CLEAN SHIPPING INDEX

Verification Guidelines for seagoing vessels

ivl
SVENSKA MILJÖINSTITUTET

Publication date: 2024-01-01

About the Clean Shipping Index

Since 2021 the Clean Shipping Index is run by IVL Swedish Environmental Research Institute. The verification guidelines are updated in collaboration with the CSI Technical committee.

Citation

Clean Shipping index, Verification Guidelines. IVL Swedish Environmental Research Institute, Gothenburg, Sweden

Contact details

Clean Shipping Index
IVL Swedish Environmental Research Institute
PO Box 530 21
400 14 Gothenburg, Sweden

cleanshippingindex@ivl.se
www.cleanshippingindex.com

TABLE OF CONTENTS

1. INTRODUCTION

The verification guidelines has been developed by the Clean Shipping Index and is continuously updated by IVL Swedish Environmental Research Institute in collaboration with the CSI Technical committee. The guidelines should be followed when performing a Clean Shipping Index vessel verification in order to issue a Clean Shipping Index certificate.

Third party verification of the submitted data on a vessel's environmental impact is considered important for the users of the Clean Shipping Index, as they may base economic decisions on the environmental performance reported.

More background and a detailed description of the methodology and scoring of the Clean Shipping Index environmental parameter are given in the Methodology and Reporting Guidelines which can be downloaded from www.cleanshippingindex.com.

2. VESSEL VERIFICATION RULES AND PROCEDURES

2.1 Accreditation of verification companies

The verifier has to be accredited according to ISO/IEC Guide 65 (EN 45011) or under ISO 17065:2012, or a standard equivalent procedure for a verification service such as the ISO 14065:2013. Verification companies that are accredited by an EU Member state to perform verification for the EU regulation on Monitoring, Reporting and Verification of CO_2 emissions from ships (1), and can show relevant knowledge on the other environmental parameters in the Clean Shipping Index are also accepted. The verifier has to be accredited by the Clean Shipping project management and its technical committee. The verifier needs to show their knowledge of Clean Shipping Index verification procedures when requested by the Clean Shipping project management.

2.2 Audit procedure

1. Shipping company submits data in Clean Shipping Index database
2. Shipping company and verifier agree on terms of verication of vessel data
3. Shipping company contacts the Clean Shipping project management for acceptance of the verifier
4. The Clean Shipping Index provides the verifier access to all the vessel data of the shipping company
5. Audit by verification company
6. When compliance is shown, the auditor confirms this in the database whereafter Clean Shipping Index generates a certificate

Annual updates on SOx & PM and CO_2 must be done digitally by the verification company. Due to regular updates in the methodology, shipowners should not update the information for their vessel during the certificate's validity. By doing so, the certificate might become invalid.

After the shipping company answered the Clean Shipping Index questionnaire about the vessel's environmental performance the shipowner needs to contact a verification company that is accredited to perform Clean Shipping Index audits. In case a verifier is not yet approved the verifier needs to contact the CSI project management, in order to be considered for accreditation. The Clean Shipping Index will open the datalink between the shipowner and the verifier after which the audit can take place. When compliance is shown, Clean Shipping Index issues a certificate indicating the environmental class (1 to 5 star) of the vessel.

How the shipping company and the verifier decide to conduct the actual verification survey is a business between these two parties – as long as all required calculations and inspections are thoroughly performed. Experience has shown that some general patterns may both be time and money saving to follow.

When the verifier has got access to vessel data it is recommended that the required documents for the survey are sent to the verifier for a review in advance.
The documents required are listed in the table in Annex 1.

An office audit, which can be performed at the shipping company or on remote, is required for the verification of CO_2 performance, sulphur content in fuel, PM levels and NO_x performance.

Spot checks on sample values from reported CO_2, SO_x , PM and voyage data will be carried out together with supporting evidence with respect to the chemicals and water & waste sections.

The verifier needs to archive all data related to the received Clean Shipping Index scoring for at least one year after the verification has expired.

2.3 Non-compliance

If non-compliance is revealed during the audit, the shipping company must adjust the scoring or adjust the performance followed by an additional audit for that item. Any non-concluded disputes between the verifier and the shipping company shall be submitted to the Clean Shipping project management for judgement.

