3 Corrosion Protection of Crude Oil Cargo Tanks
The following Rules come into force on 1 May 2013.

Alterations to the preceding Edition are marked by beams at the text margin.

Germanischer Lloyd SE

Head Office
Brooktorkai 18, 20457 Hamburg, Germany
Phone: +49 40 36149-0
Fax: +49 40 36149-200
headoffice@gl-group.com

www.gl-group.com

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Section 1 General Fundamentals

A Scope of Application
This Rule applies to the corrosion protection of cargo tanks and slop tanks of crude oil tankers below 5000 tonnes deadweight. Tankers complying to this Rule may be assigned, on request of the owner, either the Class Notation CTCOAT (Cargo Tank Coating) or a respective certificate. This Rule specifies the requirements for the corrosion protection system, the application during a newbuilding process and the supervision and certification conditions.

Cargo tanks of crude oil tankers of 5000 tonnes deadweight and above shall be coated during construction in compliance with Resolution MSC.288(87) or shall be protected by alternative means complying with Resolution MSC.289(87).

Crude oil tankers of 5000 tonnes deadweight and above may be exempted from these requirements if the ship is built to be engaged solely in the carriage of cargoes and cargo handling operations not causing corrosion according to Guidelines set out in MSC.1/Circ.1421.

B Limitations
Corrosion as a mechanism cannot be prevented entirely as such; it is merely possible to minimize the corrosion rates and the effects of the corrosion.

The corrosion rate can be reduced to an acceptable level for a certain system by means of corrosion protection measures, e.g. an appropriate selection of materials, application of the corresponding design principles, suitable coating systems or through cathodic protection. The result is that, with a high degree of probability, the specified lifetime of the structure is ensured and no corrosion damage will occur.

However, this does not release the shipyard and the ship operators from the obligation to assess properly the special features of each particular system, structural part or component and to consider the relevant corrosion hazard. In particular, the corrosion protection measures, which are applied, their maintenance and the servicing activities must be coordinated to suit the corrosion systems in the tank and also the specified lifetime.

C Definitions
Terms and their explanations in respect of corrosion and corrosion protection are defined in ISO 8044, EN 971, ISO 12944, EN 12473 and DIN 81249.
Section 2  General Requirements

A  Newbuilding

The corrosion specification of the newbuilding has to fulfil as a minimum the requirements of the following items:

- coating performance standard as described in Annex A
- cathodic protection in accordance with Section 3, C
- documentation and supervision during newbuilding according to Section 4, B

Where supervision of coating application/surface preparation is required to be performed by GL Surveyors, the yard and/or application contractor must ensure that:

- The Surveyor has unrestricted, unobstructed and safe access to all parts which have to be inspected.
- Detailed specifications and material data sheets (including material health and safety data) are timely submitted.
- The exact time schedules of inspections are submitted in advance (not later than one day before the inspection).
- Qualified and properly authorised yard and/or application contractor personnel accompany the Surveyor throughout the inspection.
- Confined spaces are adequately ventilated and lit during the inspection.

B  Ship in Service

In order to maintain the Class Notation during ship operation, it is needed to implement a suitable maintenance system to provide that the coating of the respective tanks is in "good" condition according to IMO Res. A.744 (18), Table 2.1. During periodical class surveys, this coating condition has to be confirmed by the GL Surveyor. Necessary repair works shall be in accordance with the paint manufacturer's specification.

Table 2.1  Requirements for the coating condition "good"

<table>
<thead>
<tr>
<th>Coating condition</th>
<th>Allowable level</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>General breakdown of coating or area rusted</td>
<td>&lt; 3 %</td>
<td>Percentage is related to the area under consideration or of the &quot;critical structural areas&quot;</td>
</tr>
<tr>
<td>Rust grade on plain areas</td>
<td>&lt; Ri 3</td>
<td>According to ISO 4628-3</td>
</tr>
<tr>
<td>Area of hard rust scale</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Local breakdown of coating or rust on edges or weld seams</td>
<td>&lt; 20 %</td>
<td>Percentage is related to the edges or weld seams in the area under consideration or in the &quot;critical structural area&quot;</td>
</tr>
</tbody>
</table>
Section 3 Corrosion Protection of Cargo Tanks of Crude Oil Tankers

A Design Considerations

Special attention is to be paid to the design of cargo tanks and their equipment with the aim of ensuring optimum corrosion protection through the application of suitable structural measures.

