**Pentz Cast Solutions: Aluminum Alloy Selection Guide**

|  |
| --- |
| **Aluminum Alloy Selection Guide** |

Typical Mechanical Properties of Aluminum Alloys (Sand Cast)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Properties  Alloy-Temper | Minimum Tensile  Strength (ksi) | | Minimum Yield  (ksi) | | Minimum%  Elongation | | Minimum  Hardness  (Brinell) |
| Standard Value | Pentz Typical Value | Standard Value | Pentz Typical Value | Standard Value | Pentz Typical Value | Standard  Value |
| A356.0T6 | 34 | 38-42 | 24 | 30-32 | 3.5 | 4+-6 | 70-105 |
| 356.0-T6 | 30 | 35-40 | 20 | 25-30 | 3 | 4-6 | 55-90 |
| 357.0-T6 | - | - | - | - | - | - |  |
| 535.0-F or T5 | 35 | 36-+40 | 18 | 20-22 | 9 | 10-12 | 60-90 |
| 713.0-F or T5 | 32 | - | 22 | - | 3 | - | 60-90 |

Values represent properties obtained from average measurements taken from separately cast test bars.

. (-) indicates no data available

Typical Mechanical Properties of Aluminum Alloys (Permanent Mold)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Properties  Alloy-Temper | Minimum Tensile  Strength (ksi) | | Minimum Yield  (ksi) | | Minimum%  Elongation | | Minimum  Hardness  (Brinell) |
| Standard Value | Pentz Typical Value | Standard Value | Pentz Typical Value | Standard Value | Pentz Typical Value | Standard  Value |
| A356.0T61 | 37 | 40-45 | 26 | 30-35 | 5 | 7-10 | 70-100 |
| 356.0-T6 | 33 | - | 22 | - | 3 | - | 60-90 |

Values represent properties obtained from average measurements taken from separately cast test bars.

. (-) indicates no data available

Typical Performance Characteristics of Aluminum Alloys

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Characteristics  Alloy-Temper | Dimensional Stability | Strength at Elevated Temperature | Corrosion Resistance | Casting Thin Wall and Complex Shapes | Pressure Tight/Vacuum Tight | Weldability | Machinability | Fluidity | Anodized (Appearance) | Polished (Appearance) | Electroplating | Normally Heat Treated |
| A356.0T6 | 1 | 3 | 2 | 1 | 1 | 1 | 3 | 1 | 4 | 4 | 2 | Y |
| 356.0-T6 | 1 | 3 | 2 | 1 | 1 | 1 | 3 | 1 | 4 | 4 | 1 | Y |
| 357.0-T6 | 2 | 2 | 2 | 1 | 1 | 1 | 3 | 1 | 4 | 3 | 1 | Y |
| 535.0-F or T5 | 1 | 3 | 1 | 4 | 5 | 4 | 1 | 5 | 1 | 1 | 2 | N |
| 713.0-F or T5 | 1 | 4 | 3 | 3 | 4 | 4 | 1 | 4 | 1 | 1 | 2 | N |
| Characteristics are comparatively ranked on a scale from 1 to 5 with 1 ranked as superior. | | | | | | | | | | | | |
| [**www.pentzcastsolutions**](http://www.pentzcastsolutions)**.com** | | | | | | | | | | | | |