

# Energy Efficiency of Ships

## Amended Rules and Guidance

Rules for Marine Pollution Prevention Systems  
Guidance for Marine Pollution Prevention Systems

## Reason for Amendment

For the purpose of reducing greenhouse gas emissions from ships, MARPOL Annex VI stipulates requirements related to the Energy Efficiency Design Index (EEDI). These requirements took effect in 2013, and specify that increasingly stringent regulations are to be implemented in stages (Phase 0 to Phase 3) by 2025.

A review of the Phase 3 regulations was conducted in consideration of recent technological developments in fuel efficiency. As a result, amendments to MARPOL Annex VI, such as accelerating the application period and strengthening the reduction rate for some ship types (mainly container ships), etc. were adopted as Resolution MEPC.324(75) at the 75th session of the IMO Marine Environment Protection Committee (MEPC75) held in November 2020.

Accordingly, relevant requirements were amended based upon said resolution.

## Outline of Amendment

The main contents of this amendment are as follows:

- (1) Revised the table regarding the effective date and the percentage of reduction required from the EEDI reference line.
- (2) Revised parameters used to determine reference values for bulk carriers.
- (3) Revised the interpretation for determining which ships are subject to Phase 2 and Phase 3.

“Rules for marine pollution prevention systems” has been partly amended as follows:

## **Part 8     EQUIPMENT FOR THE PREVENTION OF AIR POLLUTION              FROM SHIPS**

### **Chapter 3   ENERGY EFFICIENCY FOR SHIPS**

#### **3.3     Required Energy Efficiency Design Index (Required EEDI) (*Regulation 21 of Annex VI*)\***

Table 8-8 has been amended as follows.

Table 8-8 Reduction Factors (In Percentage) for EEDI Relative to the EEDI Reference Line

Ship Type	Size	Reduction Factors (%)					
		Phase 0	Phase 1	Phase 2		Phase 3	
		1 Jan. 2013 - 31 Dec. 2014	1 Jan. 2015 - 31 Dec. 2019	<u>1 Jan. 2020</u> - <u>31 Mar.</u> <u>2022</u>	1 Jan. 2020 - 31 Dec. 2024	<u>1 Apr. 2022</u> <u>and onwards</u>	1 Jan. 2025 and onwards
Bulk Carrier	20,000 DWT -	0	10		20		30
	10,000 - 20,000 DWT	n/a	0-10 <sup>(1)</sup>		0-20 <sup>(1)</sup>		0-30 <sup>(1)</sup>
Gas Carrier	<del>105,000</del> DWT -	0	10	<u>20</u>	<del>20</del>	<u>30</u>	<del>30</del>
	<u>10,000 - 15,000 DWT</u>	<u>0</u>	<u>10</u>		<u>20</u>		<u>30</u>
	2,000 - 10,000 DWT	n/a	0-10 <sup>(1)</sup>		0-20 <sup>(1)</sup>		0-30 <sup>(1)</sup>
Tanker	20,000 DWT -	0	10		20		30
	4,000 - 20,000 DWT	n/a	0-10 <sup>(1)</sup>		0-20 <sup>(1)</sup>		0-30 <sup>(1)</sup>
Container Ship	<u>200,000 DWT -</u>	<u>0</u>	<u>10</u>	<u>20</u>		<u>50</u>	
	<u>120,000 - 200,000 DWT</u>	<u>0</u>	<u>10</u>	<u>20</u>		<u>45</u>	
	<u>80,000 - 120,000 DWT</u>	<u>0</u>	<u>10</u>	<u>20</u>		<u>40</u>	
	<u>40,000 - 80,000 DWT</u>	<u>0</u>	<u>10</u>	<u>20</u>		<u>35</u>	
	<u>15,000 - 40,000 DWT</u>	0	10	<u>20</u>	<del>20</del>	<u>30</u>	<del>30</del>
	10,000 - 15,000 DWT	n/a	0-10 <sup>(1)</sup>	<u>0-20<sup>(1)</sup></u>	<del>0-20<sup>(1)</sup></del> <sup>(+)</sup>	<u>15-30<sup>(1)</sup></u>	<del>0-30<sup>(1)</sup></del> <sup>(+)</sup>
General Cargo Ships	15,000 DWT -	0	10	<u>15</u>	<del>15</del>	<u>30</u>	<del>30</del>
	3,000 - 15,000 DWT	n/a	0-10 <sup>(1)</sup>	<u>0-15<sup>(1)</sup></u>	<del>0-15<sup>(1)</sup></del> <sup>(+)</sup>	<u>0-30<sup>(1)</sup></u>	<del>0-30<sup>(1)</sup></del> <sup>(+)</sup>
Refrigerated Cargo Carrier	5,000 DWT -	0	10		15		30
	3,000 - 5,000 DWT	n/a	0-10 <sup>(1)</sup>		0-15 <sup>(1)</sup>		0-30 <sup>(1)</sup>
Combination Carrier	20,000 DWT -	0	10		20		30
	4,000 - 20,000 DWT	n/a	0-10 <sup>(1)</sup>		0-20 <sup>(1)</sup>		0-30 <sup>(1)</sup>
LNG carrier <sup>(3)</sup>	10,000 DWT -	n/a	10 <sup>(2)</sup>	<u>20</u>	<del>20</del>	<u>30</u>	<del>30</del>
Ro-ro cargo ship (vehicle carrier) <sup>(3)</sup>	10,000 DWT -	n/a	5 <sup>(2)</sup>		15		30
Ro-ro cargo ship <sup>(3)</sup>	2,000 DWT -	n/a	5 <sup>(2)</sup>		20		30
	1,000 - 2,000 DWT	n/a	0-5 <sup>(1)(2)</sup>		0-20 <sup>(1)</sup>		0-30 <sup>(1)</sup>
Ro-ro passenger ship <sup>(3)</sup>	1000 DWT-	n/a	5 <sup>(2)</sup>		20		30
	250 - 1,000 DWT	n/a	0-5 <sup>(1)(2)</sup>		0-20 <sup>(1)</sup>		0-30 <sup>(1)</sup>
Cruise passenger ship having non-conventional propulsion <sup>(3)</sup>	85,000 GT -	n/a	5 <sup>(2)</sup>	<u>20</u>	<del>20</del>	<u>30</u>	<del>30</del>
	25,000 - 85,000 GT	n/a	0-5 <sup>(1)(2)</sup>	<u>0-20<sup>(1)</sup></u>	<del>0-20<sup>(1)</sup></del> <sup>(+)</sup>	<u>0-30<sup>(1)</sup></u>	<del>0-30<sup>(1)</sup></del> <sup>(+)</sup>

