



**GUIDANCE CHANGE NOTICE No. 2**  
**Part 1 Seagoing Ships**

# **GUIDANCE FOR THE CORROSION PROTECTION AND COATING SYSTEMS**

**Volume G**

**April 2023**

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## Foreword

This Guidance Change Notices (GCN) No. 2 provide amendment to the [Guidance for the Corrosion Protection & Coating Systems \(Pt.1, Vol.G\) edition 2019](#) along with effective date from which these changes are applicable.

Amendments to the preceding edition are marked by strikethrough, red color, and expanded text. These amendments are to be read in conjunction with the requirements given in the GCN No. 1 2022 and the 2019 Edition of the Guidance .

The summary of current amendments for each section including the implementation date are indicated in ***Table 1 - Amendments Incorporates in This Notice.***

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Any queries or comments concerning these Rules are welcomed through communication with BKI Head Office.

## Guidance Changes Notice No. 2 – April 2023

Table 1 – Amendments Incorporates in This Notice

These amendments will come into force on 1 July 2023

Paragraph	Title/Subject	Status/Remark
<b>Section 2 – Coating Application in Ballast Water Tanks</b>		
<b>A</b>	<b>Ballast Water Tanks coated according to IMO Resolution MSC.215(82)</b>	Deleted. The coating application in ballast water tanks, see Guidance for Coating Performance Standards (Pt.7, Vol. G).
<b>B</b>	<b>Ballast Water Tanks coated according to other than IMO Resolution MSC.215(82)</b>	Deleted. The coating application in ballast water tanks, see Guidance for Coating Performance Standards (Pt.7, Vol. G).

## Section 2 Coating Application in Ballast Water Tanks

<del>A.</del>	<del>Ballast Water Tanks coated according to IMO Resolution MSC.215(82)</del> .....	<del>2-2</del>
<del>B.</del>	<del>Ballast Water Tanks coated according to other than IMO Resolution MSC.215(82)</del> .....	<del>2-8</del>

### ~~A. Ballast Water Tanks coated according to IMO Resolution MSC.215(82)~~

#### ~~1. General requirements~~

~~Concerning the coating process of seawater ballast tanks during newbuilding requirements from the International Maritime Organisation (IMO) have to be observed (IMO Performance Standard for Protective Coatings – Resolution MSC.215(82)). With these regulations the coating process needs to be surveyed much more detailed and substantial. Since the IMO coating standard is made mandatory stepwise with different implementation dates the survey of the coating process of seawater ballast tanks on newbuildings needs to be distinguished in vessels where it is applicable and in vessels where it is not applicable.~~

#### ~~1.1 Instructions for vessels built according to the IMO Resolution MSC.215(82)~~

~~Applicable to seawater ballast tanks on all types of vessels of not less than 500 gross tonnage and double-side skin spaces arranged in bulk carriers of 150 m in length and upwards for which at least one of the following items is applicable:~~

