

5.1 Recommendations for corrosion testing	5.1 腐食試験に対する勧告
5.1.1 Having reviewed the application for CleanBallast, the Group recommended that applicants should take account of the following points related to corrosivity testing:	5.1.1 CleanBallast (RWO) の申請を審査の結果、申請者は腐食試験に関して以下の点を考慮すべきであるとグループは勧告した。
.1 testing should include uncoated substrates and marine epoxy coated steel; Coatings should be in accordance with the IMO Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers (MSC.215(82));	.1 試験は無塗装の基板及び船用エポキシ樹脂系塗装の鋼板含むこと。 塗装は「すべてのタイプの船舶の専用海水バラストタンク及びばら積貨物船の二重船側部に対する IMO 塗装性能基準」(決議 MSC.215(82)) に従うこと。
.2 substrates should include low carbon steel and other metals (e.g., stainless steel, Cu alloys and Ni alloys) and non-metals (e.g., gasket and seal materials) as may be found in a ships seawater piping, fittings and structures which will be exposed to the Active Substance, Relevant Chemicals or Disinfection By-products;	.2 基板は、活性物質、関連物質または殺菌副生成物に曝される船の海水管、管取り付け物、構造に使用される低炭素鋼、その他の材料（例えば、ステンレス鋼、銅合金、ニッケル合金）、ノンメタル（例えば、ガスケットやシール材）を含むこと。
.3 in the case that passive materials are exposed to the Active Substances, Relevant Chemicals or Disinfection By-products, these should be examined for localized corrosion resistance by immersion with specimen configurations as defined in ASTM G78 Standard Guide for Crevice Corrosion Testing of Iron-Base and Nickel-Base Stainless Alloys in Seawater and Other Chloride-Containing Aqueous Environments. As an additional evaluation, short term laboratory tests should be conducted in accordance with ASTM G61 – 86(2003) e1 Standard Test Method for Conducting Cyclic Potentiodynamic Polarization Measurements for Localized Corrosion Susceptibility of Iron-, Nickel-, or Cobalt-Based Alloys;	.3 不動態化材料が活性物質、関連物質、副生成物にさらされる場合は、ASTM G78 「海水及びその他塩化物を含む水溶液環境中の鉄基及びニッケル基ステンレス合金のすき間腐食試験基準指針」に定義されたとおりに、試験片形状の浸せきによる局部耐食性について試験されること。 追加の評価として、ASTM G61- 86(2003) e1 鉄、ニッケル、コバルト基合金の局部腐食感受性に対する繰り返し動電位分極測定のための標準試験法に従って、短期実験室試験が行われること。

