LESCALLOY® 300M VAC-ARC®
HIGH STRENGTH ALLOY STEEL

Typical Composition

<table>
<thead>
<tr>
<th>C</th>
<th>Mn</th>
<th>Si</th>
<th>Ni</th>
<th>Cr</th>
<th>Mo</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.42</td>
<td>0.75</td>
<td>1.65</td>
<td>1.80</td>
<td>0.80</td>
<td>0.40</td>
<td>0.07</td>
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</table>

GENERAL CHARACTERISTICS
LESCALLOY 300M VAC-ARC steel is a modified 4340 steel with added silicon allowing for use of a higher tempering temperature. The steel has high hardenability and strength with good ductility and toughness in heavy sections. It is used primarily in the 270/300 ksi (1862/2068) tensile strength range for aircraft landing gears, flap tracks and other structural applications. Vacuum arc remelting (VAR) is used to provide optimum cleanliness and preferred ingot structure.

PHYSICAL PROPERTIES
Density: 0.283 lb/in³ (7.84 g/cm³)
Thermal Conductivity: 260.0 Btu·in/hr·ft·°F (37.49 W/m·K)
Specific Heat: 0.107 Btu/lb·°F (448J/kg·K)
Mean Coefficient of Thermal Expansion 0-200°F (-17.8-93°C): 6.3x10⁻⁶ in/in·°F (11.34x10⁻⁶ mm/mm·°C)

WORKABILITY
Forging: Forge at 1950-2250°F (1066-1232°C) using a minimum forging temperature of approximately 1700°F (927°C).
Weldability: This steel can be welded by gas or arc fusion methods.
Machinability: For optimum machinability, Lescalloy 300M Vac-Arc steel should be normalized and tempered. Approximately 1200°F (649°C) is suggested for the temper. Hardness: Typically HBW 241-285.

HEAT TREATMENT
Normalize: 1700°F (927°C), 1 hour, air cool
Austenitize: 1600°F (871°C), 1 hour, oil quench
Temper: 500-600°F (260-316°C), four hours, air cool
LESCALLOY® 300M VAC-ARC®

MECHANICAL PROPERTY DATA

TYPICAL TRANSVERSE MECHANICAL PROPERTIES WITH 575°F (302°C) TEMPER

<table>
<thead>
<tr>
<th>Size Tested</th>
<th>Specimen Size</th>
<th>U.T.S.</th>
<th>0.2% Y.S.</th>
<th>Elongation</th>
<th>R of A</th>
</tr>
</thead>
<tbody>
<tr>
<td>in</td>
<td>mm</td>
<td>ksi</td>
<td>kpsi</td>
<td>(ksi) MPa</td>
<td>(%)</td>
</tr>
<tr>
<td>26 - 28</td>
<td>660 - 711</td>
<td>0.252</td>
<td>286</td>
<td>1972</td>
<td>240</td>
</tr>
<tr>
<td>22</td>
<td>559</td>
<td>0.505</td>
<td>288</td>
<td>1986</td>
<td>245</td>
</tr>
<tr>
<td>22</td>
<td>559</td>
<td>0.252</td>
<td>288</td>
<td>1986</td>
<td>242</td>
</tr>
<tr>
<td>≤12</td>
<td>305</td>
<td>0.505</td>
<td>287</td>
<td>1979</td>
<td>244</td>
</tr>
<tr>
<td>≤12</td>
<td>305</td>
<td>0.252</td>
<td>288</td>
<td>1986</td>
<td>242</td>
</tr>
</tbody>
</table>

FRACTURE TOUGHNESS PER ASTM E 399
At nominal strength levels, the ASTM E 399 plane-strain fracture toughness is typically 60-70 ksi ¥/in. (66-77 MPa ¥/m).

JOMINY END QUENCH HARDENABILITY

<table>
<thead>
<tr>
<th>Distance from Quenched End (1/16 inch)</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>21</th>
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</thead>
<tbody>
<tr>
<td>Rockwell C</td>
<td>59.0</td>
<td>58.5</td>
<td>58.5</td>
<td>58.0</td>
<td>58.0</td>
<td>57.5</td>
<td>57.5</td>
<td>57.5</td>
<td>57.5</td>
<td>57.5</td>
</tr>
</tbody>
</table>

SPECIFICATIONS
The following industry specifications are offered for general familiarization and should not be considered a complete listing.

AMS 6257 (Replaces MIL-S-8844 Class 3)
AMS 6417
AMS 6419
BMS 7-26 (Boeing)
BE1036 (Bendix)
CE-0896 (Bendix)
C-05-1190 (Lockheed)
DMS1935 (McDonnell-Douglas)
GM1012 (Grumman)
MIL-S-83135
MTL 1201 (Messier-Dowty)

TEMPERING CURVE
Austenitized 1600°F (871°C), Oil Quench
Tempered Twice 2+2 hours

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