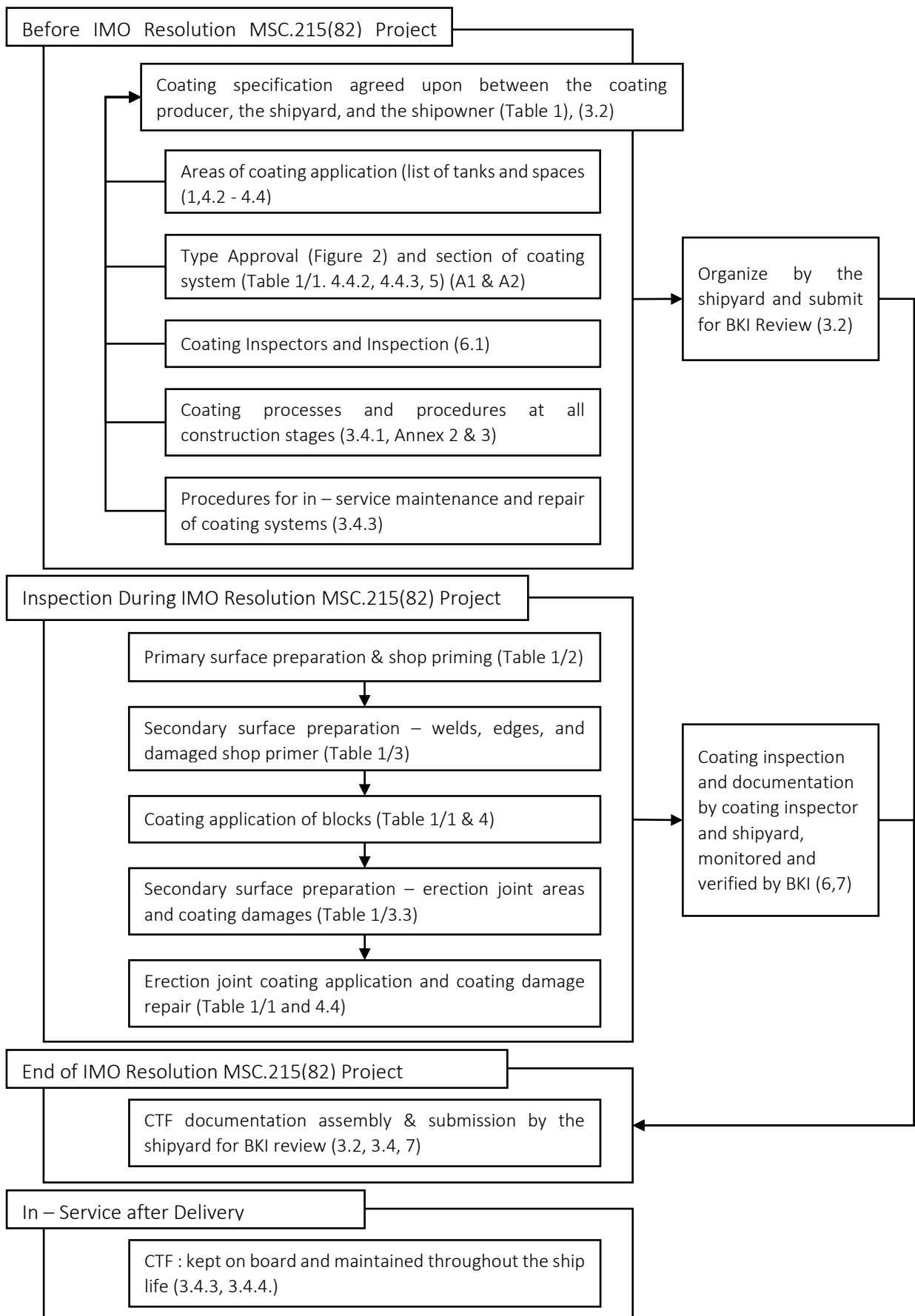
- ~~for which the building contract is placed on or after 1 July 2008; or~~
- ~~in the absence of a building contract, the keels of which are laid or which are at a similar stage of construction on or after 1 January 2009; or~~
- ~~the delivery of which is on or after 1 July 2012; or~~
- ~~the building contract is placed on or after 8 December 2006 in case of being built according to the Common Structural Rules; or~~
- ~~IMO Resolution MSC.215(82) is agreed on in the building contract.~~