The following measures shall be taken into consideration:

- Wherever possible stiffness shall be improved in areas especially subject to fatigue and high deflection rates.
- The structural design shall be such that subsequent activities for the passive and active corrosion protection, such as surface pre-treatment, coating work, inspections and maintenance, can be performed in an optimum manner, e.g. by ensuring good accessibility.
- The surfaces must be designed to be as smooth as possible. Any stiffeners, internal parts and piping etc. shall, wherever possible, be arranged in areas less at risk from corrosion.
- Obstruction of structure members by others (shadow effects), which impedes the coating work (such as open, deep gaps) must be avoided.
- The number of scallops in structural members, intended for coating, shall be limited, wherever possible, in order to facilitate the coating application.
- Points at which moisture tends to collect, thus facilitating the origination and propagation of corrosion must be avoided as far as possible.
- Effective and well placed drain holes shall be foreseen.
- Mixed construction using different materials shall, if possible, be avoided; otherwise suitable insulating measures shall be applied.

B Coatings

B.1 General

According to the specifications of the manufacturer, coatings must be suitable for the corresponding application. For cargo oil tanks, this necessitates resistance against crude oil, seawater, brackish water and corrosive gases and all relevant mixtures of it. The paint manufacturer shall assist the shipyard and owner in designing a coating system providing suitable properties and application under consideration of the planned building and operation conditions. Information on the coating material, its processing and its suitability within the coating system shall be included in the product data-sheets. The selection, surface pre-treatment and application shall be carried out in accordance with the specifications and the instructions of the paint manufacturer. Wherever there are no specific instructions by the manufacturers, the requirements described in this Section shall be followed.

B.2 Preparation of the surface

In the following, the essential requirements for the surface pre-treatment of unalloyed and low-alloy steels are stated.

For other materials, the requirements and recommendations as stated in the GL Guidelines for Corrosion Protection and Coating Systems (VI-10-2) are applicable.
Before surface preparation according to B.2.1, B.2.2 or B.2.3 and before coating takes place, all oil and grease residues shall be removed from surfaces contaminated in this way. Surfaces for which no abrasive-blasting or mechanical grinding is necessary shall always be freed from oil, grease, dirt and other contaminants.

B.2.1 Abrasive blasting

B.2.1.1 Cleanliness

B.2.1.1.1 Primary surface preparation

Within the scope of application of this Rule, all steel surfaces shall always be descaled in the pre-production phase (through blasting to surface quality grade Sa 2 ½ according to ISO 8501-1 or, for smaller areas, mechanical grinding in accordance with St3 according to ISO 8501-1) and provided with a suitable shop primer.

B.2.1.1.2 Secondary surface preparation

The surface quality grades specified in the corresponding coating material/system documentation of the manufacturer shall be complied with.

B.2.1.2 Blasting agent

Solid blasting media shall conform with the requirements set out in ISO 11124 or ISO 11126, respectively. As the blasting agents, copper works' slag (MCU), fused corundum (MKE) as well as iron or steel blasting agents can be considered.

The blasting agents shall be free of dust, salts or other impurities.

B.2.1.3 Roughness

The surface roughness shall be of roughness grade "medium" according to ISO 8503-1.

B.2.1.4 Repairing of surface defects

Welding spatter, wormholes in fillet welds, rough-rolled ends, laminations, rolling flaws etc. which have only become apparent immediately before or during the blasting work, shall be remedied.

Edges and welding seams shall be in accordance with preparation grade P2 according to ISO 8501-3 and transitions shall be gradual. The Shipbuilding and Repair Quality Standard of the IACS shall be observed in addition.

At points at which extensive repair work must be carried out after blasting, the blasting must be repeated after the repair. At components or structural units which are matter of Classification, the GL Rules for Metallic Materials (II-1) shall be observed in addition.

B.2.1.5 Environmental conditions

For blasting purposes the minimum surface temperatures shall be 3 °C above the dew point and the maximum relative atmospheric humidity shall be 90 %. To prevent impairments by dust or blasting agents, the blasting activities should not be performed close to places where coating work is being done or where coatings have not yet dried properly.

