

Amended Rules for the Classification of Steel Ships

Part 9 Additional Installations

(For External opinion inquiry)

2022. 8.



Machinery Rule Development Team

– Main Amendments –

(1) Effective date : 1 Jul. 2023 (Date of which contracts for construction are signed)

- Revision of cargo vapor emission control system requirements(VEC 2) with reference to USCG CFR 46 Part 39
- Revision of requirements for ballast water treatment system (ENP4800–4595–2022)
- Clarify the expression of terms (MET4600–38–2022)

Present	Amendment	Remark
<p>CHAPTER 9 CARGO VAPOUR EMISSION CONTROL SYSTEMS</p> <p>Section 3 Requirements for VEC2 Notation</p> <p>302. High level alarm system (2020)</p> <p>1. Each cargo tank of a tanker is to be equipped with an high level alram which:</p> <ul style="list-style-type: none"> (1) is to be independent of the overfill alarm system; (2) is to be identified with the labels "HIGH LEVEL ALARM" in black letters at least 50 mm high on a white background; (3) is to be set at no less than that corresponding to 95 % of tank capacity. The high level alarm is to come into operation before overfill alarm; (4) <u>is to give a visual and audible tank high level alarm to the ship's operator;</u> (5) is to alarm in the event of loss of power to the alarm system or failure of the electrical circuitry to the tank level sensor; and (6) is to be able to be checked at the tank for proper operation prior to each transfer or contain an electronic self-testing fea- ture which monitors the condition of the alarm circuitry and sensor. <p style="text-align: center;"><omitted></p>	<p>CHAPTER 9 CARGO VAPOUR EMISSION CONTROL SYSTEMS</p> <p>Section 3 Requirements for VEC2 Notation</p> <p>302. High level alarm system (2020)</p> <p>1. Each cargo tank of a tanker is to be equipped with an high level alram which:</p> <ul style="list-style-type: none"> (1) is to be independent of the overfill alarm system; (2) is to be identified with the labels "HIGH LEVEL ALARM" in black letters at least 50 mm high on a white background; (3) is to be set at no less than that corresponding to 95 % of tank capacity. The high level alarm is to come into operation before overfill alarm; (4) <u>is to be provide a visual and audible tank high level alarms so that ship's operator can recognize at the cargo control station and cargo deck area on the ship. (2022)</u> (5) is to alarm in the event of loss of power to the alarm system or failure of the electrical circuitry to the tank level sensor; and (6) is to be able to be checked at the tank for proper operation prior to each transfer or contain an electronic self-testing fea- ture which monitors the condition of the alarm circuitry and sensor. <p style="text-align: center;"><same as present></p>	<p>(Amendment)</p> <p>- Clarification of alarm installation location</p>

Present												Remark
CHAPTER 10 BALLAST WATER MANAGEMENT												
Table 9.10.2 Applicability of the requirements for each BWMS technology												
BWMS's Technology category → (Refer to Annex 9-3)	1	2	3a	3b	3c	4	5	6	7a	7b	8	
Requirement ↓	UV + Advanced Technology (AOT) or UV + TiO2 or UV +	In-line Flocculation	In-line membrane separation and de-oxygenation (injection of N2 from a	In-line de-oxygenation (injection of inert Gas from Inert Gas Generator)	In-tank de-oxygenation with Inert Gas Generator	In-line full flow electrolysis	In-line side stream electrolysis	In-line (stored) chemical injection	In-line side-stream ozone injection without gas/liquid separation tank and without	In-line side-stream ozone injection with gas/liquid separation tank and Discharge	In-tank pasteurization and de-oxygenation with N2 generator	
301. 1 and 2	X	X	X	X	X	X	X	X	X	X	X	
302. 1 and 2 (1) (2)	X	X	X	X	X	X	X	X	X	X	X	
302. 2 (3) (4) and 3 (6) (7)			X	X	X						X	
302. 3 (1) to (5)	X	X	X	X	X	X	X	X	X	X	X	
302. 4 (1)			X	X	X						X	
302. 4 (2)				X						X		
302. 4 (3)	X	X	X	X	X	X	X	X	X	X	X	
303. 1 (1) (A)				X	X				X	X		
303. 1 (1) (B)						X	X	X				
303. 1 (2)	X	X	X	X		X	X	X	X	X		
303. 1 (3)	X	X	X	X	X	X	X	X	X	X	X	
303. 1 (4) (5)	X	X	X	X		X	X	X	X	X		
304. 1 (1)		X	X			X	X	X	X	X	X	
304. 1 (2)			X	X	X				X	X	X	
304. 1 (3)									X	X		
304. 1 (4)						X	X	X	X	X		
304. 1 (5)						X	X	X				
304. 1 (6)			X	X	X				X	X	X	
304. 2 (1) to (4)		X	X	X	X	X	X	X	X	X	X	
304. 2 (5)			X			X	X	X	X	X	X	
304. 2 (6)			X						X	X	X	
304. 2 (7)			X			X	X	X	X	X	X	
304. 3		X				X	X	X	X	X		
304. 4						X	X	X	X	X		

