3.24 Emergency Shutdown System (ESD): A system designed to halt the transfer of biofuel immediately in the event of an emergency, activated either manually or automatically to prevent spills, leaks, or accidents.

3.25 Compatibility Check: A verification process to ensure that the supplied biofuel or blend is suitable for use in the receiving vessel's fuel system and engine configuration, without causing operational or material issues.

3.26 Sampling Point: A designated location in the bunkering system where fuel samples are drawn for quality testing and verification purposes before, during or after the transfer.

3.27 Flash Point: The lowest temperature at which the vapours of a fuel can ignite in the presence of an ignition source under specified conditions. Biofuels used for bunkering must meet the minimum flash point requirements as per applicable standards.

3.28 Quality Assurance System: A documented (quality assurance certificate) system established by the bunker supplier to ensure the consistent delivery of biofuels that meet the specified standards (as defined by BIS and ISO 8217: 2024) for quality, energy content, and compliance with regulatory norms.

3.29 Risk Assessment: A systematic evaluation of the potential hazards associated with a bunkering operation, including likelihood and consequences, forming the basis for implementing appropriate control measures.

3.30 Approved: Deemed to be in compliance by the Directorate General of Shipping (DGS), the relevant Port Authority and where applicable, by the Petroleum and Natural Gas Regulatory Board (PNGRB) and the Petroleum and Explosives Safety Organization (PESO).

3.31 STCW: International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers, establishing minimum qualification standards for masters, officers, and watch personnel on seagoing merchant ships.

3.32 Indian Waters: The maritime zones of India as defined under the Territorial Waters, , Exclusive Economic Zone and Other Maritime Zones Act, 1976 and any amendments thereof.

3.33 PIC (Person in Charge): The individual formally designated by the bunker supplier and the receiving vessel to coordinate and supervise the bunkering operation. The PIC shall be and shall have the authority to initiate, suspend, or terminate the operation as deemed necessary for quality and safety.

3.34 SIMOP: Simultaneous Operations during Bio-fuel Bunkering.

3.35 PESO: Petroleum and Explosives Safety Organisation regulations related to storage and handling of flammable liquids

4. Application

These guidelines shall apply to all biofuel bunkering operations conducted within Indian waters, regardless of the mode of delivery. This includes ship-to-ship, tank truck-to-ship, and shore-to-ship (including pipeline and terminal-based) transfers of biofuels and their blends intended for marine use.

The provisions herein shall be applicable to:

i) All Indian and foreign-flagged vessels receiving biofuels as fuel at Indian ports or anchorages.

ii) All entities engaged in the supply, transfer, or handling of biofuels for bunkering purposes, including bunker suppliers, terminal operators, trucking companies, and associated service providers.

iii) All port authorities and regulatory agencies responsible for overseeing fuel transfer operations and ensuring compliance with applicable safety and environmental regulations.

iv) All relevant stakeholders including ship owners, ship managers, masters, bunker receivers, surveyors, and personnel involved in bunkering operations.

These guidelines are intended to be read in conjunction with other applicable national and international regulations, circulars, and port-specific requirements governing marine fuel supply and handling. Any deviation from these guidelines shall be subject to prior approval from the Directorate General of Shipping.

5. Bio Fuel Bunkering Guidelines

5.1 General Requirements

Biofuel bunkering operations within Indian waters shall be carried out in accordance with the provisions of this circular, along with all applicable Indian maritime regulations including those prescribed by the

Directorate General of Shipping (DGS) and relevant port authority guidelines.

5.1.1 To conduct biofuel bunkering operations, the bunker supplier must:

Hold valid approval and certification as a registered biofuel bunker supplier issued by the Directorate General of Shipping. The certification shall explicitly specify the approved mode(s) of delivery (i.e. tank truck-to-ship, shore (terminal)-to-ship or ship-to-ship) and the designated area(s) of operation.

Comply with technical, safety, and environmental standards as prescribed under applicable BIS/ISO norms, relevant guidelines and this circular.

Ensure that all facilities, equipment and personnel involved in the bunkering operation meet the minimum requirements for safe handling, storage and transfer of biofuels and their blends.

Adhere to local port requirements regarding bunkering permissions, safety zones, berthing arrangements, and emergency preparedness.

Obtain all necessary clearances from the concerned port authority, terminal operator or other competent bodies, prior to commencing bunkering activities.