B.2.2 Mechanical grinding

Mechanical grinding is limited to smaller areas, at which coating damage has to be remedied or where, because of the local conditions, no blasting can be performed. A surface condition as per PMa according to ISO 8501-2 or St3 according to ISO 8501-1 respectively, or one that is in accordance with the specifications of the paint manufacturer shall be achieved.

The mechanical treatment must not cause any excessive polishing or roughening of the surface. The grinding shall extend at least 25 mm into the adjacent coated surfaces.

B.2.3 Pressurized water blasting with solid blasting agents

Pressurized water blasting with solid blasting agents shall be performed according to an approved specification, which must be matched to the coating system by the paint manufacturer.
B.3 Selection of the coating materials

B.3.1 Shop primers

The requirement for shop primers in respect of corrosion protection are set out in the GL Rules for Hull Structures (I-1-1), Section 35.

The shop primers used shall be of a type approved by GL. For these shop primers, the requirements set out in the GL Rules General Requirements, Proof of Qualifications, Approvals (II-3-1), Section 6, shall apply in addition.

B.3.2 Corrosion protection systems

Coating materials and coating systems shall be selected and applied according to the prevailing environmental and application-related conditions. Their suitability shall in each case be guaranteed by the paint manufacturer, and evidence thereof shall be provided on request. The most important data of a coating material shall be documented according to STG Guideline No. 2216. For the selection, the applicable statutory conditions, safety requirements and technical rules concerning work, fire and environmental protection shall be observed by the user.

The selection of a coating system for cargo oil tanks should preferably be based on practical experience with similar cases. Coating systems which are subject to strong dynamic or elongation stresses, as can occur particularly on ships of higher-strength fine-grained structural steels, or which have to withstand high temperature stresses, shall be especially suitable for withstanding such stresses. The coating shall be in light colours.

B.4 Application of coating systems

B.4.1 General requirements

- Before coating work commences, all surfaces shall be kept dust-free in compliance with ISO 8502-3 Class (rating) 2.
- Any scaffolding or stages which may be necessary must, as far as possible, be arranged so that all surfaces to be coated can be processed continuously (e.g. free-standing scaffold). If heating units are used, the exhaust fumes of the power generators shall be vented to the outside air; they shall not be allowed to mix with the heating air and precipitate on the surfaces to be coated.
- The corresponding drying or curing times between the individual layers must comply with the manufacturer's instructions, with due consideration to the environmental conditions.
- Before or during the application of the various layers, all critical areas – such as edges, corners, welds, brackets, bolts and nuts as well as areas of difficult access by spraying – shall be stripe-coated, in order to ensure compliance with the minimum film thickness and a proper sequence of layers.
- The maximum DFT (dry film thickness) of each layer and of the total thickness shall, if not otherwise stated by the paint manufacturer, not be higher than three times the NDFT (nominal dry film thickness).
- The surface temperature shall be less than 30 °C, but at least 3 °C above dew point, and the air temperature shall be higher than 5 °C, unless otherwise permitted by the paint manufacturer.
- The relative atmospheric humidity shall attain a maximum of 90 % for systems on epoxy resin basis. In practice, the following rule has proven its worth:
  - If the surface temperature and the dew point are not measured at regular intervals, application shall only take place up to a relative atmospheric humidity of max. 85 %; if both parameters are measured at intervals to be laid down, application may also take place at a higher relative atmospheric humidity.
  - The first measurement shall be carried out before application commences. The intervals for further measurements shall be varied depending on the climatic conditions and their changes.
  - The relative atmospheric humidity needs to be considered with respect to the maximum admissible space of time between surface preparation and start of the coating works. In case, that the relative atmospheric humidity is 85 % or higher, it shall not be more than four hours.
B.4.2 Spraying
Each layer shall be applied to the entire surface so that a uniform and closed coating is achieved. Defects in the coating which impair the corrosion protection effect shall be repaired before the next layer is applied.

B.4.3 Coating with brusher or roller
At points where, because of the local conditions, no spraying is possible, the coating shall be applied by coating with a brush or roller whereby the first hand is to be applied by brush. The tool and the coating material (for roller application) shall be suitable for the intended purpose.

B.4.4 Storage of coating materials
Storage temperatures between 5 and 30 °C shall be observed for the materials. The materials shall not be stored for longer than permissible.