#### ~~2. Process~~

##### ~~2.1 Process Flow~~

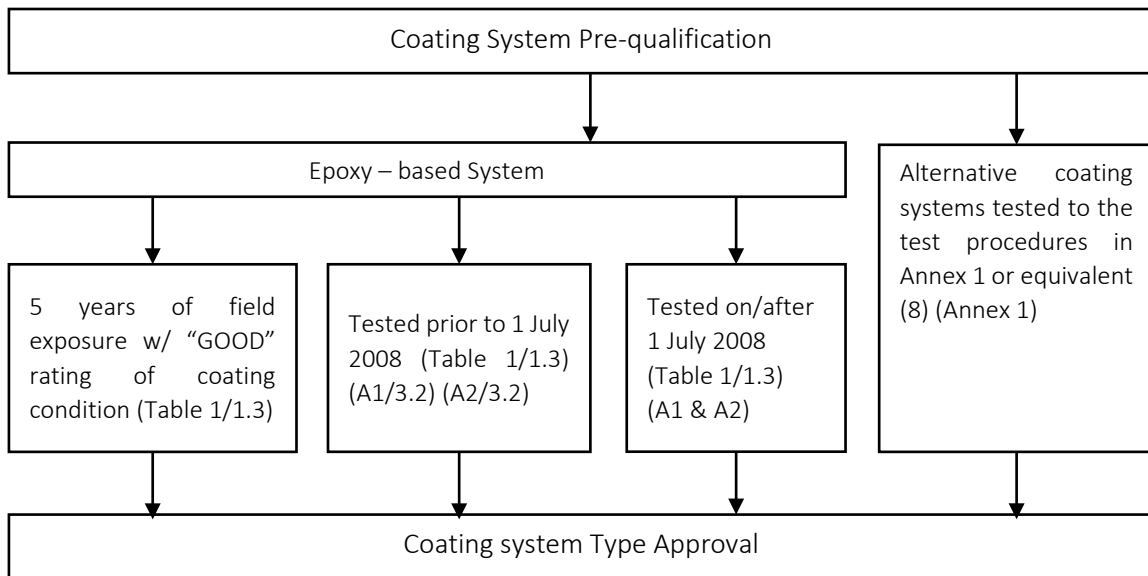
~~2.1.1 The general coating process typically follows a process flow as shown in Fig. 2.1. Each of the major coating steps is indicated, together with a cross reference to the applicable section within the IMO Resolution MSC.215(82). The various documentation and review steps are necessary to demonstrate compliance with the IMO Resolution MSC.215(82) and IACS UIs SC223 and SC227.~~

~~2.1.2 The IMO Resolution MSC.215(82) also includes requirements for pre-qualifying IMO PSPC coating systems. The general process flow for pre-qualifying coatings is shown in Fig. 2.2.~~



Note : ( ) Reference to IMO Resolution MSC.215(82) and related IACS UIs

**Fig.2.1 Coating Process Flow**



Note : ( ) Reference to IMO Resolution MSC.215(82) and related IACS UIs

**Fig.2.2 Coating Pre-qualification Testing Flow (Referred to in Fig. 2.1)**

### 3. Detail Instruction

**3.1 Coating Process** Detailed instructions for each of the major steps shown in Fig.2.1 and 2.2 are provided in this section.

#### 3.1.1 Coating Inspection Agreement

**.1** The inspection procedure of surface preparation and coating processes is to be agreed upon between the ship owner, shipyard, and coating manufacturer and shall be presented to an BKI Head Office for review prior to commencement of any coating work on any stage of a new building and, as a minimum, shall comply with the IMO Resolution MSC.215(82). BKI may, if it so determines, participate in the agreement process. The agreement, also called as Tripartite Agreement, is to be included in The Coating Technical File (CTF). See IMO Resolution MSC.215(82) paragraph 3.2.

**.2** The specification is, as a minimum, to be in accordance with all the requirements of IMO Resolution MSC.215(82) Table 1. The specification, as defined in IMO Resolution MSC.215(82) paragraph 2 of Annex 1, is to contain the type of coating system, steel preparation, surface preparation, surface cleanliness, environmental conditions, application procedure, acceptance criteria and inspection criteria.

#### 3.1.2 Selection of Areas to be Coated

**.1** The IMO Resolution MSC.215(82) is applicable for protective coatings in dedicated seawater ballast tanks of all types of ships of not less than 500 gross tonnage and double side skin spaces arranged in bulk carriers per 1.1 above.

**.2** Together with the Tripartite Agreement submitted, the shipyard is to prepare and submit a list of all spaces to be coated in accordance with the IMO PSPC Sections 1, 4.2, and 4.3 to an BKI Head Office for review. The final list is to be included in the CTF per 4. below.