Must maintain and provide proper documentation, such as providing a proper BDN, ISCC certificate (International Sustainability and Carbon Certification) and COQ (Certificate of Quality). This is especially important when dealing with blends, as the actual blend ratio bunkered as fuel should be transparent to all parties. Bunker supplier to make them available for audit or inspection by the DGS or port authority upon request

Bunker Supplier Registration Process:

Approval from DG Shipping:

i) As per the procedures laid down in Merchant Shipping Notice (MSN) No. 03 of 2014, a Company intending to register as authorised suppliers of biofuel bunkers must comply with the standard registration framework set forth by the Directorate General of Shipping. In addition to the general requirements under the MSN. Such Company shall be required to establish a robust Quality Management System (QMS) and obtain ISO 9001:2015 certification (as per latest standard), clearly specifying the operational scope as "Biofuel Bunkering." Certification must be granted by a body accredited by the National Accreditation Board for Certification Bodies (NABCB).

Both new applicants and existing suppliers seeking approval for biofuel bunkering must adhere to the guidelines under this circular in conjunction with the referenced MSN.

ii) Applicants shall be required to conduct a demonstration of a live biofuel bunkering operation. Based on the submitted application and supporting documents, the Directorate may delegate the task of observation and evaluation to the Indian Register of Shipping (IRS). Upon receipt of a satisfactory report and recommendation from IRS, the DGS may grant an Interim Bunker Supplier Registration Certificate,

valid for a period of six (6) months.

iii) Holder of the Interim Bunker Supplier Registration Certificate must apply to Director General of Shipping for offering the audit in order to obtain Full-Term Certificate at least 30 days prior to expiry of the Interim Bunker Supplier Registration Certificate. The audit shall be carried out by IRS under authorisation from the Directorate and will focus on, but not be limited to, the following aspects:

a) Verification of procedural compliance and safety performance during biofuel bunkering operations conducted under interim certification.
b) Submission of documentary evidence showing completion of at least two (2) successful bunkering operations during the interim validity period.

iv) The audit shall also confirm whether the applicant has incorporated any regulatory updates, circulars or amendments issued by the Directorate or other statutory bodies relevant to biofuel handling, transfer, and storage.

Subject to a favourable recommendation from IRS, the Directorate may issue a Full-Term Bunker Supplier Registration Certificate, to the bunker supplier valid for a period of five (5) years.

v) All registered suppliers shall undergo Annual Surveillance Audits within three months, before or after each anniversary date to ensure continued compliance with operational, safety and environmental standards. In addition, the supplier must demonstrate the bunkering process during alternate years of the certification cycle as part of the audit framework.

Failure to adhere to these requirements—especially the demonstration of operational readiness—may result in regulatory penalties, including suspension or revocation of the registration certificate.

5.1.2 The Biofuel Bunker Supplier (BBS) shall plan and execute all bunkering operations in alignment with internationally accepted standards, safety protocols, and operational best practices. Applicable standards shall be based on the mode of delivery, i.e., ship-to-ship, tank truck-to-ship or shore-to-ship (pipeline or terminal-based). The references mentioned in Section shall be treated as minimum guiding requirements. Any additional standards or best practices referenced or specifically mandated or approved by the Directorate General of Shipping (DGS), PNGRB, or PESO, from time to time will also be treated in guiding requirements.

5.1.3 The Biofuel Bunker Supplier (BBS) shall ensure that all personnel involved in the handling, transfer, and management of biofuels and their blends hold valid certifications and training as per the applicable provisions of the the petroleum product, storage and handling. The supplier shall also ensure adherence to relevant BIS standards, particularly those concerning the transportation, storage, and safe handling of combustible liquids, including biofuels.

Where required, appropriate training in flammable liquid handling, emergency response and environment protection protocols shall be provided to all operational staff on biofuel bunkering. Training records shall be maintained, updated periodically, and made available for inspection by the Directorate General of

Shipping (DGS), Port Authorities, or other competent bodies as required.

5.1.4 The BBS shall ensure that for delivery of Biofuel bunker valid insurance cover is available for an amount acceptable to the concerned Port Authorities and/or as per Flag administration requirements for accident (personnel, property & transport equipment), marine & environmental pollution damage and clearance of pollution liabilities.