At any time, the Clean Shipping project management can ask to review the background documentation of the verifier and

the shipping company to ensure that the received scoring and calculations are accurate. If either verifier or shipping company cannot show the background documentation, either a re-verification process must start or verification will be lost. If verification is not performed in line with these verification guidelines, the verifier will lose the accreditation for one year and need to be accepted again by the Clean Shipping project management.

2.4 Validity of the Clean Shipping Index certificate

The certificate is valid for 3 years. During these 3 years, an annual update on SOx & PM and CO_2 is required to keep the certificate active. The deadlines for this are mentioned on the certificate.

It is possible to have a verification performed on specific parameters. This may be beneficial when a vessel's environmental performance increases due to maintenance or replacement of equipment.

An onboard + office audit needs to be performed on all parameters every 3 years. In these guidelines under chapter three, the 3 year audit is referred to as the 'full audit'.

Verification of CO_2 emission data for container carriers according to the Clean Cargo Working Group is accepted if third party documents are shown to and documented by the CSI verifier.

2.5 Clean Shipping Index environmental classes

The Clean Shipping Index environmental classes range from one to five stars, depending on the number of points obtained. The environmental classes are defined in the methodology and verification guidelines which can be downloaded from www.cleanshippingindex.com.

2.6 Costs of verification

The costs for the verification are a matter between the shipping company and the verifier. The full audit (office + onboard, every 3 year) normally takes 1 to 2 days, depending on the availability of the data and experience of the auditor.

Clean Shipping project management charges an administrative fee of €500,- for issuing the certificate when the full audit has been performed. This is a fixed fee and will be invoiced via the verification company.

The administrative fee does not apply for shipowners who are paying users of Clean Shipping Index, for a maximum of 10 certificates per year.

2.7 Pre-verification of new-built vessels

Clean Shipping Index welcomes the intention of ship owners to obtain a certificate for new vessels, even before the vessel is in operation. Since operational data is required to obtain a CSI certificate (13), the new vessels need a different procedure than for existing vessels.

The verification can be done before the ship is in operation:

For CO_2, the EEDI is used instead of the EEOI, although it is reported as an EEOI figure (see paragraph 3.1 in the Methodology and reporting guidelines).

For RoRo vessels, the correction factor fj_{RoRo} has to be applied to the EEDI (see Appendix 1 and 4 in the Methodology and reporting guidelines).

For RoPax, EEDI has to be corrected with two factors: fj_{RoRo} and fcRoPax f_{cRoPax} (see Appendix 1 and 4 in the Methodology and reporting guidelines).

For SO_x & PM, the calculation should be made based on the fuel order basis (see paragraph 3.4 in the Methodology and reporting guidelines).

For NO_x, there should be an EIAPP certificate, or other similar, to show NO_x emission proofs or test results.

For Chemicals, there should be a written and, by a responsible person, signed basis declaring which chemicals will be used on-board.

Documents that should be audited:
Antifouling system certificate, Safety Data Sheet (SDS), technical data sheet (TDS), international air pollution prevention certificate (IAPP), refrigerant record book.

For Water & Waste, there should be a written and, by a responsible person, signed basis declaring the procedures taking place for the different emissions (e.g. incineration/ treatment).

Documents that should be audited:
Certificate of Type Approval for Sewage Treatment Plant (if applicable), International Sewage Prevention Pollution certificate (if in place), Plan Maintenance Scheme documentation (if in place), Sewage handling manuals.

Garbage Handling, there should be a written and, by a responsible person, signed basis declaring the procedure for garbage handling.

Documents that should be audited:
Garbage Management Plan, Garbage Record book (if in place).

Sludge Handling, there should be a written and, by a responsible person, signed basis declaring the procedure for sludge handling.

Documents that should be audited:
Intenational Oil Pollution Prevention certificate, Oil Record Book (if in place).

Bilge Water Treatment, there should be a written and, by a responsible person, signed basis declaring the procedure for bilge water treatment.

Documents that should be audited:
International Oil Pollution Prevention certificate, Oil Record Book (if in place), Proposal Management System documentation (if in place).