B.5 Competent repair of damage and defects in coating systems during the construction period

B.5.1 General
Repair works shall be specified in the corrosion protection specification. A classification of coating damage can take place according to STG-Guideline No. 2221, for example. The repair work shall always be suitable for the coating system intended for the corresponding area, including the surface preparation.

B.5.2 Insufficient film thickness
Surfaces at which the film thickness is insufficient shall be cleaned thoroughly and, if necessary, sanded down. Then a compatible coating shall be applied until the required film thickness is attained. The transitions to the original coatings shall be gradual.

B.5.3 Contaminated surfaces
Contaminated surfaces, which are to be coated further, shall be prepared anew as per B.2

B.5.4 Coating damage without exposed metal surface
The affected areas of the surface shall first be cleaned and degreased. In addition, it is necessary to attain smooth transitions (feathering) by sanding the edge zones, in order to achieve as uniform a surface as possible. Many two-component coatings have a recoating period; for this reason, if this interval has elapsed, additional edge zones must be sanded or roughened in the intact area, to achieve perfect adhesion in the transition zone.

B.5.5 Coating damage with exposed metal surface
The conditions of the material or the systems in respect of surface preparation, the application data for each individual layer etc. shall be observed as per specification. For the adjacent coating areas, the required procedure is set out in D.5.4.

B.6 Testing, acceptance and documentation of the coating systems
In the following general requirements for testing, acceptance and documentation of coating systems for cargo oil tanks are described. The requirements stated in Section 4 apply, in addition.

B.6.1 Testing
The surface preparation of the tanks shall be checked as follows before the coating work commences:

- check of steel work with respect to surface imperfections, welds and edges
- check of the required roughness profile (visual inspection or contact stylus method)
- testing for soluble salts, dust and other non-visible impurities following ISO 8502
- surface temperature and relative humidity
Within the scope of the application process, each individual layer of coating that is applied, and subsequently the entire coating system shall be tested as follows:

- Curing temperature and time, and in case of zinc silicate also relative atmospheric humidity shall be recorded.
- Visual inspection for uniformity, colour, covering power, curing and possible defects (e.g. cracks, flaking, craters etc.)
- Coating thickness measurement for compliance with the NDFT. The NDFT shall be seen as the minimum dry film thickness, which is required on the whole surface.
- In special cases, where clear indications are given, that a good adhesion is not achieved, a test of adhesive strength (see ISO 2409 or ISO 4624) is needed.

### B.6.2 Reference areas

#### B.6.2.1 General

Reference areas are suitable areas on the structure used to establish a minimum acceptable standard for the work, to check that data provided by a manufacturer or contractor is correct and to enable the performance of the coating to be assessed at any time after completion.

Reference areas shall be prepared in locations in which the corrosive stresses are typical for the structure concerned. All surface preparation and coating application work on reference areas shall be carried out in the presence of GL Surveyor as well as representatives of all parties concerned, who shall give their agreement in writing when the reference areas are in accordance with the specification. All reference areas shall be accurately documented and permanently marked on the structure itself.

The size and number of reference areas shall be in reasonable proportion, both practically and economically, to the area of the complete structure, see also Table 3.1.

#### B.6.2.2 Reference area records

The contractor shall keep records on the preparation of reference areas for each step of the work (for recommended form see Annex B). The records shall include all relevant data and shall be approved by GL Surveyor.

#### B.6.2.3 Damaged reference areas

If reference areas have been damaged, the defects shall be carefully repaired but these repaired parts are no longer valid as reference areas.

### Table 3.1 Number of reference areas according to ISO 12944-7

<table>
<thead>
<tr>
<th>Size of structure (coated area) [m^2]</th>
<th>Recommended maximum number of reference areas</th>
<th>Recommended maximum percentage of reference area relative to total area of structure [%]</th>
<th>Recommended maximum total area of reference areas [m^2]</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 2 000</td>
<td>3</td>
<td>0.6</td>
<td>12</td>
</tr>
<tr>
<td>above 2 000 to 5 000</td>
<td>5</td>
<td>0.5</td>
<td>25</td>
</tr>
<tr>
<td>above 5 000 to 10 000</td>
<td>7</td>
<td>0.3</td>
<td>75</td>
</tr>
<tr>
<td>above 10 000 to 25 000</td>
<td>7</td>
<td>0.2</td>
<td>100</td>
</tr>
<tr>
<td>above 25 000 to 50 000</td>
<td>9</td>
<td>0.2</td>
<td>200</td>
</tr>
<tr>
<td>above 50 000</td>
<td>9</td>
<td>0.2</td>
<td></td>
</tr>
</tbody>
</table>
B.6.3 Acceptance and documentation