5.1.5 As per IMO Circular MSC-MEPC.2/Circ.17, biofuel blends containing more than 25 percent biofuel by volume fall under the scope of MARPOL Annex II and are governed by the carriage requirements under Chapter 17 of the IBC Code. Hence, such blends were not permitted to be carried onboard conventional bunker vessels certified under MARPOL Annex I. However, MEPC.1/Circ.917 permits the carriage of biofuel blends up to 30 percent by volume on such vessels, provided that:

- **All residues or tank washings are discharged ashore, or**
- **The vessel's Oil Discharge Monitoring Equipment (ODME) is approved for the specific biofuel blend being carried.**

<u>These conditions shall be strictly adhered to for all bunker deliveries involving biofuel blends within this threshold.</u>

5.1.6 For the purpose of biofuel bunkering, the Bunker Supplier shall ensure that fuel transfer hoses (rubber, composite or metallic depending on fuel type) are tested and certified for safe operation at designated pressure and temperature ranges.

- Pressure testing shall be conducted at manufacturer-specified intervals, and in no case shall the interval exceed twelve (12) months. A minimum hose test pressure (e.g., 1.5×MAWP) to be maintained.
- All tests shall be witnessed by an accredited and authorised person, duly certified for competence in flammable liquid handling systems. A certificate of inspection and compliance shall be issued accordingly by the authorised person or entity.
- Test certificates must be retained and made available for inspection by port officials or classification societies.
- All hoses, seals, elastomers used in the fuel system shall be identified. They are inspected at regular intervals and renewed at 50% of the original PMS duration unless they are made of compatible material.
- The material of the flexible hoses used for transfer of biofuel blends shall be compatible to handle such fuels. Recommended biofuel compatible elastomers include Fluorocarbon, Nylon, Teflon, Viton. Recommended polymer includes Carbon filled acetyl. The metals that are in contact with biodiesel, shall be made of Carbon-Steel, Stainless Steels, Aluminium. Fibre glass is recommended non-metallic material.

5.1.7 The Biofuel Bunker Supplier (BBS) shall ensure that a valid Safety Data Sheet (SDS) and quality data is maintained and made available for each biofuel or biofuel blend supplied during the bunkering

operation. The SDS shall be specific to the blend grade (e.g. B20, B30), clearly outlining the fuel's chemical composition (blend ratio %, sulphur content), flash point, storage and handling precautions and first aid/emergency response protocols. The SDS shall be shared with the receiving vessel and port authority prior to bunkering. The material safety data sheets for biofuel blends shall be prepared using SDS for biofuels and SDS for distillate fuels by a competent organization. It may be allowed to supply SDS for individual components of the blend.

5.1.8 The Person-in-Charge (PIC) nominated by the Bunker Supplier (BBS), together with the Master or PIC of the receiving vessel, shall hold joint responsibility for ensuring the safety and integrity of all activities related to the biofuel bunkering operation. This includes overseeing compliance with approved procedures, supervising physical transfer operations and responding to any incidents or abnormalities that may arise during bunkering..

5.1.9 Each bunkering operation shall designate:

- A Person-in-Charge (PIC) from both the supplying and receiving sides,
- A Single Point of Contact (SPOC) nominated by the relevant Port Authority or the terminal where the bunker operations are to be carried out to manage any operational queries, relay emergency alerts, and coordinate responses between the parties.

All stakeholders must be informed of these designated contacts in writing prior to the commencement of bunkering, and communication protocols must be tested prior to fuel transfer.

5.1.10 The Biofuel Bunker Supplier (BBS) shall implement effective systems for the custody control of biofuel from the point of reception through storage and up to the final point of delivery. This shall include all associated transportation systems, such as tank trucks, pipelines or ships used in the bunkering supply chain.

Where any operational processes are outsourced—including but not limited to storage terminal operation, ship handling or tank truck transport—such activities shall be explicitly identified and documented within the supplier's Quality Management System (QMS).

The BBS shall retain full responsibility for ensuring that all outsourced services conform to applicable safety, quality, and environmental requirements, and shall implement appropriate oversight mechanisms to maintain control over such processes.

5.1.11 The Bunker Supplier shall establish and maintain a documented record management procedure for all evidence generated in relation to the supply and delivery of biofuels. This shall include protocols for the:

- Identification of operational records (including test reports, delivery logs, SDS, transfer checklists etc.),
- Storage and retrieval of such records in a secure and traceable manner,
- Retention period in line with regulatory requirements and internal audit standards: 03 (three) years

- Disposal or archiving of records upon expiry of the retention period, ensuring data privacy and confidentiality.