### **3.1.3 — Qualifications of Coating Inspector(s)**

~~.1 — The qualifications of the coating inspector(s) are to comply with the requirements in the IMO Resolution MSC.215(82) paragraph 6.1.1. Coating inspector qualification, requirements for assistant inspectors, and equivalent qualification of coating inspectors are clarified in IACS UI-SC 223.~~

### **3.1.4 — Selection of Coatings**

~~.1 — The selection of coatings is to be made taking into account the expected service conditions and intended planned maintenance program that should provide a target useful coating life of 15 years in “GOOD” condition in accordance with IMO Resolution MSC.215(82) paragraph 4.1. The selected coatings are to be listed and cross referenced to the spaces to be coated as per 3.1.2 above. See IMO Resolution MSC.215(82) Table 1, 1.1.~~

~~.2 — The selected coating system shall be Type Approved (per 3.1.5 below) for compliance with IMO Resolution MSC.215(82) paragraph 5, by a pre-qualification test as illustrated in Fig. 2.2. See IMO Resolution MSC.215(82) Table 1, 1.3,.~~

### **3.1.5 — Type Approval Certificate**

~~.1 — A “Type Approval Certificate” which signifies that one of the options as illustrated in Fig. 2.2 has been satisfied is to be obtained for each coating system selected. See IMO Resolution MSC.215(82) paragraphs 4.4.3 and 5.~~

~~.2 — The coating manufacturer is to provide copies of the Type Approval Certificate for each coating system to be used in accordance with the IMO Resolution MSC.215(82) to the shipyard for inclusion into the CTF per 4. below.~~

### **3.1.6 — Technical Data Sheet**

~~.1 — Each selected coating is also to be documented by a “Technical Data Sheet” and its own verified application procedures which list technical information necessary to properly identify the coating product and application requirements. See IMO Resolution MSC.215(82) paragraphs 3.4.2.2, 4.4.4, and Table 1, 1.1.~~

~~.2 — The coating manufacturer is to provide copies of the Technical Data Sheets for each coating system to be used to the shipyard for inclusion into the CTF per 4. below.~~

### **3.1.7 — Primary Surface Preparation**

~~.1 — The primary surface preparation is to comply with IMO Resolution MSC.215(82) Table 1, 2.1 and 2.2.~~

~~.2 — The yard is to carry out the primary surface preparation and retain work records or other documentation as confirmation of the preparation treatment. Coating inspector(s) shall carry out inspections and document their confirmation that the primary surface preparation is within the standard. The documents are to be included in the CTF per 4. below.~~

### **3.1.8 — Shop Primer Application**

~~.1 — The shop primer is to be applied in compliance with the IMO PSPC Table 1, 2.3. See IACS UI-SC 223 for review of Quality Control of Automated Shop Primer plants and paragraph 7.3 for common interpretations concerning shop primer.~~

~~.2 — The yard is to apply the shop primer and retain work records or documentation. Coating inspector(s) shall carry out inspections and document that the shop primer application is within the standard and compatible with the selected coating to be applied. The documents are to be included in the CTF per 4. below.~~

### **3.1.9 — Secondary Surface Preparation**

~~.1 — The secondary surface preparation is to comply with IMO Resolution MSC.215(82) Table 1, 3.~~

~~.2 — The yard is to carry out the secondary surface preparation and retain work records or other documentation as confirmation of the surface preparation. Coating inspector(s) shall carry out inspections and document their confirmation that the secondary surface preparation is within the standard. The documents are to be included in the CTF per 4. below.~~

### **3.1.10 — Protective Coating Application**

~~.1 — The protective coating is to be applied in compliance with IMO Resolution MSC.215(82) Table 1, 1.4 and 1.5. The application conditions from IMO Resolution MSC.215(82) Table 1, 4.1 and 4.2 are to be followed. Inspection of the coating is to be performed as per 3.1.11 below.~~

~~.2 — The yard is to apply the coatings and retain work records or documentation. Coating inspector(s) shall carry out inspections and document that the coating application is within the standard.~~