<p>.4 testing of coated substrates should be conducted using ISO 2812-2:2007 Paints and varnishes – Determination of resistance to liquids – Part 2: Water immersion method as guidance;</p>	<p>.4 塗装基板の試験は、ISO 2812-2: 2007 「塗料及びワニスー耐液体性の測定ー第2部：水浸せき法」により実施すること。</p>
<p>.5 testing should be conducted with controls (untreated) and treated effluents under continuous exposure and also, if appropriate, intermittent exposure of the specimens at the maximum treatment concentration of the ballast water management system</p> <p>ASTM G31 – 72(2004) Standard Practice for Laboratory Immersion Corrosion Testing of Metals can be used as a guide for such testing.</p> <p>As a minimum, testing source waters should be conducted using full strength, once-through (not refreshed) natural seawater.</p> <p>If appropriate, testing should also include testing in fresh or brackish water;</p>	<p>.5 試験は連続曝露下、また、適切な場合、バラスト水管理システムの最大処理濃度における試験片の間欠曝露下において、コントロール(未処理)及び処理排水を用いて実施すること。</p> <p>ASTM G31-72(2004) 「金属の実験室浸せき腐食試験の標準的実施」は、それらの試験の指針として使用できる。</p> <p>最低限、試験原水はそのままの濃度の、貫流(リフレッシュされていない)自然海水使って実施すること。</p> <p>適切な場合、試験は淡水または汽水による試験も含むこと。</p>
<p>.6 test duration should not be less than 6 months;</p>	<p>.6 試験期間は6か月以上とすること。</p>
<p>.7 subsequent evaluation of uncoated materials should include an evaluation of the corrosion rate, by weight loss, and the depth and density of localized corrosion (i.e. pitting or crevice attack).</p> <p>These evaluations may be made with the assistance of ISO 11463 Corrosion of Metals and Alloys – Evaluation of Pitting Corrosion and ASTM G 46 Guide for Examination and Evaluation of Pitting Corrosion;</p>	<p>.7 続いて、未塗装材料の評価は、重量減少により、腐食速度、局部腐食の深さと密度の評価を含むこと。(すなわち、孔食またはすき間腐食)</p> <p>これらの評価は、ISO 11463 「金属及び合金の腐食ー孔食の評価」及びASTM G46 「孔食の試験及び評価指針」の支援によりなされるかもしれない。</p>
<p>.8 subsequent evaluation of coated materials and coating properties of both controls and samples exposed to treatment conditions should include:</p>	<p>塗装材料及びコントロールと処理状態に曝されるサンプルの両方の塗装特性の評価は、次を含むこと。</p>
<p>.1 coatings adhesion according to ISO 4624 Paints and Varnishes – Pull-Off Test for Adhesion;</p>	<p>.1 ISO 4626 「塗料及びワニスープルオフ付着試験」による塗膜密着性</p>

<p>.2 degree of blistering according to ISO 4628-2 Paints and Varnishes – Evaluation of Degradation of Coatings – Designation of Quantity and Size of Defects, and of Intensity of Uniform Changes In Appearance – Part 2: Assessment of Degree of Blistering;</p>	<p>.2 ISO 4628-2 「塗料及びワニスー塗膜劣化の評価ー欠陥の量とサイズ及び外観上の均一変化の激しさー第2部：膨れの程度の評価」による膨れの程度</p>
<p>.3 degree of rusting according to ISO 4628-3 Paints And Varnishes – Evaluation of Degradation of Coatings – Designation Of Quantity And Size of Defects, and of Intensity of Uniform Changes in Appearance – Part 3: Assessment of Degree of Rusting;</p>	<p>.3 ISO 4628-3 「塗料及びワニスー塗膜劣化の評価ー欠陥の量とサイズ及び外観上の均一変化の激しさー第3部：さびの程度の評価」によるさびの程度</p>
<p>.4 degree of cracking according to ISO 4628-4 Paints and Varnishes – Evaluation of Degradation of Coatings – Designation of Quantity And Size of Defects, and of Intensity of Uniform Changes in Appearance – Part 4: Assessment of Degree of Cracking;</p>	<p>.4 ISO 4628-4 「塗料及びワニスー塗膜劣化の評価ー欠陥の量とサイズ及び外観上の均一変化の激しさー第4部：割れの程度の評価」による割れの程度</p>
<p>.5 degree of flaking according to ISO 4628-5 Paints And Varnishes – Evaluation of Degradation of Coatings – Designation of Quantity and Size of Defects, and of Intensity of Uniform Changes In Appearance – Part 5: Assessment of Degree of Flaking; and</p>	<p>.5 ISO 4628-5 「塗料及びワニスー塗膜劣化の評価ー欠陥の量とサイズ及び外観上の均一変化の激しさー第5部：はがれの程度の評価」によるはがれの程度</p>
<p>.6 degree of delamination around a scribe according to ISO 4628-8 Paints and Varnishes – Evaluation of Degradation of Coatings – Designation of Quantity and Size Of Defects, and of Intensity of Uniform Changes in Appearance – Part 8: Assessment of Degree of Delamination and Corrosion Around a Scribe.</p>	<p>.6 ISO 4628-8 「塗料及びワニスー塗膜劣化の評価ー欠陥の量とサイズ及び外観上の均一変化の激しさー第8部：スクライプ回りの層間はく離及び腐食の度合いの評価」によるスクライプ回りの層間はく離及び腐食の度合い</p>