All documentation must be readily accessible for audit or inspection by the Directorate General of Shipping or relevant statutory authorities.

5.2 Operational Document Requirement

To demonstrate the ability to systematically plan and safely execute Bio Fuel bunkering operations, the Biofuel Bunker Supplier (BBS) shall submit the documentation to the relevant Port Authority for each mode of delivery, at least 24 hours in advance of every bunkering operation

i) BBS Vessel Certification (if applicable - Ship to Ship):

a) Certificate of Registry issued by the Flag Administration;
b) Certificate of Fitness for the Carriage of Oil or Biofuel Cargoes, as per MARPOL Annex I or II (depending on fuel composition);
c) Relevant certificates in accordance with the ISM Code.
d) Classification Certificate issued by a Recognized Classification Society, verifying compliance with applicable standards for fuel transfer operations.

ii) Trucking Company Certifications (if applicable - Truck to Ship):

a) Valid PESO license for the transport of flammable liquids by road under applicable petroleum rules;
b) Certificates of compliance with BIS standards governing mobile fuel tankers (e.g., IS 15607, IS 16159);
c) Valid documentation of driver training and certification, specifically in the safe handling and emergency procedures related to flammable liquid fuels.
d) Tank calibration certificates

iii) Terminal Operator Certifications (if applicable - Shore to Ship):

a) Valid authorization from competent regulatory authorities to operate the biofuel storage and pipeline bunkering systems;
b) Certificates of compliance with relevant national and international safety standards for liquid fuel terminal operations, including provisions for overfill protection, secondary containment, spill control, and grounding systems.

iv) Quantitative Risk Assessment (QRA) Report:

a) The Biofuel Bunker Supplier (BBS), in consultation with the Port Authority, shall prepare a Quantitative Risk Assessment (QRA) prior to first bunkering operation. These assessments must be reviewed during each bunkering operation for changes if any amended regularly, incorporating changes in operations environment or infrastructure.
b) The QRA shall identify and assess risks related to fire, flammable liquid spills and environmental

exposure. It shall define the required safety and security zones, based on credible incident scenarios, including fuel leakage or ignition during transfer.

c) Consequence analysis must consider thermal radiation, pool fires and environmental contamination, taking into account local weather conditions and port layout.
d) The assessments shall follow applicable guidelines and must be conducted by qualified personnel with expertise in marine fuel risk assessments. Final signed copy of QRA for the given bunkering operation to be maintained.

v) Bio Fuel Bunker Management Plan: The Biofuel Bunker Supplier (BBS) shall prepare a comprehensive Biofuel Bunker Management Plan in consultation with the Port Authority. This plan shall detail procedures and safety measures for the pre-bunkering, bunkering, and post-bunkering phases and shall comply with relevant EMSA guidelines. The plan shall include:

a) Details of the proposed operations, including the use of bunker supply ship, trucks or terminal infrastructure. The specific delivery location and operational procedures must be clearly defined. Operational limits (e.g. adverse weather, restricted visibility, sea conditions) and conditions under which bunkering shall be postponed or suspended must be stated.
b) Declared quantity and specification of biofuel to be bunkered, including blend composition where applicable.
c) Documented safety protocols, including site-specific risk assessments and a comprehensive emergency response plan.
d) Guidelines for fuel transfer operations, equipment integrity checks and real-time communication protocols between all stakeholders.
e) Compatibility checklist templates to ensure interoperability between BBS and Biofuel Bunker Receiver (BBR) vessels or facilities.
f) Valid test reports and certifications for bunkering equipment, spill containment systems, flow meters (wherever applicable), grounding devices, and hoses or connectors.
g) Details of training, familiarization and safety drill records for all bunker supplier personnel engaged in the operation.
h) Protocols for the use and availability of appropriate personal protective equipment (PPE) for handling flammable liquids.
i) Availability of intrinsically safe lighting and electrical systems in areas of fuel transfer.
j) Well-defined emergency contingency procedures for responding to incidents such as fuel spills, fire, equipment failure or personnel injury.
k) A mechanism for documenting all bunkering-related operations, including any simultaneous operations (SIMOPs) occurring at the terminal or anchorage during the biofuel transfer.
l) Fuel Sampling Protocols which includes Sampling points, methodology, and container specifications. Retention and sealing of Reference Samples for dispute resolution.
m) Fuel Quality Dispute Resolution Mechanism - A documented procedure to address discrepancies in quantity, quality, or contamination , timelines for resolution and storage and chain-of-custody of samples during dispute.
n)Environmental Monitoring and Spill Reporting -Requirements for continuous monitoring during ship to ship transfer, notifying concerned authorities

vi) Bunkering Compatibility Checklist / Report

The Biofuel Bunker Supplier (BBS) shall maintain a Bunkering Compatibility Checklist or Report confirming the mutual compatibility of systems, transfer procedures, safety equipment and communication protocols between the BBS and the Biofuel Bunker Receiver (BBR).

