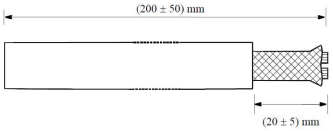
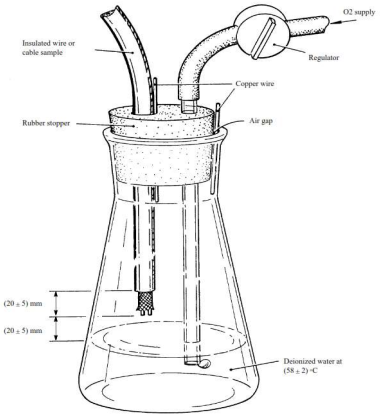
<table>
<tr><th></th><th colspan="2">ECSS Standard (ESA projects)</th><th colspan="2">ASTM Standards</th></tr>
<tr><th></th><th>ECSS-Q-ST-70-20</th><th>ASTM-B298</th><th>ASTM-B961</th></tr>
<tr><td>Objective / Scope</td><td>To measure susceptibility to corrosion (only)</td><td>Full spec (susceptibility to corrosion, elongation, direction of layers, joints, resistivity…)</td><td>Full spec (susceptibility to corrosion, elongation, direction of layers, joints, resistivity…)</td></tr>
<tr><td>Samples preparation</td><td>2 adjacent samples 200±50mm each:
1- Stripped-off (control)
2- Insulation removed on 20±5mm
  </td><td>8 production units 152mm each</td><td>1 test sample 203.2 to 406.4mm (8-16 in), attached to a polyethilene rod.
Then, both conductor and rod are introduced into a shrinkable polyethile tubing, leaving 20±5mm of conductor exposed</td></tr>
<tr><td>Preparation Test equipment</td><td>  </td><td>1- Initial cleaning: 3 minutes immersion into a suitable organic solvent.
2- Samples are dried with a cloth and kept fry in a different clean cloth
3- Two different solutions are prepared:
a) Sodium Polysulfide solution, temperature 15.6 to 21ºC
b) Hydrochloric Acid solution</td><td>Same set-up than ECSS-Q-ST-70-20</td></tr>
<tr><td>Exposing duration of test samples</td><td>240 hours</td><td>1- 114mm of each sample is introduced in solution a) for 30s.
2- Wash samples in clean water and wipe them dry
3- Immerse samples in solution b) for 15s.
4- Wash samples in clean water and wipe them dry</td><td>240 hours</td></tr>
<tr><td>Examination methods</td><td>20x magnification
Polyethilene jacket is removed after exposure and samples are inspected within 3h after removal from the equipment</td><td>Unaided eye against white background</td><td>20x magnification
Polyethilene jacket is removed after exposure and samples are inspected within 3h after removal from the equipment</td></tr>
<tr><td>Pass/fail criteria</td><td>Codification of corrosion on 5 levels
<table>
<tr><th>Code</th><th></th><th>Extent of corrosion 7 strands</th><th>Extent of corrosion 19 strands</th></tr>
<tr><td>0</td><td>None</td><td rowspan="3">2 to 3 strands in one or more locations along the sample length are affected.</td><td></td></tr>
<tr><td>1</td><td>Minor defect</td><td>One point on 1 or 2 adjacent strands.</td></tr>
<tr><td>2</td><td>Minor defect</td><td>On 2 to 8 adjacent strands in one location along sample length.</td></tr>
<tr><td>3</td><td>Minor defect</td><td>On 2 to 8 adjacent strands in a few locations along sample length.</td></tr>
<tr><td>4 (reject)</td><td>Major defect</td><td rowspan="2">Corrosion affects 4 or more strands (more than 50 %) at the same sample length.</td><td>On 2 to 10 adjacent strands in several locations along sample length.</td></tr>
<tr><td>5 (reject)</td><td>Major defect</td><td>Severe corrosion affecting more than 50 % of the total strands from any conductor, in any location.</td></tr>
</table></td><td>Blackening exposed copper is revealed through the openings in the silver coating→ samples are considered failed.
- If 1-2 samples out of 8 fail→ testing of 8 additional samples
- If >2 samples of the first 8 fail or any sample from second 8 fails→ lot is considered failed</td><td>Codification of corrosion on 5 levels:
<table>
<tr><th>Code</th><th></th><th>Extent of corrosion 7 strands</th><th>Extent of corrosion 19 strands</th></tr>
<tr><td>0</td><td>None</td><td></td><td></td></tr>
<tr><td>1</td><td>Minor defect</td><td>On 1 or 2 adjacent strands in one location along the length of the sample</td><td>On 1 or 2 adjacent strands in one location along the length of the sample.</td></tr>
<tr><td>2</td><td>Minor defect</td><td>On 2 to 3 adjacent strands in one location along sample length.</td><td>On 2 to 8 adjacent strands in one location along the sample length.</td></tr>
<tr><td>3</td><td>Minor defect</td><td>On 2 to 3 strands in two to three locations along sample length.</td><td>On 2 to 8 strands in two to three locations along the sample length.</td></tr>
<tr><td>4 (reject)</td><td>Major defect</td><td>On >4 adjacent strands in four or more locations along sample length.</td><td>On 2 to 10 strands in four or more locations along the sample length.</td></tr>
<tr><td>5 (reject)</td><td>Major defect</td><td>Severe corrosion affecting more than 50 % of the total strands from the conductor, in any one location.</td><td>Severe corrosion affecting more than 50 % of the total strands from the conductor, in any one location.</td></tr>
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<tr><td>Link</td><td>https://ecss.nl/standard/ecss-q-st-70-20c-determination-of-the-susceptibility-of-silver-plated-copper-wire-and-cable-to-red-plague-corrosion/</td><td>https://www.astm.org/Standards/B298.htm</td><td>https://www.astm.org/Standards/B961.htm</td></tr>
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