Notes:

- 1 Reduction factor to be linearly interpolated between the two values dependent upon vessel size. The lower value of the reduction factor is to be applied to the smaller ship size.
- 2 Phase 1 commences for those ships on 1 September 2015.
- 3 Reduction factor applies to those ships delivered on or after 1 September 2019, as defined in paragraph 43 of regulation 2.

Table 8-9 has been amended as follows.

Table 8-9 Parameters for Determination of Reference Values for Different Ship Types

Ship type defined in 3.1.2	<i>a</i>	<i>b</i>	<i>c</i>
(4) Bulk carrier	961.79	(i) <u>Deadweight of the ship (referred to as “DWT” hereinafter in this table) where <math>DWT \leq 27900</math></u> (ii) <u>27,900 where <math>DWT &gt; 27900</math></u>	0.477
(5) Gas carrier	1120.00	<del>Deadweight of the ship (referred to as “DWT” hereinafter in this Table)</del>	0.456
(6) Tanker	1218.80		0.488
(7) Container carrier	174.22		0.201
(8) General cargo ship	107.48		0.216
(9) Refrigerated cargo carrier	227.01		0.244
(10) Combination carrier	1219.00		0.488
(12) Ro-ro cargo ship (vehicle carrier)	$(DWT/GT)^{0.7} \times 780.36$ where $DWT/GT < 0.3$ , 1812.63 where $DWT/GT \geq 0.3$		0.471
(13) Ro-ro cargo ship	1405.15	DWT	0.498
	1686.17 <sup>(1)</sup>	(i) DWT where $DWT \leq 17,000^{(1)}$ (ii) 17,000 where $DWT > 17,000^{(1)}$	
(14) Ro-ro passenger ship	752.16	DWT	0.381
	902.59 <sup>(1)</sup>	(i) DWT where $DWT \leq 10,000^{(1)}$ (ii) 10,000 where $DWT > 10,000^{(1)}$	
(17) LNG carrier	2253.7	DWT	0.474
(18) Cruise passenger ship having non-conventional propulsion	170.84	Gross tonnage of the ship (GT)	0.214

Note:

- 1 To be used from Phase 2 and thereafter. These values, however, may also be applied to Phase 1 in cases where deemed appropriate by the Society.

“Guidance for marine pollution prevention systems” has been partly amended as follows:

## **Part 8 EQUIPMENT FOR THE PREVENTION OF AIR POLLUTION FROM SHIPS**

### **Chapter 3 ENERGY EFFICIENCY FOR SHIPS**

Section 3.3 has been amended as follows.