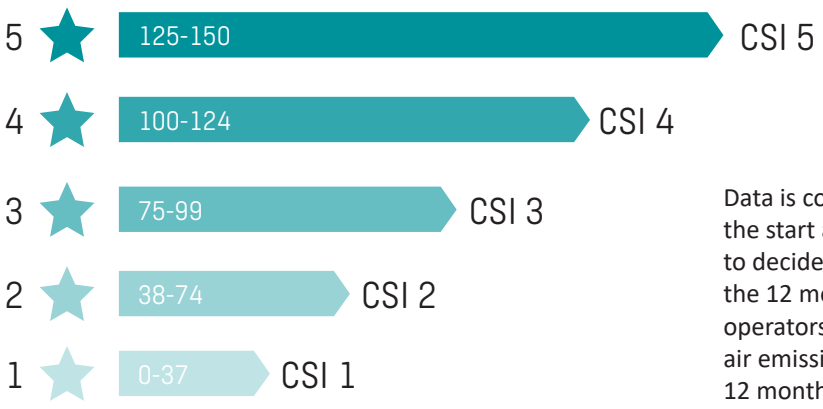
Crew Awareness, verify that the policy for crew awareness training is in place.

Scrubber water, there should be a written and, by a responsible person, signed basis declaring that scrubbers are not used.

Documents that should be audited:
Fuel orders.

However, after 6 months of operation, the parameters Chemicals and Water & Waste, Garbage Handling, Sludge Handling, Bilge Water Treatment, Crew Awareness and Scrubber water should be verified in the same way as existing vessels are verified.

Figure 2. Graphical representation of the points in the CSI scheme.



Data is considered over a 12 month running period, the start and end period are up to the ship operator to decide. A certificate expires one month after the 12 month period has passed. This means ship operators have one month to update the annual air emission verification. The validity follows the 12 month running period of the initial verification.

3. CLEAN SHIPPING INDEX VERIFICATION OF SCORING PARAMETERS

SO_x and PM

A summary of all bunker deliveries for all types applicable (HFO, MDO, MGO, LNG etc.) including quantity and sulphur content should be presented. The summary should cover a 12 month running period.

Documentation of bunker use at berth, including boilers, and within ECAs, if applicable, should be presented per voyage. Documentation on external methods of reducing SO_x and PM emissions, if applicable, should be presented.

Review the IAPP certificate and bunker records for one bunkering per month over the 12 month running period. For new vessels, the calculation should be based on any fuel order basis available.

Sulphur testing should follow the Revised MARPOL Annex VI (2).

Sulphur analysis protocols should be found on board during the full audit.

Measurement report with PM emission factors proving that PM measurements were made following ISO 8178.

If shore power connection is used, a review of the policy and usage should be done both in office and on board.

If plug-in battery power is claimed, a review of the usage should be done both at office and onboard.

Required documents:
Bunkering documents (Bunker Delivering Notes, BDN summaries), Oil Record book, International Air Pollution Prevention certificate, Measurement report with PM emission factors.

NO_x

For engines installed after 1st Jan 2000, the data on NO_x emissions is stated in the EIAPP certificate (2).

If the engine is pre-2000, or if NO_x-abatement technology is installed, a document reporting NO_x-measurements done according to the NO_x Technical Code 2008 (2) should be controlled. A fixed engine load factor of 75% of maximum continuous rating on ME and 50% on AE during the measurements is approved.

Measurements done by accredited institutions are accepted.

On-board inspection of EIAPP for all engines and, if applicable, NO_x-abatement technology documentation and verified usage should take place during the full audit.

If shore power connection is used, a review of the policy and usage should take place both in office and on board (same as for SO_x & PM).

If plug-in battery power is claimed, a review of the usage should be done both at office and onboard (same as for SO_x & PM).

Required documents:
Engine International Air Pollution Prevention certificate for all engines (if applicable), Other approved NO_x measurements or calculations (if applicable).

CO_2

Office and onboard verification should take place. Calculations should cover a 12 month running period and should follow the methodology and reporting guidelines.

For example, this means that a summary of the ship itinerary for the entire period that is to be verified including: departure port, arrival port, distance travelled and cargo carried, should be presented.

A summary of type of main engine, auxiliary engine, boiler and other consumer fuel delivered during the total period should be presented (see SO_x)

The mass of consumed main engine, auxiliary engine, boiler and other consumed fuel for the total period, should be presented.

