Copper and Copper Alloys
Premium Quality, Light and Medium Gauge
Coil and Strip – Made to Your Specifications

Alloys
Heyco offers a wide array of copper and copper alloys including:

- C10200
- C11000
- C12200
- C19010
- C19400
- C19500
- C21000
- C22000
- C23000
- C51000
- C51100
- C51900
- C52100
- C6000
- C6800
- C51000
- C51100
- C51900
- C52100
- C70250
- C72500

Other alloys available by special arrangement (consult mill).

Capabilities
Rolling: Down to .002” thick
Slitting: .200 - 17,000” wide
Order Sizes: 250 lbs. and up
Traverse-wound reels: 500lb/1000lb/2000lb
Pancake coils: Up to 580 PIW, I.D. ranging from 4” to 16”

NOTE: Heyco is a major supplier to distributors on a national basis and also offers toll conversion programs.

Why Heyco Metals
Heyco Metals has built a reputation for industry-leading quality, rapid response, outstanding technical support and on-time delivery. Our extremely short lead times can keep your inventories lean while meeting unpredictable spikes in demand. With over four decades of metals experience, Heyco Metals has done it all, including pioneering the use of real-time 100% surface inspection to ensure pristine surface quality.

Our wide variety of products are ready to be turned around – accurately and quickly – to meet your specific demands. We consistently produce copper and copper alloys that we’re proud to identify as “Heyco Metals.”

Here’s more of what sets us apart:
- Non-contact gauge control at rolling eliminates diamond marks – essential for leadframe, connector, and decorative applications. Similarly, non-contact air wipes eliminate wiper marks typically seen on static rubber-wiped product
- Proprietary oil filtration keeps rolling lubricant free of particulate matter and virtually eliminates any possibility of roll marks
- Thermal degreasing provides oil-free surfaces without the abrasion and contact associated with aqueous cleaning lines
- Automated on-line surface inspection (pioneered by Heyco), via Cognex vision systems, allows 100% surface integrity without reliance on error-prone human inspection
- Stringent preventive maintenance ensures that equipment downtime is an extremely rare occurrence
- Raw materials are sourced throughout the world in order to secure an optimal combination of value and capability
- Lead times at Heyco are consistently far shorter than those of our competitors
- 95% + On-Time-Delivery
- Heyco’s technical staff represents decades of combined experience that can provide valuable support for leadframe, connector, architectural, and general usage applications
- Corporate stability, conservative cash management and private shareholder base facilitate ongoing investment in the finest strip-processing technology available

Look to Heyco Metals for:
- Rolling • Bell Annealing • Strand Annealing
- Stretch Bend Leveling • Slitting • Traverse Winding

www.heycometals.com
# Copper & Copper Alloys Specifications

## Coppers

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Yield, Elongation, and Rockwell values are presented as reference values only for materials > .0080 and are not to be construed as actual specifications. For chemistry data, see appropriate ASTM/CDA specification.

(1) Lbs. per cu. in. at 68°F (annealed) x 27.88 grs/cu. cm at 20°C; (2) 18” PSI tension; (3) % IACS at 68°F (20°C) as annealed; (4) BTU per sq. ft. per hr. per °F at 68°F (20°C); (5) Inches/inch°F x 106 from 68°F to 572°F (20°C to 300°C); (6) x 1,000 PSI; (7) x 1,000 PSI (0.2% offset); (8) % in 2 inches; (9) .002 gauge and above (0.017 scale). Certain properties reprinted with permission of Olin Corp.
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### Annealed (TM00)

| Tensile (6) | 34-40 | 36-42 | 39-47 | 44-54* | 45-61 | 44-61 |
| Yield (7) | 10 Nom. | 13 Nom. | 8 Min. | 20 Min.* | 10 Min. | 22 Min. |
| Elong (8) | 45 Nom. | 48 Nom. | 43 Min. | 50 Min.* | 40 Min. | 45 Min. |
| Rockwell (9) | 15-20 | 15-36 | 15-44 | 16-60 | 17-62 |

### 1/4 Hard

| Tensile | 34-47 | 40-50 | 44-54 | 48-58 | 49-59 | 49-59 |
| Yield | 31 Nom. | 33 Nom. | 23 Min. | 28 Min. | 21 Min. | 32 Min. |
| Elong | 30 Nom. | 20 Nom. | 15 Min. | 24 Min. | 34 Min. | 39 Min. |
| Rockwell | 34-51 | 38-53 | 42-57 | 42-60 | 43-57 | 43-57 |

### 1/2 Hard (TM02)

| Tensile | 42-52 | 47-57 | 51-61 | 55-65 | 57-67 | 55-65 |
| Yield | 44 Nom. | 48 Nom. | 43 Min. | 40 Min. | 42 Min. | 43 Min. |
| Elong | 13 Nom. | 13 Nom. | 8 Min. | 16 Min. | 19 Min. | 33 Min. |
| Rockwell | 46-57 | 52-61 | 56-64 | 56-66 | 56-68 | 50-66 |

### 3/4 Hard (TM03)

| Tensile | 46-56 | 52-62 | 57-67 | 61-71 | 64-74 | 62-72 |
| Yield | 50 Nom. | 54 Nom. | 51 Min. | 50 Min. | 55 Min. | 52 Min. |
| Elong | 10 Nom. | 7 Nom. | 4 Min. | 8 Min. | 8 Min. | 23 Min. |
| Rockwell | 52-60 | 58-64 | 63-68 | 63-70 | 65-70 | 67-71 |