This document shall serve to verify that both parties are technically and operationally aligned to safely and efficiently conduct the proposed bunkering operation, in compliance with relevant standards, statutory requirements, and any specific conditions imposed by the Port Authority.

vii) Joint Bunkering Plan

No biofuel bunkering operation shall commence unless a mutually agreed Joint Bunkering Management Plan has been finalised between the Biofuel Bunker Supplier and the Bunker Receiver (Receiving Vessel). This plan shall specify:

- Roles and responsibilities of all parties involved,
- Communication protocols,
- Safety and emergency procedures,
- Emergency response planning shall include Fuel-specific fire suppression, spill response.
- Environmental safeguards and spill response measures.

The plan must be signed and acknowledged by both parties and kept on record for inspection.

It must include specific procedures tailored to the selected mode of delivery, such as:

- Tank Truck arrival, positioning and connection protocols for tank truck-to-ship bunkering
- Pipeline connection, line purging and flushing procedures for shore (terminal)-to-ship bunkering
- Emergency coordination mechanisms and roles of involved personnel

The plan must reflect compliance with all applicable regulations and port-specific safety requirements.

viii) Bio Fuel Quality Assurance Certificates as per ISO 8217:2024

Certificate from an NABL accredited laboratory confirming the biofuel blend ratio, flash point, moisture content must be presented during delivery of bio fuel.

ix)Identification of any Simultaneous Operations (SIMOPs)—e.g., cargo handling, crew changes, or waste discharge—that may affect bunkering safety and necessary control measures.

5.3 Operational Requirement

i) Monitoring of Bio Fuel Transfer: For shore (terminal)-to-ship and ship-to-ship biofuel bunkering, both the Bunker Supplier (BBS) operator and the receiving vessel crew must continuously monitor key

operational parameters such as flow rate, transfer pressure and temperature throughout the operation. Emergency shutdown systems must be operational, tested periodically and readily accessible during the entire bunkering process.

ii) Bunkering Operations: The BBS shall execute the bunkering process in accordance with the approved Biofuel Bunker Management Plan and Joint Bunkering Plan. A pre-bunkering checklist must be completed no more than four hours prior to the planned operation. This checklist shall include verification of:

- Hose or pipeline connections (truck/ship/shore),
- Availability and condition of safety equipment,
- Communication protocols and systems must be retained for inspection by the relevant authorities.

iii) The following critical parameters must be jointly agreed upon by the BBS and the Bunker Receiver (BBR) prior to commencement of operations and recorded:

a) Total quantity of biofuel to be transferred,
b) Maximum allowable pressure during the operation
c) Maximum flow or pumping rate to be maintained.

iv) During biofuel bunkering, simultaneous ship-to-ship activities such as provisioning, waste disposal or cargo handling to be restricted to avoid operational and safety risks arising from increased personnel movement and equipment interference. In case, if such operations can't be evaded, additional safety precautions to be exercised as part of bunker checklist.

v) The Biofuel Bunker Supplier (BBS) shall maintain segregated storage & handling facilities to ensure product integrity as per the grade of bio-fuel and also ensure that no simultaneous transfer of Diesel Oil, Heavy Fuel Oil (HFO), Very Low Sulphur Fuel Oil (VLSFO) or lubricants is carried out during the biofuel bunkering operation. All such activities must be scheduled outside the biofuel transfer window.

vi) Where the bunker supplier has storage tanks for biofuel, the tank should be equipped with arrangements for (a) collection of samples (bottom, middle and top), (b) protection from cold weather conditions, (c) recirculation facility to ensure that fuel blend remains homogeneous, if required and (d) draining arrangement of accumulated water from bottom of tank.

vii) Maintenance records should be available with the bunker supplier ensuring weather & watertight integrity of storage tanks including cleaning of tanks, inline filters, pipes, valves etc.