The onboard verification should cover check on ship's log and records of loading conditions, printouts from load computer, departure and arrivals and bills of laden for period covered.

In case it concerns a new build vessel without a 12 operational month history, the Energy Efficiency Design Index (EEDI) serves as the reference for scoring (see section 2.7).

Required documents:
Overview of each voyage, split on ballast and laden legs if applicable, with sailed distance, port calls, cargo transported, type and mass of fuel consumed for main engine, auxiliary engines, boilers and other consumption.

Data should be available over a 12 month running period. Documentation explaining methodology and calculation used for establishing CO_2 emissions.

Antifouling

Onboard verification should take place.

Verify that the antifouling paint is biocide-free and does not contain any active ingredients (In the MSDS, the biocides are usually labelled active ingredients).

Required documents:
Anti-Fouling System certificate, Safety Data Sheet, Technical Data Sheet

Stern Tube Oils

Onboard verification should take place.

Confirm the stern tube arrangement – if applicable. If biodegradable fluid is claimed, documentation should be presented to show that each main component of the product (>5% by weight) should have a biodegradation >60% within 28 days. Testing should be according to ISO 9439 (3) or ISO 10708 (4). ISO 9408 (5) may be accepted if the theoretical oxygen demand (ThOD) and a time period of maximum 28 days are chosen in the method.

Required documents:
Safety Data Sheet, Technical Data Sheet.

External Hydraulic Fluids

Onboard verification should take place.

Confirm the external hydraulic fluid arrangement. If a capped external hydraulic system is claimed, no fluid should possibly be able to reach the sea in case of leakage. If biodegradable fluid is claimed, biodegradation data should be presented in accordance with criteria for stern tube oils.

Required documents:
Safety Data Sheet, Technical Data Sheet.

Gear Oils For Thrusters/Pitch Propellers

Onboard verification should take place.

Confirm gear oil arrangement for thrusters and/or pitch propellers – if applicable. If biodegradable fluid is claimed, biodegradation data should be presented in accordance with criteria for stern tube oils.

Required documents:
Safety Data Sheet, Technical Data Sheet.

Boiler/Cooling Water Treatment

Onboard verification should take place.

If claimed, verify that the vessel avoids the usage of chemical products, or components in the products, classified as carcinogenic, mutagenic, toxic to reproduction (CMR substances), sensitizing, toxic or dangerous to the environment according to the CLP regulation (6). Nitrite is excluded. In addition, organic solvents classified with risk phrases on health and environmental danger have to be avoided.

Required documents:
Safety Data Sheet, Technical Data Sheet.

Cleaning Agents

Onboard verification should take place.

If claimed, verify that the vessel avoids use of chemical products, or components in the products, classified as carcinogenic, mutagenic, toxic to reproduction (CMR substances), according to the CLP - Classification, Labelling and Packaging Regulation (EC) No 1272/2008.(6).

Detergents classified as dangerous to the environment according to the CLP regulation or with limits in the EU Regulation on detergents (7), have to be avoided. Also, organic solvents classified with risk phrases regarding health and environmental danger have to be avoided.

Detergents, surfactants or other components that disturb the installed bilge water treatment have to be avoided. Information on approved surfactants is usually found on the website of the bilge water cleaning equipment manufacturer.

The demands above are applicable for chemical products in normal regular use. Exceptions may be accepted for extraordinary situations, force major or accidents.

Required documents:
Safety Data Sheet, Technical Data Sheet.

Refrigerants

Onboard verification should take place.

Confirm what refrigerant systems are installed onboard. All refrigerants have to comply with criteria to get scoring. Reefer refrigerants are excluded. The ozone layer depletion potential (ODP) and the global warming potential (GWP)

as defined by the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer (8), should be verified for all refrigerants.

Verify if the refrigerants are natural (NH_3, CO_2) or hydrofluorocarbon (HFC) with ODP number = 0 and GWP number < 3500. Additional points are achieved if the GWP is below 1850.

Required documents:
Material Safety Data Sheet, International Air Pollution Prevention certificate, Refrigerant Record Book.

Sewage/Black Water

Onboard verification should be done.

