



**ALUMTEK CORPORATION**

# **TECHNICAL CATALOG**

## **OF**

# **BUS BAR CONDUCTORS**



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## Aluminum Bus Conductor

Today, aluminum is one of the most widely specified conductive materials used in the manufacture and construction of electrical power distribution components and equipment. Typical applications presently using aluminum conductors include bus duct, bus bar, panel boards, switchgear, isolated phase bus and a host of other similarly purposed products installed virtually everywhere—from electric utility switchyards to substations construction all over the world.

The most commonly used alloys are 6063, 6061, and 6101. Where high strength and lower conductivity is called for, alloy 6061 bus is used. Where high conductivity is required, with a minimum sacrifice in mechanical properties, alloy 6101 is used. Alumtek aluminum bus conductors are manufactured to meet appropriate ASTM specifications. These include ASTM B-317 Aluminum Alloy Extruded Bar, Rod, Pipe and Structural Shapes for Electrical Purposes for Alloy 6101. The tempering process is an application that hardens or strengthens the metal by applying heat and/or cooling the metal. The most common tempers are T6, T61, and T63. T6 is solution heat treated, and artificially aged to maximum mechanical property levels. T61 is an overaged temper with higher conductivity, but lower mechanical properties than T6. T63 is an “in-between” temper with higher conductivity than T6, but less than T61. The most common alloy and temper combinations are 6063-T6, 6061-T6, 6101-T6, 6101-T61, and 6101-T63.

When Selecting a Bus Conductor A variety of factors must be considered in bus design. In all applications, considerations include d-c or a-c current, ampacity required, frequency, operating voltage, allowable voltage drop, maximum possible short circuit currents, available space, and the taps and connections required. Bus conductor ampacities are usually based on a continuous operating temperature of 40°C above an ambient temperature of 40°C. The ampacity could be calculated for other condition as per customer request.

Bus Conductor is sold in various lengths ranging from 3 m to 12 m.

Contact Alumtek Sales department for more information.