#### **3.3 Required Energy Efficiency Design Index (Required EEDI) (Regulation 21 of Annex VI)**

**1** In Table 8-8, Part 8 of the Rules, a “ship corresponding to Phase 0” refers to the following new ships:

- (1) a ship for which the building contract is placed in Phase 0, and the delivery of which is before 1 January 2019; or
- (2) a ship for which the building contract is placed before 1 January 2013, and the delivery of which is on or after 1 July 2015 and before 1 January 2019; or
- (3) in the absence of a building contract, the ships referred to in the following (a) or (b):
  - (a) a ship at beginning stage of construction on or after 1 July 2013 and before 1 July 2015, and the delivery of which is before 1 January 2019; or
  - (b) a ship at beginning stage of construction before 1 July 2013, and the delivery of which is on or after 1 July 2015 and before 1 January 2019.

**2** In Table 8-8, Part 8 of the Rules, a “ship corresponding to Phase 1” refers to the following new ships:

- (1) a ship for which the building contract is placed in Phase 1, and the delivery of which is before 1 January 2024; or
- (2) a ship for which the building contract is placed before 1 January 2015, and the delivery of which is on or after 1 January 2019 and before 1 January 2024; or
- (3) in the absence of a building contract, the ship referred to in the following (a) or (b):
  - (a) a ship at beginning stage of construction on or after 1 July 2015 and before 1 July 2020, and the delivery of which is before 1 January 2024; or
  - (b) a ship at beginning stage of construction before 1 July 2015, and the delivery of which is on or after 1 January 2019 and before 1 January 2024.

**3** In Table 8-8, Part 8 of the Rules, a “ship corresponding to Phase 2” refers to the following new ships:

- (1) For ship types where Phase 2 ends on 31 March 2022:
  - (a) a ship for which the building contract is placed in Phase 2, and the delivery of which is before 1 April 2026; or
  - (b) a ship for which the building contract is placed before 1 January 2020, and the delivery of which is on or after 1 January 2024 and before 1 April 2026; or
  - (c) in the absence of a building contract, the ship referred to in the following (i) or (ii):
    - i) a ship at beginning stage of construction on or after 1 July 2020 and before 1 October 2022, and the delivery of which is before 1 April 2026; or
    - ii) a ship at beginning stage of construction before 1 July 2020, and the delivery of which is on or after 1 January 2024 and before 1 April 2026.
- (2) For ship types where Phase 2 ends on 31 December 2024:
  - (~~a~~) a ship for which the building contract is placed in Phase 2, and the delivery of which is

before 1 January 2029; or

~~(2b)~~ a ship for which the building contract is placed before 1 January 2020, and the delivery of which is on or after 1 January 2024 and before 1 January 2029; or

~~(2c)~~ in the absence of a building contract, the ship referred to in the following ~~(a)~~ or ~~(b)~~:

~~(a)~~ a ship at beginning stage of construction on or after 1 July 2020 and before 1 July 2025, and the delivery of which is before 1 January 2029; or

~~(b)~~ a ship at beginning stage of construction before 1 July 2020, and the delivery of which is on or after 1 January 2024 and before 1 January 2029.

**4** In **Table 8-8, Part 8 of the Rules**, a “ship corresponding to Phase 3” refers to the following new ships:

(1) For ship types where Phase 3 commences with 1 April 2022 and onwards:

(a) a ship for which the building contract is placed in Phase 3; or

(b) a ship for which the building contract of which is placed before Phase 3, and the delivery is on or after 1 April 2026; or

(c) in the absence of a building contract, the ship referred to in the following (i) or (ii):

i) a ship at beginning stage of construction on or after 1 October 2022; or

ii) a ship at beginning stage of construction before 1 October 2022, and the delivery of which is on or after 1 April 2026.

(2) For ship types where Phase 3 commences with 1 January 2025 and onwards:

~~(4a)~~ a ship for which the building contract is placed in Phase 3; or

(b) a ship for which the building contract of which is placed before Phase 3, and the delivery is on or after 1 January 2029; or

(c) in the absence of a building contract, the ship referred to in the following (i) or (ii):

~~(2i)~~ ~~in the absence of a building contract,~~ a ship at beginning stage of construction or after 1 July 2025; or

~~(3ii)~~ a ship at beginning stage of construction before 1 July 2025, and the delivery of which is on or after 1 January 2029.

**5** (Omitted)

**6** (Omitted)