Confirm sewage/black water treatment policy.
Either approved sewage treatment plant according to MEPC (9) verified by usage and function through maintenance record or verification that all sewage is left to land for treatment. This can be proven by checking that there is a contract with a competent supplier and a receipt or invoice of managed waste water.

Required documents:
Certificate of Type Approval for Sewage Treatment Plant (if applicable), International Sewage Prevention Pollution certificate (if in place), Plan Maintenance Scheme documentation (if in place), Sewage handling manuals, copy of contract or receipts of managed wastes.

Grey Water

Onboard verification should be done.

Confirm grey water treatment policy. Verify grey water handling in Particularly Sensitive Sea Areas (PSSAs). (12)

Either grey water is treated in an approved sewage treatment plant according to MEPC (9) verified by usage and function through maintenance record or verification of no grey water discharge in PSSA through operational manuals or verification that all grey water is left to land for treatment. This can be proven by checking that there is a contract with a competent supplier and a receipt or invoice of managed waste water.

Required documents:
Certificate of Type Approval for Sewage Treatment Plant (if applicable), International Sewage Prevention Pollution certificate (if in place), Plan Maintenance Scheme documentation (if in place), grey water and sewage handling manuals.

Garbage Handling

Onboard verification should take place.

Confirm policy for garbage handling. If claimed, verify no incineration of garbage, no waste overboard (food waste excluded) and separate garbage handling for reuse, recycling and discharge. Information should be presented according to Annex V in MARPOL 73/78 (10).

Required documents:
Garbage Record Book, Garbage Management Plan.

Sludge Handling

Onboard verification should take place.

Confirm policy for sludge handling. Verify handling of sludge, incineration of sludge oil, documentation of sludge oil disposal according to oil record book. Verify sample reading in oil record book and verify according to the International Oil Pollution Prevention certificate following the MARPOL Annex I (11).

Required documents:
International Oil Pollution Prevention certificate,
Oil Record Book.

Bilge Water Treatment

Onboard verification should take place.

Confirm policy for bilge water treatment. If claimed, verify that active treatment equipment is installed, calibrated and a documented emission of < 5ppm oil in the disposed bilge water. Verify if emission control box is installed and register position and time. Verify if bilge water is discharged to an onshore treatment facility.

Required documents:
International Oil Pollution Prevention certificate, Oil Record Book, Proposal Management System documentation (if in place).

Crew Awareness

Onboard verification should take place.

Confirm policy and training log (or equivalent) for crew awareness training. Judge result by asking the following questions to at least (but not limited to) Master, Chief Engineer, 2nd Engineer, 1st Officer, engine room personnel, galley personnel and electrician:

1. What are the environmental aspects of your daily operations, and the impact these may cause?
2. What kind of knowledge and tools to limit the environmental impact of your daily operations do you have?
3. Do you feel that environmental issues are prioritized to the necessary level within your company, and that you are well prepared for new and stricter regulations?
4. What do you believe is the main challenge for your company with regards to an emerging greener economy?

Written answers to these crew awareness questions will be filed by verifier together with verification documents.

No further required documents.

Scrubber water

Onboard verification should be done.

Confirm that the vessel does not have a scrubber on board or uses fuels containing residual oil, such as Very Low Sulphur Fuel Oil (VLSFO) or Ultra Low Sulphur Fuel Oil (ULSFO). If plug-in battery power is claimed, a review of the usage should be done both at office and onboard.

Required documents:
Bunkering documents (Bunker Delivery Notes, BDN summaries), Oil Record book.