## Mechanical and Electrical Properties of Aluminum Bus Conductors, 6101-T6 Aluminium Alloy

Size	Outside Dia.	Wall Thickness	Area	Weight	Tensile Strength		D.C. Resistance at 20°C	Current Rating at 50 Hz <sup>3</sup>	Short Circuit Current <sup>2</sup>	Deflection <sup>1</sup>	Moment of Inertia	Section Modulus
					Min. Ultimate	Min. Yield						
	mm	mm	mm	Kg/m	kN	kN	Ω/km	Amper	KA	cm	cm <sup>4</sup>	cm <sup>3</sup>
<b>40*5</b>	<b>40</b>	<b>5</b>	<b>550</b>	<b>1.48</b>	<b>110</b>	<b>93</b>	<b>0.0570</b>	<b>937</b>	<b>44</b>	<b>31.5</b>	<b>9</b>	<b>4</b>
<b>50*5</b>	<b>50</b>	<b>5</b>	<b>707</b>	<b>1.91</b>	<b>141</b>	<b>120</b>	<b>0.0443</b>	<b>1115</b>	<b>56</b>	<b>19.2</b>	<b>18</b>	<b>7</b>
<b>50*6</b>	<b>50</b>	<b>6</b>	<b>829</b>	<b>2.24</b>	<b>166</b>	<b>141</b>	<b>0.0377</b>	<b>1208</b>	<b>66</b>	<b>20.0</b>	<b>21</b>	<b>8</b>
<b>50*8</b>	<b>50</b>	<b>8</b>	<b>1056</b>	<b>2.85</b>	<b>211</b>	<b>179</b>	<b>0.0296</b>	<b>1363</b>	<b>84</b>	<b>21.5</b>	<b>25</b>	<b>10</b>
<b>63*6</b>	<b>63</b>	<b>6</b>	<b>1074</b>	<b>2.90</b>	<b>215</b>	<b>183</b>	<b>0.0291</b>	<b>1451</b>	<b>85</b>	<b>12.0</b>	<b>45</b>	<b>14</b>
<b>65*5</b>	<b>65</b>	<b>5</b>	<b>942</b>	<b>2.54</b>	<b>188</b>	<b>160</b>	<b>0.0332</b>	<b>1369</b>	<b>75</b>	<b>10.9</b>	<b>44</b>	<b>13</b>
<b>80*6</b>	<b>80</b>	<b>6</b>	<b>1395</b>	<b>3.77</b>	<b>279</b>	<b>237</b>	<b>0.0224</b>	<b>1756</b>	<b>111</b>	<b>7.1</b>	<b>98</b>	<b>24</b>
<b>80*10</b>	<b>80</b>	<b>10</b>	<b>2199</b>	<b>5.94</b>	<b>440</b>	<b>374</b>	<b>0.0142</b>	<b>2204</b>	<b>175</b>	<b>7.9</b>	<b>140</b>	<b>34</b>
<b>100*6</b>	<b>100</b>	<b>6</b>	<b>1772</b>	<b>4.78</b>	<b>354</b>	<b>301</b>	<b>0.0176</b>	<b>2100</b>	<b>141</b>	<b>4.4</b>	<b>200</b>	<b>39</b>
<b>100*8</b>	<b>100</b>	<b>8</b>	<b>2312</b>	<b>6.24</b>	<b>462</b>	<b>393</b>	<b>0.0135</b>	<b>2399</b>	<b>184</b>	<b>4.6</b>	<b>251</b>	<b>49</b>
<b>115*6</b>	<b>115</b>	<b>6</b>	<b>2055</b>	<b>5.55</b>	<b>411</b>	<b>349</b>	<b>0.0152</b>	<b>2352</b>	<b>163</b>	<b>3.3</b>	<b>312</b>	<b>53</b>
<b>120*6</b>	<b>120</b>	<b>6</b>	<b>2149</b>	<b>5.80</b>	<b>430</b>	<b>365</b>	<b>0.0145</b>	<b>2434</b>	<b>171</b>	<b>3.0</b>	<b>357</b>	<b>58</b>
<b>120*8</b>	<b>120</b>	<b>8</b>	<b>2815</b>	<b>7.60</b>	<b>563</b>	<b>479</b>	<b>0.0111</b>	<b>2786</b>	<b>223</b>	<b>3.1</b>	<b>452</b>	<b>74</b>
<b>150*6</b>	<b>150</b>	<b>6</b>	<b>2714</b>	<b>7.33</b>	<b>543</b>	<b>461</b>	<b>0.0115</b>	<b>2921</b>	<b>215</b>	<b>1.9</b>	<b>718</b>	<b>94</b>
<b>160*6</b>	<b>160</b>	<b>6</b>	<b>2903</b>	<b>7.84</b>	<b>581</b>	<b>493</b>	<b>0.0107</b>	<b>3081</b>	<b>230</b>	<b>1.7</b>	<b>878</b>	<b>108</b>
<b>200*6</b>	<b>200</b>	<b>6</b>	<b>3657</b>	<b>9.87</b>	<b>731</b>	<b>622</b>	<b>0.0085</b>	<b>3706</b>	<b>290</b>	<b>1.0</b>	<b>1754</b>	<b>172</b>

<sup>1</sup> These are maximum deflection values in cm for a simple beam with uniformly distributed load and span length 10 m. Deflection d1 for any other span L1 may be obtained from the relation:  $d1=d (L1/L)^4$

<sup>2</sup> These are maximum short circuit current for 80 °C ambient temperature and 120 ° C temperature rise in 1 second.

<sup>3</sup> current ratings are based on 40°C rise over 40°C ambient in still but unconfined air, normally oxidized surface (e=0.35).



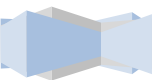
## Bus Packaging System





## Alumtek Production Facilities

### Extrusion Presses





## Aging Furnances

