



## HIGH RATIO EXTRUDED ALUMINUM ALLOY

Alloy C57B, is a 6xxx alloy that has been slightly modified to improve extrudability of difficult extruded profiles, particularly heatsinks and thin wall hollows. For complex solid, semi-hollow, or hollow shapes, C57B alloy provides a new level of design flexibility. Also due to the lower magnesium content, C57B alloy is also more suitable than 6063 alloys for brazing applications.

### Mechanical Properties

|   | Ultimate Tensile Strength (ksi) | Tensile Yield Strength (ksi) | Elongation (%) |
|---|---------------------------------|------------------------------|----------------|
| <b>C57B – T5</b> , thickness up thru 0.500 inches |                                 |                              |                |
| <b>Minimum</b>                                    | <b>22.0</b>                     | <b>16.0</b>                  | <b>8</b>       |
| <b>Typical</b>                                    | <b>30.9</b>                     | <b>27.2</b>                  | <b>13.5</b>    |
| <b>6063 – T5</b> , thickness up thru 0.500 inches |                                 |                              |                |
| <b>Minimum</b>                                    | <b>22.0</b>                     | <b>16.0</b>                  | <b>8</b>       |
| <b>Typical</b>                                    | <b>27.0</b>                     | <b>21.0</b>                  | <b>12</b>      |

(6063 Alloy data per Aluminum Association Standards & Data Manual)

### Chemical Composition (weight percent)

| Alloy       | Si             | Fe          | Cu          | Mn          | Mg              | Cr          | Zn          | Ti          | Others      |             |
|-------------|----------------|-------------|-------------|-------------|-----------------|-------------|-------------|-------------|-------------|-------------|
|             |                |             |             |             |                 |             |             |             | Each        | Total       |
| <b>C57B</b> | <b>0.2-0.6</b> | <b>0.35</b> | <b>0.10</b> | <b>0.15</b> | <b>0.25-0.5</b> | <b>0.10</b> | <b>0.10</b> | <b>0.10</b> | <b>0.05</b> | <b>0.15</b> |
| <b>6063</b> | <b>0.2-0.6</b> | <b>0.35</b> | <b>0.10</b> | <b>0.10</b> | <b>0.45-0.9</b> | <b>0.10</b> | <b>0.10</b> | <b>0.10</b> | <b>0.05</b> | <b>0.15</b> |

Chemical composition is in weight percent max unless shown as a range or minimum.

Remainder = Aluminum

**Electrical Conductivity:** The average electrical conductivity in % IACS (International Annealed Copper Standard) is 54.6.

**Thermal Conductivity:** Approximately 207 W/m K° at room temperature.

| Temperature °C (°F)    | Thermal Conductivity W/m-K |                     |
|------------------------|----------------------------|---------------------|
|                        | C57B - T5 (Average)        | 6063 - T5 (Average) |
| <b>23°C (73.4°F)</b>   | <b>207</b>                 | <b>203</b>          |
| <b>50°C (122.0°F)</b>  | <b>212</b>                 | <b>208</b>          |
| <b>100°C (212.0°F)</b> | <b>218</b>                 | <b>214</b>          |
| <b>150°C (302.0°F)</b> | <b>221</b>                 | <b>218</b>          |
| <b>200°C (392.0°F)</b> | <b>224</b>                 | <b>220</b>          |
| <b>250°C (482.0°F)</b> | <b>226</b>                 | <b>223</b>          |

**Machinability:** Machinability tests have indicated C57B alloy is comparable to 6063 alloy. High speed machining techniques and the use of chip breakers are recommended to enhance machinability and manage chip formation.

**Anodizing:** Alloy C57B is comparable to 6063 alloy for anodizing capability and responds well to clear, clean and color dye, brite dip, and hard coat anodizing methods.