Amendment												Remark
CHAPTER 10 BALLAST WATER MANAGEMENT												<div>(ENP4800-4595-2022)</div> <div>Revisions were made because the requirements for each BWMS type were marked differently from the applied.</div>
Table 9.10.2 Applicability of the requirements for each BWMS technology (2022)												
BWMS's Technology category → (Refer to Annex 9-3)	1	2	3a	3b	3c	4	5	6	7a	7b	8	
Requirement ↓	UV + Advanced Technology (AOT) or UV + TiO2 or UV +	In-line Flocculation	In-line membrane separation and de-oxygenation (injection of N2 from a	In-line de-oxygenation (injection of inert Gas from Inert Gas Generator)	In-tank de-oxygenation with Inert Gas Generator	In-line full flow electrolysis	In-line side stream electrolysis	In-line (stored) chemical injection	In-line side-stream ozone injection without gas/liquid separation tank and without	In-line side-stream ozone injection with gas/liquid separation tank and Discharge	In-tank pasteurization and de-oxygenation with N2 generator	
301. 1 and 2	X	X	X	X	X	X	X	X	X	X	X	
302. 1 and 2 (1) (2)	X	X	X	X	X	X	X	X	X	X	X	
302. 2 (3) (4) and 3 (6) (7)			X	X	X						X	
302. 3 (1) to (5)	X	X	X	X	X	X	X	X	X	X	X	
302. 4 (1)			X	X	X						X	
302. 4 (2)				X						X		
302. 4 (3)	X	X	X	X	X	X	X	X	X	X	X	
303. 1 (1) (A)				X	X				X	X		
303. 1 (1) (B)						X	X	X				
303. 1 (2)	X	X	X	X		X	X	X	X	X		
303. 1 (3)	X	X	X	X	X	X	X	X	X	X	X	
303. 1 (4) (5)	X	X	X	X		X	X	X	X	X		
304. 1 (1)		X	X			X	X	X	X	X	X	
304. 1 (2)			X	X	X				X	X	X	
304. 1 (3)									X	X		
304. 1 (4)						X	X	X	X	X		
304. 1 (5)						X	X	X				
304. 1 (6)			X	X	X				X	X	X	
304. 2 (1) to (5)		X	X	X	X	X	X	X	X	X	X	
304. 2 (6)			X			X	X	X	X	X	X	
304. 2 (7)			X						X	X	X	
304. 2 (8)			X			X	X	X	X	X	X	
304. 3		X				X	X	X	X	X		
304. 4						X	X	X	X	X		