~~The documents are to be included in the CTF per 4. below.~~

### **3.1.11 — Coating Inspection**

~~.1 — The coating is to be inspected at various stages of surface preparation and application to verify and document that the surface preparation and the coating application are within the standard as per IMO Resolution MSC.215(82) Paragraph 6.1.2.~~

~~.2 — The coating inspectors are to document the results from the inspections per IMO Resolution MSC.215(82) Paragraph 6.1.3, Annex 2 and Annex 3. The documents are to be included in the CTF per 4. below.~~

~~.3 — BKI is to monitor and verify (see 3.2) the implementation of IMO Resolution MSC.215(82) paragraph 7.~~

### **3.1.12 — Coating Repair**

~~.1 — Any defective areas of the coatings are to be repaired per IMO Resolution MSC.215(82) Table 1, 4.4. The coating inspectors are to document the results from the inspections of the repaired areas per IMO Resolution MSC.215(82) Paragraph 6.1.3 and Annex 2. The documents are to be included in the CTF per 4. below.~~

### **3.1.13 — CTF Documentation and Review**

~~.1 — The IMO Resolution MSC.215(82) mandates that each step in the coating process is performed strictly in accordance with the specifications and properly documented. The Coating Inspection Agreement, called the Tripartite Agreement, is to be documented and reviewed prior to the performance of the actual work. Daily log and non-conformity reports for the inspection items listed in IMO Resolution MSC.215(82) Paragraph 6.2 are required to illustrate the conditions and inspection results of the actual work carried out.~~



~~.2~~ — The assembly and submission of all documents called the Coating Technical File (CTF) is the overall responsibility of the shipyard as per IMO Resolution MSC.215(82) Paragraph 3.4 and 4. of this Guidance. The final CTF file is to be submitted to the attending BKI surveyor for review.

### ~~3.2~~ — **Verification Procedure**

The basic verification procedure is included in IMO Resolution MSC.215(82) Paragraph 7. The following information shall be verified by BKI prior to reviewing the CTF.

#### ~~3.2.1~~ — **Technical Data Sheet, Type Approval Certificate**

Verify the Technical Data Sheet and Type Approval Certificates for compliance with the IMO Resolution MSC.215(82) Paragraph 5.

#### ~~3.2.2~~ — **Coating Identification**

~~.1~~ — The attending BKI Surveyor shall verify on sampling basis that the coating identification on representative containers is the same coating identified in the Technical Data Sheet and Type Approval Certificate.

#### ~~3.2.3~~ — **Coating Inspector Qualification**

~~.1~~ — The attending BKI Surveyor shall verify that the coating inspector(s) and assistant inspector(s) are qualified in accordance with the qualification standards in IMO Resolution MSC.215(82) Paragraph 6.1.1 and IACS UI-SC223.

#### ~~3.2.4~~ — **Coating Inspector's Reports**

~~.1~~ — The attending BKI Surveyor shall verify that the coating inspector's reports of surface preparation and the coatings' application indicate compliance with the manufacturers' Technical Data Sheet, Type Approval Certificate and coating specification agreed in the tripartite agreement.

#### ~~3.2.5~~ — **Implementation of Coating Inspection Requirements**

~~.1~~ — The attending BKI Surveyor shall monitor implementation of the coating inspection requirements, see IMO Resolution MSC.215(82) Paragraph 7.5 and IACS UI-SC223.

### ~~3.3~~ — **Maintenance, Repair, and Partial Re-coating**

~~3.3.1~~ — The coatings are to be maintained in accordance with IMO Resolution MSC.215(82) Paragraph 3.4.3 and 3.4.4. The relevant sections of the Guidelines for Maintenance and Repair of Protective Coatings from IMO Circular MSC.1/Circ.1330 are to be applied.

~~3.3.2~~ — Records of maintenance, repair, and partial re-coating are to be documented in the CTF, which is to be kept on board and maintained throughout the life of the ship in accordance with IMO Resolution MSC.215(82) Paragraph 3.4.5.

