INTERNATIONAL MARITIME ORGANIZATION

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AIR POLLUTION PREVENTION

Shipboard biofuel blend checklist (FAME-based biofuels)

Submitted by IBIA

SUMMARY	
Executive summary:	A shipboard biofuel blend checklist for biofuels based on fatty acid methyl esters (FAME) is set out in the annex to this document.
Strategic direction, if applicable:	3
Output:	3.2
Action to be taken:	Paragraph 3
Related documents:	None

Introduction

1 IBIA notes that with the increased use of biofuel blends as a marine fuel, there is the potential for different and additional operational risks for the ship, especially for ship operators planning to bunker and consume biofuel blends for the first time. These risks can be addressed and mitigated through the application of robust management practices for the fuel, both before the fuel is delivered and when onboard.

2 To aid ships in the management of the fuel, IBIA has prepared a shipboard biofuel blend checklist for FAME-based biofuels, as set out in the annex to this document. The checklist is based on information set out in the International Council on Combustion Engines (CIMAC) guideline 04|2024, *Marine-fuels containing FAME; A guideline for shipowners & operators*.* For bio-based products other than FAME-based biofuels, consultation and involvement of the original equipment manufacturer (OEM) and the ship's Recognized Organization (RO) should be sought for guidance on product acceptance and suitability.

Action requested of the Committee

3 The Committee is invited to note the information provided in the annex to this document.

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* https://www.cimac.com/cms/upload/workinggroups/WG7/CIMAC_Guideline_Marine-fuels_containing_FAME_04-2024.pdf

ANNEX

Shipboard Biofuel Blend Checklist (FAME-Based Biofuels)

For vessel operators planning to bunker and consume biofuel blends for the first time.

Below is a checklist based on CIMAC guideline 04|2024, Marine-fuels containing FAME; A guideline for shipowners & operators

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1. Before Ordering / Bunkering

Regulatory & Technical Review

☐ Confirm the intended biofuel blend complies with the agreed fuel specification.

☐ Consult engine, separator, boiler and auxiliary equipment OEMs regarding approved biofuel blend limits and operational recommendations.

☐ Verify requirements with Flag Administration and Classification Society.

☐ Complete a vessel-specific risk assessment prior to first use.

☐ Ensure crew are briefed on handling, storage and operational considerations associated with biofuel blends.

Fuel Assessment

☐ Review fuel specification, blend ratio, density, viscosity, cold flow properties and heating value.

☐ Review bio-fuel specification, before blend

☐ Assess:

- Cloud Point (CP)
- Cold Filter Plugging Point (CFPP)
- Pour Point (PP)

against the expected operating temperatures during the voyage.

☐ Consider vessel route and ambient temperatures when selecting the fuel grade.

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2. Compatibility Checks

Fuel System Compatibility

☐ Confirm compatibility of:

- Seals and gaskets
- Elastomers
- Hoses
- Pumps
- Valves
- Piping systems
- Fuel treatment equipment

with the intended biofuel blend.

Coating Compatibility

☐ Verify compatibility of tank coatings, paint systems and protective coatings with biofuel blends.

Emissions Equipment

☐ For vessels fitted with SCR systems, consult the supplier regarding operation on biofuel blends.

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3. Tank Preparation Before First Loading

☐ Strip bunker tanks before loading biofuel blends.

☐ Minimise settling tank and service tank inventories before introducing biofuel blends.

☐ Inspect tanks for sludge, sediments and residues from previous fuel batches.

☐ Inspect heating coils for leakage.

☐ Check for water ingress from ballast tanks, cargo tanks or hull defects.

☐ Avoid unnecessary commingling of different fuel batches.

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4. Water Management

☐ Drain all free water before loading and during storage.

☐ Regularly monitor tank bottoms for water accumulation.

☐ Maintain effective dewatering procedures throughout storage and use.

☐ Monitor for signs of microbiological contamination.

☐ Ensure separators are correctly configured for efficient water removal.

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5. Bunkering Operations

☐ Verify:

- Bunker Delivery Note (BDN)
- Fuel specification and Biofuel specification
- Blend ratio
- Sustainability documentation (where applicable)

before acceptance.

☐ Obtain representative bunker samples in accordance with company procedures.

☐ Record tank allocation and fuel segregation arrangements.

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6. Initial Consumption Period

Increased Monitoring Required

☐ Closely monitor fuel filters for clogging.

☐ Closely monitor separator performance.

☐ Ensure adequate stocks of:

- Filter elements
- Separator spares
- Consumables

are available onboard.

☐ Monitor fuel transfer and booster pumps for abnormal operation.

Be aware: Biofuel blends may loosen accumulated deposits within tanks and fuel systems, potentially resulting in increased filter loading during the initial period of use.

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7. Fuel Treatment and Separation

☐ Verify separator settings are suitable for the density and characteristics of the fuel being used.

☐ Confirm gravity-disc selection is correct or that automated separator settings are appropriate.

☐ Consult separator OEM if software updates or dedicated biofuel operating modes are available.

☐ Monitor sludge discharge frequency and sludge characteristics.

☐ Monitor automatic water detection systems for abnormal alarms.

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8. Storage Management

Prolonged Storage

☐ Avoid prolonged storage whenever possible.

☐ Apply a First-In / First-Out (FIFO) fuel management approach.

☐ Keep tanks as full as practicable to minimise condensation.

☐ Avoid excessive heating during storage.

☐ Regularly monitor for:

- Water accumulation
- Oxidation and fuel degradation
- Sediment and gum formation
- Increased acidity
- Microbial contamination
- Corrosion

☐ Regularly drain water from tanks and low points.

☐ Consider fuel quality retesting if storage exceeds six months.

☐ Verify storage duration remains within fuel supplier recommendations.

☐ Before consuming fuel stored for extended periods, assess fuel condition and investigate any signs of instability or contamination.

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9. Machinery Performance Monitoring

☐ Monitor engine performance following fuel changeover.

☐ Monitor fuel consumption and voyage fuel planning due to the lower energy content of biofuel blends.

☐ Verify sufficient fuel quantities are onboard to complete the intended voyage.

☐ Monitor lubricating oil condition and contamination levels.

☐ Follow OEM lubrication and maintenance recommendations.