viii) The Bunker Receiver (BBR) shall be thoroughly familiar with the standard operating procedures (SOPs) of the BBS prior to initiation of bunkering. A formal briefing or checklist walkthrough may be conducted to ensure understanding.

ix) In cases where biofuel is being loaded on a vessel for the first time, the ship operator shall ensure a trial run is conducted under controlled conditions. The trial should confirm fuel system compatibility and operational safety before proceeding with regular operations.

x) Use of equipment such as ro-ro ramps, gangways or hydraulic/pneumatic tools that can generate heat, friction or sparks shall be prohibited within the safety zone unless specifically certified for use in hazardous areas.

xi) All passengers and crew aboard the receiving vessel shall be notified when biofuel bunkering is in progress through clear visual warning signs and access restrictions to the designated bunkering area. These measures are essential to ensure awareness and prevent unauthorized presence in high-risk zones.

xii) In the event of any emergency or operational anomaly at the Biofuel Bunker Supplier's (BBS) facility—be it the terminal, bunker vessel or transport tank truck—the BBS shall immediately notify the Biofuel Bunker Receiver (BBR) via VHF or any mutually agreed upon communication channel, regardless of whether the BBR's systems are directly impacted.

xiii) In circumstances requiring emergency response or evacuation from the bunker site, the decision to abandon the vessel or vacate the berth shall rest solely with the Master of the receiving vessel or the Port/ Harbour Master, in consultation with relevant authorities.

xiv) The Bunker Receiving Vessel (BBR) shall ensure that the biofuel intended for use is compatible with the vessel's engine, auxiliary systems, and fuel handling infrastructure. This compatibility assessment shall be based on OEM-issued fuel guidance, laboratory-tested specifications, and fuel system tolerances.

Where applicable, the BBR must obtain validation from the engine manufacturer before initiating bunkering operations.

xv) Prior to the commencement of each biofuel bunkering operation, the following preparatory actions shall be undertaken by the Biofuel Bunker Supplier (BBS) and the Biofuel Bunker Receiver (BBR):

a) A functional test of the Emergency Shutdown (ESD) system shall be conducted between the BBS and BBR interfaces—whether through a pipeline, vessel or tank truck connection. The successful operation must be documented.
b) All valves and associated equipment involved in the transfer process—manual and automated—must be checked for operational readiness at both ends.
c) The availability and response readiness of local emergency services (fire brigade, ambulance, etc.) must be verified with the relevant authorities.
d) A visual inspection of the bunkering manifolds and connections on both the BBS and BBR must be conducted to ensure the integrity of piping, hoses, valves and safety fittings.
e) The presence and adequacy of protective safety measures such as drip trays, must be confirmed.

xvi) Procedures for recording of customer complaint or incident pertaining to quality of biofuel blend and action taken by bunker supplier to be available and records to be maintained.

xvii) The Biofuel Bunker Supplier shall adhere to the following notification protocols:

a) Pre-Bunkering Notification: Submit a formal notification to the respective Port Authority at least 24

hours prior to the operation, detailing the intended time, location, method of delivery and a 24-hour emergency contact.
b) Phase-wise Reporting: Report the start and completion of the bunkering operation to the Port Authority via VHF or designated communication channel, depending on the mode of delivery.
c) Incident Reporting: Any operational anomaly, equipment failure, or emergency during the bunkering process must be reported immediately to the Port Authority and all other relevant government departments in accordance with regulatory procedures.

xviii) Designated bunkering tank/ tanks to be identified by Biofuel Bunker supplier.

6. Test reports from NABL accredited laboratory or Certificate of Quality (COQ):

a) Biofuel or its blends must be supplied with following test results of the final fuel according to a full ISO 8217:2024 specification requirement, which shall include at least the following:

i) Kinematic viscosity at 40 °C
ii) Density at 15 degree C
iii) Either Pour point or Cold Filter Plugging Point (CFPP) to indicate Cold-flow properties
iv) Water content
v) Acid number
vi) Sulphur content
vii) Flash point
viii) Acid number

b) If the biofuel blend has crossed 6 months (since it is manufactured or blended) but within its shelf life, additional following tests report to be provided by the biofuel bunker supplier to the Bunker receiver:

i) Full routine analysis as per ISO8217:2024 specifications
ii) % FAME by Fame-Scan (e.g ASTM D7963 or ASTM D7371)
iii) Copper strip corrosion (e.g. ASTM D130) to gauge the corrosiveness of the fuel due to high FAME content
iv) Microbial analysis (appliable for distillate blend biofuel) as per IP385
v) Oxidation Stability

7. Sustainability Certification

A Proof of Sustainability should be provided by biofuel bunker supplier (obtained from ISCC or RSB) to the Bunker receiver for each bunkering operation along with the Bunker Delivery Note, to facilitate the verification of the reported biofuel consumption.