### ~~4.~~ — **Documentation**

~~4.1~~ — Each single step of the coating process, including surface preparation shall be documented and filed.

~~4.2~~ — The collection of the documentation is commonly called Coating Technical File (CTF).

~~4.3~~ — The CTF will include, amongst others, the reports of the certified coating inspector, technical data sheets of the coating system, type approval certificates, procedures for in-service maintenance and repair of coating systems, etc.

~~4.4~~ — The CTF remains on board of the vessel and shall be maintained throughout the life of the vessel. This means that inspection and maintenance of the coating process shall be continuously recorded including location and work specification.

~~4.5~~ — The content of the Coating Technical File is listed in [Annex B](#).

~~4.6~~ — Examples for documentation records are shown in [Annex C](#).

## ~~5. Survey After Construction~~

~~5.1~~ — All annual, intermediate, and renewal or periodic survey, the attending Surveyor is to verify:

That documentation is onboard as outlined in [4](#) above.

That approved operational procedures as outlined in [3.3](#) above are maintained onboard.

That at the time of the corresponding periodical survey (Annual, Intermediate, or Renewal), any maintenance or repair of coating that have been carried out are properly documented, as per [3.3](#).

## ~~B. Ballast Water Tanks coated according to other than IMO Resolution MSC.215(82)~~

### ~~1. General~~

All seawater ballast tanks shall be provided with a corrosion protection system.

The following corrosion protection systems are to be used:

coating systems;

coating systems in combination with a cathodic protection system.

### ~~2. Coating systems~~

#### ~~2.1 General~~

The coatings shall be, in accordance with the manufacturer's specifications, resistant against seawater, coastal water, harbour water and the substances they may contain.

The characteristics, composition and field of application of a coating system shall be documented, i.e. prescribed by the manufacturer of the coating material.

Details of the coating material, how it is to be processed and its suitability for the coating system shall be contained in the product data sheet.

#### ~~2.2 Approvals~~

For new buildings, the applied coatings and coating systems shall be approved by BKI. Refer to [Section 1, B](#).

#### ~~2.3 Surface preparation~~

The surface shall be prepared according to the instructions of the manufacturer of the coating material.

~~Surface preparation is subject to specifications in the product data sheet and shall correspond to a valid surface quality grade, e.g. SIS 055900, ISO 12944-4 or ISO 8501.~~

~~Slag and loose weld spatters have to be removed before the coating is applied.~~

~~Welded or otherwise attached accessory material (tack plates, lugs etc.) shall be completely integrated into the corrosion protection, or otherwise removed.~~

#### **2.4 — Application**

~~The process of application is to be carried out according to the coating manufacturer's instructions.~~

~~During application the ambient conditions and procedural instructions are to be complied with, in accordance with the details specified in the manufacturer's instructions and in the approvals.~~

~~Surface areas which are obstructed and are thus inadequately exposed to the spraying, exposed edges and corners, as well as weld seams, shall be stripe coated in advance to achieve a sufficient coating thickness.~~

#### **2.5 — Dry film thickness**

~~The dry film thickness of the coating systems shall be in accordance with the approvals and correspond to a minimum of 250 µm.~~

~~The prescribed coating thickness is the minimum coating thickness which shall not be undercut at any spot of the coated surface.~~

#### **2.6 — Documentation**

~~The work processes involved in setting up a coating system as well as the coating materials to be used shall be laid down in a coating plan.~~

~~The coating plan for ballast water tanks is to be submitted to BKI for approval.~~

~~The coating protocol is to be compiled in such a way that all work steps executed, including surface preparation and coating materials used, are documented.~~

~~This documentation is to be compiled by the coating manufacturer and/or the contractor executing the work and/or the yard. An inspection plan shall be agreed to between the parties involved.~~

~~The papers pertaining to the documentation shall be signed by these parties. On completion of the coating system, the signed papers constituting the documentation are to be handed to the Surveyor for acceptance. The documentation is to contain the following data:~~