Within the corrosion protection, the way of acceptance and documentation shall be specified and agreed. If not otherwise defined, the acceptance (see Annex B) of prepared surfaces and coating systems in all cargo tanks, the applicator shall invite representatives of not only the shipyard but also of the coating material supplier and the ship owner to attend.

The applicator shall compile the documentation and shall deliver this to the yard and, if applicable, to the other participants. The documentation shall provide evidence of the checks and acceptance tests as well as the conditions prevailing during the processing, including data on the coating materials which were used.

Curing temperature shall be recorded as per procedure to be agreed by the parties involved before the coating work commences.

C Cathodic Protection

Sacrificial anodes shall be mandatory in all levels of slop tanks.

If not otherwise agreed between owner and shipyard, Guidelines for Corrosion Protection and Coating Systems (VI-10-2), Section 7, applies for cathodic protection of tanks.
Section 4 Certification and Supervision of Corrosion Protection Works

A Documentation

A.1 The work processes involved in setting up a coating system as well as the coating materials to be used must be laid down in a coating plan.

A.2 The coating plan for tanks must be submitted to GL for approval.

A.3 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.

A.4 This documentation is to be compiled by the paint manufacturer and/or the contractor executing the work and/or the yard. An inspection plan must be agreed to between the parties involved. The papers pertaining to the documentation must 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 DFT, processing conditions)
- product data sheet for the coating
- 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)
- report of DFT measurement and visual inspections
- signatures of involved parties (yard, paint manufacturer, work contractor)

A.5 Coating protocols already in existence and used by coating manufactures, work contractors, yards and ship owners will be accepted by GL, provided they contain the above data and are signed by all parties involved. Any missing data are to be furnished.

B Supervision according to GL Inspection Plan

The inspection plan shows the supervision works performed by the Surveyor. The Surveyor needs to be informed in time about all relevant steps of the surface preparation and coating works as well as the tests to be performed, so that he has the possibility to prepare for the inspection works and supervise the testing. The consequences as given in Table 4.1 are applicable, if the acceptance criteria are not fulfilled.

The supervision works according to the inspection plan shall be confirmed by the Surveyor by counter signing the relevant test reports prepared by the paint manufacturer and/or the contractor executing the work and/or the yard.
For reference areas as described in Section 3, B.6.2, all surfaces preparation and coating application work shall be carried out under GL supervision. The surface preparation and coating application shall be assessed by test types, methods and acceptance criteria as stated in the GL acceptance plan and shall be documented by the Surveyor using Annex B.

Table 4.1 GL inspection plan

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Method</th>
<th>Frequency</th>
<th>Acceptance criteria</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>The surface preparation of the tanks shall be checked as follows before the coating work commences:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual examination</td>
<td>Visual, for sharp edges, weld spatter slivers, etc.</td>
<td>Spot checks with special consideration of critical areas</td>
<td>P2 acc. to ISO 8501-3</td>
<td>Defects to be repaired</td>
</tr>
<tr>
<td>Cleanliness</td>
<td>ISO 8501-1</td>
<td>Spot checks with special consideration of critical areas</td>
<td>Sa 2 ½, St 3 for small areas</td>
<td>Reblasting or grinding for small areas</td>
</tr>
<tr>
<td></td>
<td>ISO 8502-3</td>
<td>Spot checks</td>
<td>Max. quantity and size rating 2</td>
<td>Recleaning and retesting until acceptable</td>
</tr>
<tr>
<td>Salt test</td>
<td>ISO 8502-9 or equivalent</td>
<td>Spot checks</td>
<td>Max. conductivity corresponding to 30mg/m² NaCl</td>
<td>Recleaning and retesting until acceptable</td>
</tr>
<tr>
<td>Roughness</td>
<td>Comparator or Stylus Instrument (ISO 8503)</td>
<td>Each component or once per 10 m²</td>
<td>Medium</td>
<td>Reblasting</td>
</tr>
</tbody>
</table>