The Proof of Sustainability should comply to the requirements, as per MEPC.1/Circ.905.

8. Bunker Delivery Note (BDN):

A Bunker Delivery Note (BDN) shall be issued by the biofuel bunker supplier for each bunkering operation and shall accompany every transfer of biofuel or biofuel blends to a vessel. The BDN is a legally required document and serves as evidence of the quantity and specification of the fuel delivered.

The BDN shall include, at a minimum, the following information:

i) Name and IMO number of the receiving vessel.
ii) Name, address, and registration details of the bunker supplier.
iii) Date and location of bunkering.
iv) Quantity and type of biofuel or biofuel blend supplied, including the blend ratio.
v) Density at 15°C.
vi) Sulphur content of the fuel.
vii) Flash Point of fuel.
viii) Confirmation that the fuel meets the specifications prescribed under relevant standards and applicable regulatory requirements.
ix) Declaration that the fuel is free from any contaminants or chemical substances prohibited under MARPOL or Indian law.
x) Signature of the authorised representative of the bunker supplier and the receiving vessel, along with name and designation.
xi) Unique BDN reference number or batch identifier for traceability.

The master or authorised officer of the receiving vessel shall retain the BDN on board for a minimum period of three years and shall produce it to the port authorities or inspecting agencies upon request.

9. Requirements for Crew Member and Personal

a) Ship to Ship: Crew members aboard the Biofuel Bunker Receiver (BBR) and Biofuel Bunker Supplier (BBS) vessels who are involved in the bunkering operation shall be appropriately trained and certified.

- BBR vessel crew shall be trained in accordance with relevant STCW Code provisions.
- BBS vessel crew must possess training aligned with applicable standards for handling biofuels, covering cargo operations, firefighting, spill response and emergency procedures.

b) Truck Drivers (Tank Truck to Ship): Drivers responsible for transporting and delivering biofuel by road shall be certified in accordance with the Petroleum and Explosives Safety Organization (PESO) guidelines and applicable BIS standards.
c) Terminal Operator (Shore to Ship): Personnel operating terminal facilities for biofuel transfer must be trained in accordance with safety standards relevant to fuel storage and transfer operations.

10. Enforcement

The Directorate General of Shipping (DGS) shall be the primary authority responsible for the enforcement of the provisions set forth in this circular. All stakeholders including vessels, bunker suppliers, trucking companies and terminal operators must ensure full compliance with the prescribed regulatory framework.

Non-compliance shall attract appropriate action, which may include warnings, monetary penalties, detention of assets, suspension or revocation of licenses, or any other action deemed necessary by the competent authority.

All decisions concerning biofuel bunkering operations shall be informed by a prior risk analysis, tailored to the specifics of each operation. In this regard, the Port Authority, DGS, as applicable, may assess and determine the following:

a) Approval of risk acceptance criteria
b) Oversight and governance framework for biofuel bunkering operations within the port
c) Applicability of an accreditation or certification scheme for biofuel bunker suppliers
d) Suitability and acceptability of bunkering locations (with defined limits within the port or anchorage)
e) Restrictions concerning simultaneous operations (SIMOPs) during bunkering
f) Adequacy of shore-side contingency and emergency response plans
g) Traffic control procedures and movement restrictions during bunkering
h) Any additional port-specific requirements or operational safeguards

Periodic surprise inspections by DGS or nominated authority may be conducted to verify the fuel quality, crew training and documentation accuracy.

11. Amendments:

This Circular shall be subject to periodic review and amendment by the Directorate General of Shipping (DGS) as deemed necessary to reflect technological advancements in biofuel production and bunkering operations, changes in applicable national or international regulations, and evolving industry best practices. Amendments may also be undertaken based on feedback received from stakeholders and lessons learned from on-ground implementation. All relevant entities shall be required to comply with the most current version of this Circular as officially notified by the Directorate.

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