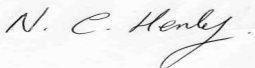


ENGINEERING STANDARDS	DATE	STANDARDS NO.
	14 Apr 03	10
<b>SPECIFICATION FOR ELECTROPLATING COATINGS OF NICKEL AND CHROMIUM</b>		
<p><b>1 SCOPE</b></p> <p>This standard specifies requirements for electroplated coatings of nickel plus chromium on copper alloys that are required for LEWMAR components.</p> <p><b>2 TYPE OF COATING</b></p> <p>2a The variations in the different coatings that can be obtained under the specification BS EN 12540: 2000 are numerous, so to avoid confusion and to satisfy all LEWMAR requirements these have been reduced to the one specification for coatings on copper alloys.</p> <p>2b The chromium plate to be the <b>Hexavalent</b> chromium based plating formulation.</p> <p><b>3 SERVICE CONDITION</b></p> <p>The grading of the service condition number for LEWMAR components under BS EN 12540: 2000 will be number 4 "Exceptionally severe service outdoors in corrosive conditions".</p> <p><b>4 SPECIFIC REQUIREMENTS</b></p> <p>(a) Nickel coating will be as per BS EN 12540 : 2000 type d which states "for a double or triple layer nickel coating of which the bottom layer contains less than 0.005% sulphur and has a elongation greater than 8% when tested by the method given in Appendix C BS EN12540 :2000 and the top layer contains more than 0.04% sulphur; the thickness of the bottom layer in double layer coatings shall be not less than 60% of the total nickel thickness and in triple layer coatings shall not be less than 50% of the total nickel thickness, the thickness of the top layer in either case being not less than 20% of the total nickel thickness. If there are three layers, the intermediate layer shall contain more sulphur than the top layer and shall not exceed 10% of the total nickel thickness".</p> <p>(b) Nickel coating will be 25 microns average thickness.</p> <p>(c) Chromium coating will be as per BS EN12540 : 2000 type r (regular). And will have a <b>minimum</b> local thickness of 0.5 micron. ( note 2 )</p>		
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# LEWMAR®

<b>ENGINEERING STANDARDS</b>	DATE	STANDARDS NO.
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<b>SPECIFICATION FOR ELECTROPLATING COATINGS OF NICKEL AND CHROMIUM</b>		
<p><b>5 DESIGNATED THICKNESS</b></p> <p>Components to be plated will therefore specify the following designation for coatings on copper alloys:- BS EN 12540 GRADE 4 Cu/Ni 30d Cr r.</p> <p><b>6 SURFACE CONDITION PRIOR TO ELECTROPLATING</b></p> <p>(a) Significant surfaces will be polished prior to electroplating.</p> <p>(b) Improvement of rough, porous or pitted surfaces by a copper undercoat deposit of average thickness of 10 microns per coat, is permissible under this standard, to the approval of LEWMAR Quality Control. Refer to Note 3.</p> <p><b>7 TEST AND INSPECTION PROCEDURES</b></p> <p>Tests for thickness of plating will be carried out on a regular basis using a Fisher X-Ray XUVM. The tabulated results to be supplied to Lewmar by the plater.</p>		
<b>NOTES</b>		
<p>1) An allowance has been made in the design specification to accommodate the film thickness indicated. Therefore the dimensions shown on LEWMAR drawings are the machined sizes to be achieved.</p> <p>2) LEWMAR's requirement for minimum chromium thickness will be 0.5 microns.</p> <p>3) In general all casting work will be copper plated, polished, re-coppered and polished, with a final 3 minute flash copper coat to ensure good reactivation of the copper undercoat, immediately followed by nickel/chrome.</p>		

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