Present	Amendment	Remark
<p style="text-align: center;">Section 3 Ballast Water Management Systems</p> <p>302. Ballast water management systems</p> <p>1. General</p> <p>(1) The Ballast water management systems (BWMS) is to be operated in accordance with the requirements specified in the Type Approval Certificate(TAC) issued by the Flag Administraion. BWMS should be operated within its Treatment Rated Capacity (TRC) as per the TAC. This may require limiting of ship's ballast pump flow rates.</p> <p>The arrangement of the bypasses or overrides of the BWMS is to be consistent with the approved Operation Maintenance and Safety Manual by the Flag Administration's Type Approval.</p> <p>In case the maximum capacity of the ballast pump(s) exceeds the maximum treatment rated Capacity (TRC) of the BWMS specified in the TAC issued by the Flag Administration, there should be a limitation on the BWMP giving a maximum allowable flow rate for operating the ballast pump(s) that shall not exceed the maximum TRC of the BWMS. (2022)</p> <p>(2) <u>Where the ballast pump has a capacity exceeding the treatment rated capacity of an BWMS, an appropriate flow control arrangement is to be provided for the ballast pumps and operational manual for flow control arrangement is to be specified in the ballast water management plan.</u></p> <p style="text-align: center;"><omitted></p>	<p style="text-align: center;">Section 3 Ballast Water Management Systems</p> <p>302. Ballast water management systems</p> <p>1. General</p> <p>(1) The Ballast water management systems (BWMS) is to be operated in accordance with the requirements specified in the Type Approval Certificate(TAC) issued by the Flag Administraion. BWMS should be operated within its Treatment Rated Capacity (TRC) as per the TAC. This may require limiting of ship's ballast pump flow rates.</p> <p>The arrangement of the bypasses or overrides of the BWMS is to be consistent with the approved Operation Maintenance and Safety Manual by the Flag Administration's Type Approval.</p> <p>In case the maximum capacity of the ballast pump(s) exceeds the maximum treatment rated Capacity (TRC) of the BWMS specified in the TAC issued by the Flag Administration, there should be a limitation on the BWMP giving a maximum allowable flow rate for operating the ballast pump(s) that shall not exceed the maximum TRC of the BWMS. (2022)</p> <p><u>(2) Where the ballast pump has a capacity exceeding the treatment rated capacity of an BWMS, an appropriate flow control arrangement is to be provided for the ballast pumps and operational manual for flow control arrangement is to be specified in the ballast water management plan.</u></p> <p style="text-align: center;"><same as present></p>	<p>(Amendment)</p> <p>- The contents of 302.1.(1) and (2) are duplicated.</p>