4. VERIFICATION OF SHIPPING COMPANIES

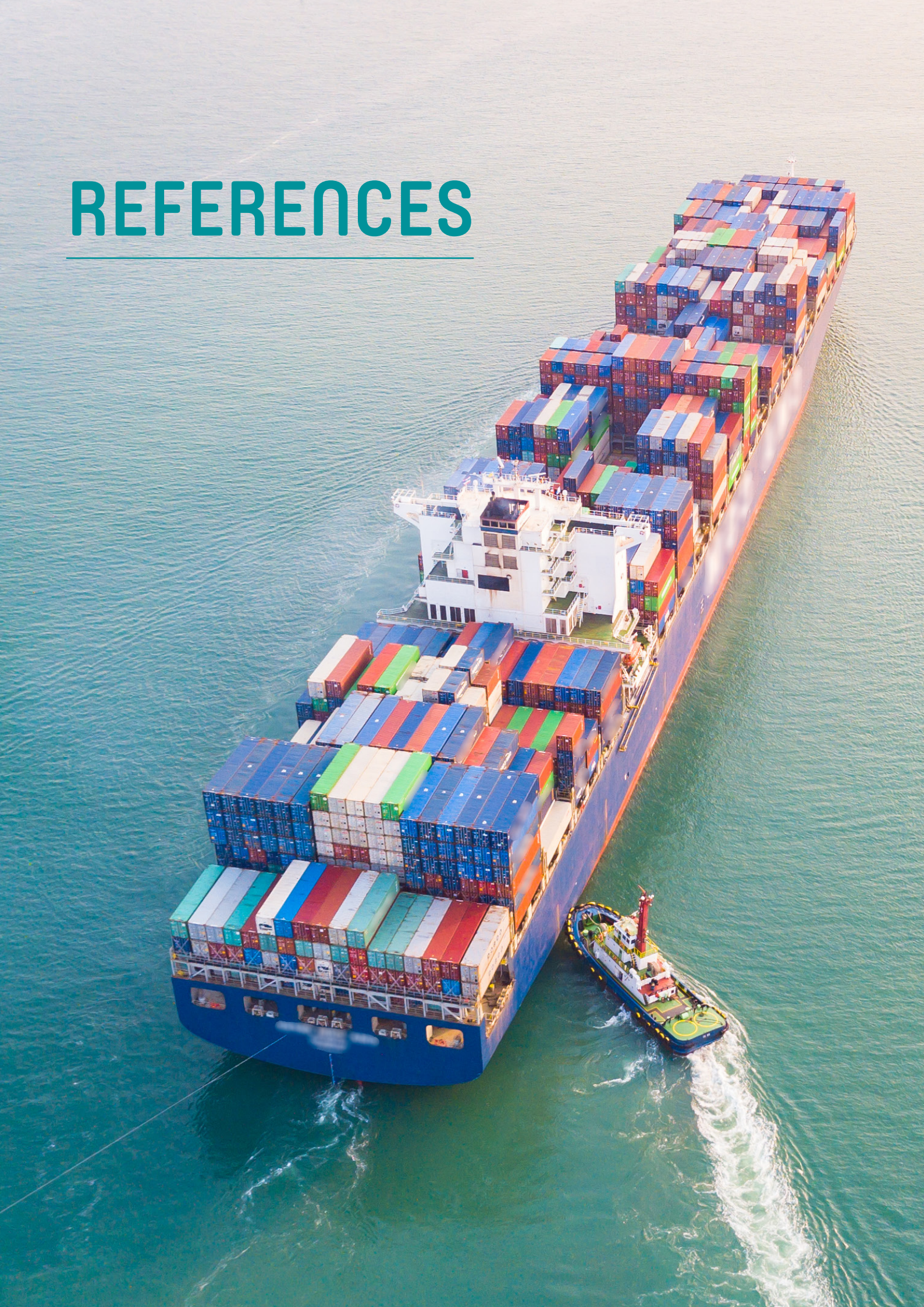
In addition to individual vessel verifications, shipping companies are offered a “company verification” which leads to highlighted exposure in the Clean Shipping Index database. Such exposure is intended to function as a stamp of an overall quality of the company, and might be considered so by the Clean Shipping Index members.

The requirement for a “company verification” status is having a certain number of vessels from the fleet verified, based on the square root of total fleet (fractions rounded up), see below table.

Fleet size	Number of ships to verify	Fleet size	Number of ships to verify
1	1	82-100	10
4	2	101-121	11
9	3	122-144	12
16	4	145-169	13
25	5	170-196	14
36	6	197-225	15
49	7	226-256	16
64	8	257-289	17
65-81	9	290-324	18

NOTE: fleet size number should be based on owned and chartered vessels time (6 months contract or more) -and bareboat charter). The database will automatically base the required number of vessels on total number of vessels reported.

