TABLE 4
GRAIN SIZE AND HARDNESS FOR ALLOY UNS N08800 COLD-ROLLED, DEEP-DRAWING, AND SPINNING QUALITY SHEET AND STRIP

<table>
<thead>
<tr>
<th>Thickness, in. (mm)</th>
<th>Calculated Diameter of Average Grain Section, max, in. (mm)</th>
<th>Corresponding ASTM Micro-Grain Size No.</th>
<th>Rockwell B, Hardness, max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheet (56 in. (1.42 m) Wide and Under)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.050 (1.3) and less</td>
<td>0.0030 (0.075)</td>
<td>4.5</td>
<td>86</td>
</tr>
<tr>
<td>Over 0.050 to 0.250 (1.3 to 6.4), incl</td>
<td>0.0043 (0.110)</td>
<td>3.5</td>
<td>86</td>
</tr>
<tr>
<td>Strip (12 in. (305 mm) Wide and Under)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.005 to 0.010 (0.13 to 0.25), incl</td>
<td>0.0009 (0.022)</td>
<td>8\textsuperscript{e}</td>
<td>88\textsuperscript{e}</td>
</tr>
<tr>
<td>Over 0.010 to 0.125 (0.25 to 3.2), incl</td>
<td>0.0030 (0.075)</td>
<td>4.5</td>
<td>86</td>
</tr>
</tbody>
</table>

\textsuperscript{d}For Rockwell or equivalent hardness conversions see Hardness Conversion Tables E 140.
\textsuperscript{e}Caution should be observed in using the Rockwell test on thin material, as the results may be affected by specimen thickness. For thickness under 0.050 in. (1.3 mm), the use of the Rockwell superficial or the Vickers hardness test is suggested.
\textsuperscript{f}Sheet requirements (above) apply to strip thicknesses over 0.125 in. (3.2 mm), and for all thicknesses of strip over 12 in. (305 mm) in width.
\textsuperscript{g}For ductility evaluations for strip under 0.005 in. (0.13 mm) in thickness, the springback test such as described in Test Method F 155, is often used and the manufacturer should be consulted.
\textsuperscript{h}Accurate grain size and hardness determinations are difficult to make on strip under 0.005 in. (0.13 mm) in thickness and are not recommended.

5.1.9 **Purchaser Inspection** — If purchaser wishes to witness tests or inspection of material at place of manufacture, the purchase order must so state indicating which tests or inspections are to be witnessed (Specification B 906).

6. **Materials and Manufacture**

6.1 **Heat Treatment** — The final heat treatment of UNS N08120 shall be 2150°F (1177°C) minimum, UNS N08810, 2050°F (1121°C) minimum, UNS N08811 and UNS N08890, 2100°F (1149°C) minimum.

7. **Chemical Composition**

7.1 The material shall conform to the composition limits specified in Table 2.

7.2 If a product (check) analysis is performed by the purchaser, the material shall conform to the product (check) analysis variations in Specification B 906.

8. **Mechanical and Other Requirements**

8.1 **Mechanical Properties** — The material shall conform to the mechanical properties specified in Table 3.

8.2 **Grain Size** — Annealed Alloys UNS N08120, UNS N08810, UNS N08811, and UNS N08890 shall conform to an average grain size of ASTM No. 5 or coarser.

8.3 **Deep-Drawing and Spinning Quality Sheet and Strip** — (Alloy UNS N08800) Shall conform to the grain size and hardness requirements as provided in Table 4.

8.3.1 The mechanical properties of Table 3 do not apply to deep drawing and spinning quality sheet and strip.

8.4 **Annealing Temperature** — Alloy UNS N08120 shall be annealed at 2150°F (1177°C) minimum, and UNS N08810, 2050°F (1121°C) minimum.

9. **Dimensions and Permissible Variations**

9.1 **Thickness and Weight:**

9.1.1 **Plate** — For plate up to 2 in. (50.8 mm), incl, in thickness, the permissible variation under the specified thickness and permissible excess in overweight shall not exceed the amounts prescribed in Table A3.1 in Specification B 906.

9.1.1.1 For use with Table A3.1 in Specification B 906, plate shall be assumed to weigh 0.287 lb/in.\(^3\) (7.944 g/cm\(^3\)).

9.1.2 **Plate** — For plate over 2 in. (50.8 mm) in thickness, the permissible variations over the specified thickness shall not exceed the amounts prescribed in Table A3.2 in Specification B 906.

9.1.3 **Sheet and Strip** — The permissible variations in thickness of sheet and strip shall be as prescribed in Table A3.3 in Specification B 906. The thickness of sheet and strip shall be measured with the micrometer spindle \(\frac{3}{8}\) in. (9.5 mm) or more from either edge for material 1 in. (25.4 mm) or over in width and at any place on strip under 1 in. in width.