~~location and date,~~

~~ship and the tanks treated,~~

~~manufacturer's specifications for the coating system (number of coatings, total coating thickness, processing conditions),~~

~~product data sheet for the coating and BKI approval number,~~

~~contractors and persons carrying out the work,~~

~~surface preparation (procedure, working materials, ambient conditions),~~

~~condition of surface prior to coating (cleanness, roughness, existing primer, surface quality grade achieved),~~

~~application (procedure, number of coatings),~~

~~application conditions (time, surface/ambient temperature, humidity, dew point, ventilation),~~

~~the date the tanks were first ballasted is to be recorded,~~

~~report of coating thickness measurement and visual inspections,~~

signatures of involved parties (yard, coating manufacturer, work contractor).

Coating protocols already in existence and used by coating manufacturers, work contractors, yards and ship owners will be accepted by BKI, provided they contain the above data and are signed by all parties involved. Any missing data is to be furnished.

### 3. Coatings combined with cathodic protection

#### 3.1 Coating

In the case of coatings used in combination with cathodic protection, the provisions under point 2 shall apply for the coatings.

In addition, the coatings have to be resistant against the cathodic protection, i.e. the coatings shall not exhibit any impairment of their purpose up to a potential of  $-1200$  mV against the copper/copper-sulphate electrode. Proof of resistance against cathodic corrosion protection can be provided in accordance with recognized standards, e.g. ISO 15711. Refer also to [Annex A](#).

#### 3.2 Cathodic protection

For the cathodic protection of ballast water tanks in combination with coatings, sacrificial anodes made of zinc or aluminium may be used.

Tables 2.1 and 2.2 contain recommended alloy compositions for conventional aluminium and zinc anodes.

Zinc and aluminium anodes of differing chemical composition may also be used, provided proof of the cathodic protection ability is provided.

Zinc anodes may not be used in the event that operating temperatures in excess of  $60^{\circ}\text{C}$  can be expected.

Impressed current systems are not permitted in ballast water tanks.

**Table 2.1 Sacrificial anodes of zinc alloys for applications in seawater**

Element	KI-Zn1	KI-Zn2
Al	0,01—0,05	$\leq 0,01$
Cd	0,025—0,07	$\leq 0,004$
Cu	$\leq 0,005$	$\leq 0,005$
Fe	$\leq 0,005$	$\leq 0,0014$
Pb	$\leq 0,006$	$\leq 0,006$
Zn	$\geq 99,22$	$\geq 99,88$
Potential ( $T = 20^{\circ}\text{C}$ )	$-1,03$ V Ag/AgCl/Sea	$-1,03$ V Ag/AgCl/Sea
$Q_g$ ( $T = 20^{\circ}\text{C}$ )	780 Ah/kg	780 Ah/kg
Efficiency ( $T = 20^{\circ}\text{C}$ )	95 %	

**Table 2.2 Sacrificial anodes of aluminium alloys for applications in seawater**

Element	KI-AI1	KI-AI2	KI-AI3
Si	≤0,10	≤0,10	
Fe	≤0,10	≤0,13	≤0,10
Cu	≤0,005	≤0,005	≤0,02
Mn	N/A	N/A	0,15—0,5
Zn	2,0—6,0	4,0—6,0	2,0—5,0
Ti	-	-	0,01—0,05
In	0,01—0,03	-	0,01—0,05
Sn	-	0,05—0,15	-
Other El.	≤0,10	≤0,10	≤0,10
Al	Remainder	Remainder	Remainder
Potential (T = 20 °C)	-1,05 V Ag/AgCl/Sea	-1,05 V Ag/AgCl/Sea	-1,05 V Ag/AgCl/Sea
$Q_s$ (T = 20 °C)	2000 Ah/kg	2000 Ah/kg	2000 Ah/kg
Efficiency (T = 20 °C)	95%		

The coating application in ballast water tanks, see [Guidance for Coating Performance Standards \(Pt.7, Vol. G\)](#).

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