Present	Amendment	Remark
<p>304. Special requirements for BWMS categories 2, 3a, 3b, 3c, 4, 5, 6, 7a, 7b and 8 generating dangerous gas or dealing with dangerous liquids. (2022)</p> <p>3. For BWMS using chemical substances or dangerous gas which are stored on-board for either storage or preparation of the active substances (BWMS categories 2 and 6), storage or preparation of the neutralizers (BWMS categories 4, 5, 6, 7a and 7b) or recycling the wastes produced by the BWMS (BWMS category 2).</p> <p>(1) Procedures are to be in accordance with the Material Safety Data Sheet and BWM.2/Circ.20 “Guidance to ensure safe handling and storage of chemicals and preparations used to treat ballast water and the development of safety procedures for risks to the ship and crew resulting from the treatment process”, and the following measures are to be taken as appropriate:</p> <p>(A) The materials, inside coating used for the chemical storage tanks, piping and fittings are to be resistant to such chemicals substances.</p> <p>(B) Chemical substances (even if they are not defined as dangerous liquid in the sense of 301. 2 (3) and gas storage tanks are to be designed, constructed, tested, inspected, certified and maintained in accordance with:</p> <p>(a) for independent tanks permanently fixed onboard containing dangerous liquids (eg. sulfuric acid H₂SO₄) or dangerous gas (eg. oxygen O₂): the Classification Rules as applicable to pressure vessels</p> <p>(b) for independent tanks permanently fixed onboard not containing dangerous liquid (eg. sodium sulphite, sodium biosulphite or sodium thiosulphate neutralizers) and not containing dangerous gas (eg. nitrogen N₂): the Classification Rules or other industry standard recognized by the Classification Society</p> <p>(c) for portable tanks: the IMDG Code or other industry standard recognized by the Classification Society.</p> <p>(C) When the chemical substances are stored inside integral tanks, the ship's shell plating shall not form any boundary of the tank.</p> <p><omitted></p>	<p>304. Special requirements for BWMS categories 2, 3a, 3b, 3c, 4, 5, 6, 7a, 7b and 8 generating dangerous gas or dealing with dangerous liquids. (2022)</p> <p>3. For BWMS using chemical substances or dangerous gas which are stored on-board for either storage or preparation of the active substances (BWMS categories 2 and 6), storage or preparation of the neutralizers (BWMS categories 4, 5, 6, 7a and 7b) or recycling the wastes produced by the BWMS (BWMS category 2).</p> <p>(1) Procedures are to be in accordance with the Material Safety Data Sheet and BWM.2/Circ.20 “Guidance to ensure safe handling and storage of chemicals and preparations used to treat ballast water and the development of safety procedures for risks to the ship and crew resulting from the treatment process”, and the following measures are to be taken as appropriate:</p> <p>(A) The materials, inside coating used for the chemical storage tanks, piping and fittings are to be resistant to such chemicals substances.</p> <p>(B) Chemical substances (even if they are not defined as dangerous liquid in the sense of 301. 2 (3) and gas storage tanks are to be designed, constructed, tested, inspected, certified and maintained in accordance with:</p> <p>(a) for independent tanks permanently fixed onboard containing dangerous liquids (eg. sulfuric acid H₂SO₄) or dangerous gas (eg. oxygen O₂): the Classification Rules as applicable to pressure vessels</p> <p>(b) for independent tanks permanently fixed onboard not containing dangerous liquid and not containing dangerous gas : the Classification Rules or other industry standard recognized by the Classification Society (eg. sodium sulphite, sodium biosulphite or sodium thiosulphate neutralizers)</p> <p>(c) for portable tanks: the IMDG Code or other industry standard recognized by the Classification Society.</p> <p>(C) When the chemical substances are stored inside integral tanks, the ship's shell plating shall not form any boundary of the tank.</p> <p><same as present></p>	<p>(Amendment)</p> <p>– sentence structure correction</p>

Present										Remark
Table 9.10.3 In-line BWMS's technologies categorization										
BWMS's Technology category →		1	2	3a	3b	4	5	6	7a	7b
		In-line UV or UV + Advanced Oxidation Technology (AOT) or UV + TiO2 or UV + Plasma	In-line Flocculation	In-line membrane separation and de-oxygenation (injection of N2 from a N2 Generator)	In-line de-oxygenation (injection of Inert Gas from Inert Gas Generator)	In-line full flow electrolysis	In-line side stream electrolysis ⁽³⁾	In-line (stored) chemical injection	In-line side-stream ozone injection without gas/liquid separation tank and without Discharge treatment	In-line side-stream ozone injection with gas/liquid separation tank and Discharge water treatment tank
Characteristics ↓										
Des-infection when ballasting	Making use of active substance		X			X	X	X	X	X
	Full flow of ballast water is passing through the BWMS	X	X	X	X	X				X
	Only a small part of ballast water is passing through the BWMS to generate the active substance						X			
After-treatment when de-ballasting	Full flow of ballast water is passing through the BWMS	X								X
	Injection of neutralizer					X	X	X	X	X
	Not required by the Type Approval Certificate issued by the Administration		X	X						
Examples of dangerous gas as defined in Sec 3, 301. 2. (2)			(1)	O ₂ , N ₂	CO ₂ , CO	H ₂ , Cl ₂	H ₂ , Cl ₂	(1)		O ₂ , O ₃ , N ₂
After-treatment when de-ballasting	BWMS is located in the outside the cargo area	Not Acceptable	Case 1.2 ⁽²⁾	Case 1.3a ⁽²⁾	Case 1.3b	Case 1.4 ⁽²⁾	Case 1.5	Case 1.6	Case 1.7a	Case 1.7b ⁽²⁾
Notes: (1) To be investigated on a case by case basis based on the result of the IMO (GESAMP) MEPC report for Basic and Final approval in accordance with the G9 Guideline. (2) Only « Means of dis-connection » as described in 303.1 (3) (A) are to be applied. (3) In-line side stream electrolysis may also be applied in-tank in circulation mode (no treatment when ballasting or deballasting)										