REFERENCES



1. Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC
2. MEPC. 2008. Revised MARPOL Annex VI. Amendments to the Annex of the Protocol of 1997 to amend the international Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto. MEPC 176 (58). www.imo.org
3. ISO 9439:1999. Water quality – Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium – Carbon dioxide evolution test.
4. ISO 10708:1997. Water quality – Evaluation in an aqueous medium of the ultimate aerobic biodegradability of organic compounds – Determination of biochemical oxygen demand in a two-phase closed bottle test.
5. ISO 9404:1999. Water quality – Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium by determination of oxygen demand in a closed respirometer.
6. EU. 2008. Regulation (EC) No 1272/2008 - classification, labelling and packaging of substances and mixtures (CLP).
7. EU. 2004. Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergent.
8. Montreal. 1987. The Montreal Protocol on Substances that Deplete the Ozone Layer. http://ozone.unep.org
9. MEPC. 2006. Revised guidelines on implementation of effluent standards and performance test for sewage treatment plants. Resolution MEPC. 159 (55). www.imo.org
10. MARPOL. 1988. Annex V; Prevention of Pollution by Garbage from Ships. www.imo.org
11. MARPOL. 2007. Annex I; Prevention of Pollution by Oil www.imo.org
12. IMO. 2021 Marine Environment Particularly Sensitive Sea Areas (PSSA) https://www.imo.org/en/OurWork/Environment/Pages/PSSAs.asp
13. Clean Shipping Index. Methodology and Reporting Guidelines. Clean Shipping Index, Gothenburg, Sweden.

ANNEX 1. REQUIRED DOCUMENTATION FOR CLEAN SHIPPING INDEX VESSEL VERIFICATION

1. Bunkering documents, SO_x
2. Type and mass of fuel consumed within ECA-SO_x–over a 12 month running period one calendar year,SO_x
3. Oil record book, SO_x
4. Measurement report with PM emission factors proving that PM measurements were made following ISO 8178
5. IAPP certificate, SO_x
6. EIAPP certificates for all engines, if applicable, NO_x
7. Other approved NOx measurements, if applicable, NO_x
8. Overview of each voyage, split on ballast and laden legs if applicable, with sailed distance, port calls, cargo transported, type and mass of fuel consumed for main engine, auxiliary engines, boilers and other consumption. Data preferably available over one calendar year, CO_2
9. Documentation explaining methodology and calculation used for establishing CO_2 footprint, CO_2
10. TDS (Technical Data Sheet), Antifouling
11. AFS certificate, Antifouling
12. SDS (Safety Data Sheet), Antifouling
13. TDS (Technical Data Sheet), Stern tube oil
14. SDS (Safety Data Sheet), Stern tube oil
15. TDS (Technical Data Sheet), External hydraulic fluids
16. SDS (Safety Data Sheet), External hydraulic fluids
17. TDS (Technical Data Sheet), Gear oils for thrusters and controllable pitch (CP) propellers
18. SDS (Safety Data Sheet), Gear oils for thrusters and controllable pitch (CP) propellers
19. TDS (Technical data Sheet), Boiler/ Cooling water treatment
20. SDS (Safety Data Sheet), Boiler/ cooling water treatment
21. TDS (Technical Data Sheet), Cleaning agents
22. SDS (Safety Data Sheet), Cleaning agents
23. SDS (Safety Data Sheet), Refrigerants
24. IAPP (International air pollution prevention certificate), Refrigerants
25. Refrigerant Record Book, Refrigerants
26. ISPP certificate, if in place, Sewage
27. PMS documentation of tests, if in place, Sewage
28. Sewage handling manuals, Sewage
29. Contracts/receipts/invoices of supplier managing waste water or, if in place, sewage
30. Garbage Record Book, Garbage handling
31. Garbage Management Plan, Garbage handling
32. IOPP Certificate, Sludge handling
33. Oil record book documentation, Sludge handling
34. IOPP Certificate, Bilge water treatment
35. PMS documentation of tests, if in place, Bilge water treatment
36. Written answers to the crew awareness questions, Crew awareness
37. Bunkering documents, Scrubber water
38. Oil Record book, Scrubber water

GET IN CONTACT

Clean Shipping Index
IVL Swedish Environmental Research Institute
PO Box 530 21
400 14 Gothenburg
Sweden

e-mail: cleanshippingindex@ivl.se