Within the scope of the application process, each individual coating that is applied and subsequently the entire coating system, shall be tested as follows:

<table>
<thead>
<tr>
<th>Environmental Conditions</th>
<th>Test Type</th>
<th>Method</th>
<th>Frequency</th>
<th>Acceptance criteria</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Environmental Conditions</td>
<td>Ambient and steel temperature. Relative humidity. Dew point</td>
<td>Before start of coating works</td>
<td>In accordance with specified requirements (refer to B.4)</td>
<td>No blasting or coating</td>
</tr>
<tr>
<td>Visual examination of coating</td>
<td>Visual, to determine: Curing, contamination, solvent retention, pinholes/popping, sagging, surface defects</td>
<td>Spot checks with special consideration of critical areas (after each layer)</td>
<td>According to specified requirements</td>
<td>Repair of defects</td>
<td></td>
</tr>
<tr>
<td>Film thickness</td>
<td>ISO 2178</td>
<td>Each component or once per 10 m² (10 mm from edges)</td>
<td>DFT ≥ 300 µm in total</td>
<td>Repair, additional coats or recoating as appropriate</td>
<td></td>
</tr>
<tr>
<td>Adhesion between steel and first coating layer (i.e. not required)</td>
<td>ISO 4624 using equipment with an automatic centred pulling force, and carried out when system are fully cured</td>
<td>Spot checks only, if there are clear indications that good adhesion is not given.</td>
<td>According to ISO 12944-6</td>
<td>Coating to be rejected</td>
<td></td>
</tr>
</tbody>
</table>

1 Scope of testing need to be extended if deviations from the requirements are found.
2 If the same blasting agent is used for all areas spot checks are sufficient.
3 Deviations from the stated acceptance criteria shall be implemented, if deemed necessary due to the coating manufacturer’s specification.
Annex A  Coating Performance Standard

A  Areas to be Protected

- deck head with complete internal structure including brackets connecting to longitudinal and transverse bulkheads, see Fig. A.1
- vertical plating of surrounding bulkheads with attached structure extending 10 % of tank's height, but not more than 2 m, down from the deck with additional 100 mm around vertical brackets/stiffeners
- inner bottom & vertically 1.5 m above bottom surface
- slop tanks shall be coated on all surfaces

B  Specification of Coating Systems

The structure of the specification shall include at least the items shown in Table A.1:

Table A.1  Minimum requirements for coating specification

<table>
<thead>
<tr>
<th></th>
<th>General Information</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1. General Information Remarks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1 Area of use: Oil tanks and slop tanks</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Steel dressing</td>
<td>Section 3, B.2 to be observed</td>
</tr>
<tr>
<td>2.1</td>
<td>Edges</td>
<td>P2 acc. to ISO 8501-3</td>
</tr>
<tr>
<td>2.2</td>
<td>Steel surface imperfections</td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>Irregularities in welds</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Surface preparation</td>
<td>Section 3, B.2 to be observed</td>
</tr>
<tr>
<td>3.1</td>
<td>Sa 2 ½ on areas with damaged shop primer and weld seams. The shop primer shall be removed if good adhesion and compatibility is not confirmed by the paint manufacturer. St 3 for small damages (&lt; 3 % of total area) or where no blasting can be performed because of the local conditions</td>
<td>ISO 8501</td>
</tr>
<tr>
<td>3.2</td>
<td>Surface roughness: medium</td>
<td>ISO 8503</td>
</tr>
<tr>
<td>3.3</td>
<td>Dust: dust grade &quot;2&quot;</td>
<td>ISO 8502-3</td>
</tr>
<tr>
<td>3.4</td>
<td>Water soluble salt: &lt; 30 mg/m²</td>
<td>ISO 8502-9</td>
</tr>
<tr>
<td>4</td>
<td>Coating system</td>
<td>Section 3, B.3, B.4 and B.5 to be observed</td>
</tr>
<tr>
<td>4.1</td>
<td>Epoxy based (or other equivalent hard coating)</td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>NDFT shall be ≥ 300 µm in minimum two coats. Surface areas, which are obstructed and are thus inadequately exposed to the spraying, exposed edges and corners as well as weld seams must be stripe coated to achieve a sufficient coating thickness. DFT must not be more than 3 · NDFT. For areas below bell mouths (about 2 m · 2 m) and suction well inside special abrasive resistant coating with increased coating thickness (NDFT ≈ 600 µm) shall be used.</td>
<td></td>
</tr>
</tbody>
</table>