Amendment										Remark
Table 9.10.3 In-line BWMS's technologies categorization										- Revision of containment requirements
BWMS's Technology category →		1	2	3a	3b	4	5	6	7a	7b
		In-line UV or UV + Advanced Oxidation Technology (AOT) or UV + TiO ₂ or UV + Plasma	In-line Flocculation	In-line membrane separation and de-oxygenation (injection of N ₂ from a N ₂ Generator)	In-line de-oxygenation (injection of Inert Gas from Inert Gas Generator)	In-line full flow electrolysis	In-line side stream electrolysis ⁽³⁾	In-line (stored) chemical injection	In-line side-stream ozone injection without gas/liquid separation tank and without Discharge treatment	In-line side-stream ozone injection with gas/liquid separation tank and Discharge water treatment tank
Characteristics ↓										
Dis-infection when ballasting	Making use of active substance		X			X	X	X	X	X
	Full flow of ballast water is passing through the BWMS	X	X	X	X	X				X
	Only a small part of ballast water is passing through the BWMS to generate the active substance						X			
After-treatment when de-ballasting	Full flow of ballast water is passing through the BWMS	X								X
	Injection of neutralizer					X	X	X	X	X
	Not required by the Type Approval Certificate issued by the Administration		X	X						
Examples of dangerous gas as defined in Sec 3, 301. 2. (2)			(1)	O ₂ , N ₂	CO ₂ , CO	H ₂ , Cl ₂	H ₂ , Cl ₂	(1)		O ₂ , O ₃ , N ₂
After-treatment when de-ballasting	BWMS is located in the outside the cargo area	Not Acceptable	Case 1.2 ⁽²⁾	Case 1.3a ⁽²⁾	Case 1.3b	Case 1.4 ⁽²⁾	Case 1.5	Case 1.6	Case 1.7a	Case 1.7b ⁽²⁾
Notes: (1) To be investigated on a case by case basis based on the result of the IMO (GESAMP) MEPC report for Basic and Final approval in accordance with the G9 Guideline. (2) Only « Means of dis-connection » as described in Fig 9.10.2(a) are to be applied. (3) In-line side stream electrolysis may also be applied in-tank in circulation mode (no treatment when ballasting or deballasting)										

Present	Amendment	Remark
<p style="text-align: center;">CHAPTER 10 BALLAST WATER MANAGEMENT</p> <p style="text-align: center;">Section 3 Ballast Water Management Systems</p> <p>306. Surveys</p> <p>4. Tests and inspections on type approved products (2018)</p> <p>(2) Completion tests</p> <p>(A) External examination</p> <p>(B) <u>Operation tests and performance tests</u></p> <p>(C) Insulation resistance tests and high voltage tests (to be applied to electric devices, electronic devices and so on)</p> <p>(D) Pressure tests (to be applied to hydraulic devices, pneumatic devices and so on)</p> <p>(E) Other tests considered necessary by the Society</p> <p style="text-align: center;"><omitted></p>	<p style="text-align: center;">CHAPTER 10 BALLAST WATER MANAGEMENT</p> <p style="text-align: center;">Section 3 Ballast Water Management Systems</p> <p>306. Surveys</p> <p>4. Tests and inspections on type approved products (2018)</p> <p>(2) Completion tests</p> <p>(A) External examination</p> <p>(B) Operation tests and performance tests Functional test (Requirement regarding alarm and stopping) (2022)</p> <p>(C) Insulation resistance tests and high voltage tests (to be applied to electric devices, electronic devices and so on)</p> <p>(D) Pressure tests (to be applied to hydraulic devices, pneumatic devices and so on)</p> <p>(E) Other tests considered necessary by the Society</p> <p style="text-align: center;"><same as present></p>	<p>(Amendment)</p> <p>- Clarify the expression of terms (MET4600-38-2022)</p>