Deviations from the above given specification shall be implemented if deemed necessary due to the paint manufacturer's specification or recommendation.
Fig. A.1  Areas to be protected
### Annex B  Form for Final Report on Corrosion Protection Work

#### A  Final Report on Corrosion Protection Work

<table>
<thead>
<tr>
<th>GL Reg. No. :</th>
<th>Drawing No.:</th>
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<tbody>
<tr>
<td></td>
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**Coating system:**

<table>
<thead>
<tr>
<th>Application contractor</th>
</tr>
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<tbody>
<tr>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>New work</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

- Rust grade of steel surface (ISO 8501-1):
  - ☐ A
  - ☐ B
  - ☐ C
  - ☐ D
  - Milling Imperfections found
  - ☐ Sharp edges and burrs removed
  - ☐ Welding residues, including weld spatter, not removed

**Specified surface preparation grade (ISO 8501-1 or ISO 8501-2):**

- Blast-cleaning
  - ☐ Sa 2
  - ☐ Sa 2 ½
  - ☐ Sa 3
  - ☐ PSa 2
  - ☐ PSa 2 ½
  - ☐ PSa 3

- Flame cleaning
  - ☐ Fl

- Hand and power-tool cleaning
  - ☐ St 2
  - ☐ St 3
  - ☐ PST 2
  - ☐ PST 3

- Machine abrading
  - ☐ PMa

**Specified surface profile (ISO 8503-1):**

- Comparator G
  - ☐ Fine
  - ☐ Medium
  - ☐ Coarse

- Comparator S
  - ☐ Fine
  - ☐ Medium
  - ☐ Coarse
<table>
<thead>
<tr>
<th>Details of surface preparation</th>
<th>Details of paint application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface preparation grade achieved</td>
<td>1st coat</td>
</tr>
<tr>
<td>ISO 8501-1, ISO 8501-2</td>
<td></td>
</tr>
<tr>
<td>ISO 8502-3</td>
<td></td>
</tr>
<tr>
<td>Surface profile achieved (ISO 8503)</td>
<td></td>
</tr>
<tr>
<td>Salt test (ISO 8502-6, ISO 8502-9)</td>
<td></td>
</tr>
<tr>
<td>Brand name(s)/types of blast-cleaning abrasive (e.g. in accordance with ISO 11124/ISO 11126 series of standards)</td>
<td></td>
</tr>
<tr>
<td>Manufacturer(s) of abrasive</td>
<td></td>
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<tr>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>Air temperature, °C</td>
<td></td>
</tr>
<tr>
<td>Relative humidity, %</td>
<td></td>
</tr>
<tr>
<td>Dew point, °C</td>
<td></td>
</tr>
<tr>
<td>Surface temperature, °C</td>
<td></td>
</tr>
<tr>
<td>Designation of paint and type of coat, product No.</td>
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</tr>
<tr>
<td>Colour</td>
<td></td>
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<tr>
<td>Batch No.</td>
<td></td>
</tr>
<tr>
<td>Paint manufacturer(s)</td>
<td></td>
</tr>
<tr>
<td>Method of application</td>
<td></td>
</tr>
<tr>
<td>NDFT</td>
<td>μm</td>
</tr>
<tr>
<td>DFT</td>
<td>min. μm</td>
</tr>
<tr>
<td></td>
<td>mean μm</td>
</tr>
<tr>
<td></td>
<td>max. μm</td>
</tr>
<tr>
<td>Complies with specification?</td>
<td>yes / no</td>
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</table>
### Reference areas provided?

<table>
<thead>
<tr>
<th>Yes, indicate report No(s.)</th>
<th>No</th>
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</thead>
</table>

### Date of preparation:

**Remarks:**

### Use additional sheet, if necessary.

<table>
<thead>
<tr>
<th>Date:</th>
<th>Name of Surveyor:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Place:</th>
<th>Signature:</th>
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</thead>
</table>