### Hard (TM04)

| Tensile | 50-59 | 57-66 | 63-72 | 68-77 | 71-81 | 68-78 |
| Yield | 54 Nom. | 58 Nom. | 57 Min. | 59 Min. | 67 Min. | 55 Min. |
| Elong | 5 Nom. | 4 Nom. | 4 Min. | 3 Min. | 6 Min. | 15 Min. |

### Ex Hard (TM06)

| Tensile | 56-64 | 64-72 | 72-80 | 78-87 | 83-92 | 79-89 |
| Yield | 59 Nom. | 64 Nom. | 65 Min. | 65 Min. | 79 Min. | 65 Min. |
| Elong | 2 Nom. | 2 Nom. | 3 Min. | 2 Min. | 2 Min. | 3 Min. |
| Rockwell | 62-66 | 67-71 | 70-74 | 72-76 | 74-76 | 74-76 |

### Spring (TM08)

| Tensile | 60-68 | 69-77 | 78-86 | 85-93 | 91-100 | 86-95 |
| Yield | 63 Nom. | 68 Nom. | 69 Min. | 72 Min. | 82 Min. | 69 Min. |
| Elong | 2 Nom. | 2 Nom. | 3 Min. | 1 Min. | 1 Min. | 2 Min. |
| Rockwell | 64-68 | 70-72 | 74-76 | 75-78 | 76-78 | 76-78 |

### Ex Spring

| Tensile | 61-69 | 72-80 | 82-90 | 89-97 | 95-104 | 90-99 |
| Yield | 64 Nom. | 71 Nom. | 73 Min. | 74 min. | 86 Min. | 70 Min. |
| Elong | 1 Nom. | 1 Nom. | 2 Min. | 1 Min. | 2 Min. | 2 Min. |
| Rockwell | 65-69 | 71-73 | 75-77 | 76-79 | 77-79 | 77-79 |

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(1) Lbs. per cu. in. at 68°F (annealed) x (27.68 gms./cu. cm at 20°C); (2) 10 PS; tension; (3) % IACS at 68°F (20°C) as annealed; (4) BTU per sq. ft. per ft. per hr. per °F at 68°F (20°C); (5) inches/hour°F x .9% from 68°F to 572°F (20°C to 300°C); (6) x 1,000 PSI; (7) x 1,000 PSI (0.2% offset); (8) % in 2 inches; (9) .000" gauge and above (B7 scale). Certain properties reprinted with permission of Olin Corp.
## Copper & Copper Alloys Specifications

### Phosphor-Bronzes

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<td>80-92</td>
</tr>
<tr>
<td>Rockwell</td>
<td>66-73</td>
<td>66-74</td>
<td>71-78</td>
<td>67-78</td>
</tr>
</tbody>
</table>

#### Hard (TM04)

<table>
<thead>
<tr>
<th></th>
<th>Tensile</th>
<th>Yield</th>
<th>Elong</th>
<th>Rockwell</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tensile</strong></td>
<td>76-91</td>
<td>72-87</td>
<td>80-96</td>
<td>85-100</td>
</tr>
<tr>
<td>Yield</td>
<td>74 Min.</td>
<td>70 Min.</td>
<td>82 Nom.</td>
<td>78 Min.</td>
</tr>
<tr>
<td>Elong</td>
<td>7 Min</td>
<td>2 Min.</td>
<td>10 Nom.</td>
<td>12 Min.</td>
</tr>
<tr>
<td>Rockwell</td>
<td>71-78</td>
<td>69-77</td>
<td>72-80</td>
<td>73-81</td>
</tr>
</tbody>
</table>

#### Ex Hard (TM06)

<table>
<thead>
<tr>
<th></th>
<th>Tensile</th>
<th>Yield</th>
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<th>Rockwell</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tensile</strong></td>
<td>88-103</td>
<td>84-99</td>
<td>91-106</td>
<td>97-112</td>
</tr>
<tr>
<td>Yield</td>
<td>85 Min.</td>
<td>81 Min.</td>
<td>96 Nom.</td>
<td>92 Min.</td>
</tr>
<tr>
<td>Elong</td>
<td>2 Min.</td>
<td>1 Min.</td>
<td>4 Nom.</td>
<td>10 Min.</td>
</tr>
<tr>
<td>Rockwell</td>
<td>74-81</td>
<td>73-80</td>
<td>77-83</td>
<td>70-80</td>
</tr>
</tbody>
</table>

#### Spring (TM08)

<table>
<thead>
<tr>
<th></th>
<th>Tensile</th>
<th>Yield</th>
<th>Elong</th>
<th>Rockwell</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tensile</strong></td>
<td>95-110</td>
<td>91-105</td>
<td>98-113</td>
<td>105-119</td>
</tr>
<tr>
<td>Yield</td>
<td>92 Min.</td>
<td>88 Min.</td>
<td>104 Nom.</td>
<td>100 Min.</td>
</tr>
<tr>
<td>Elong</td>
<td>1 Min.</td>
<td>1 Min.</td>
<td>3 Nom.</td>
<td>3 Min.</td>
</tr>
<tr>
<td>Rockwell</td>
<td>76-82</td>
<td>75-81</td>
<td>78-84</td>
<td>72-80</td>
</tr>
</tbody>
</table>

#### Ex Spring

<table>
<thead>
<tr>
<th></th>
<th>Tensile</th>
<th>Yield</th>
<th>Elong</th>
<th>Rockwell</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tensile</strong></td>
<td>100-114</td>
<td>96-109</td>
<td>102-117</td>
<td>110-122</td>
</tr>
<tr>
<td>Yield</td>
<td>98 Min.</td>
<td>92 Min.</td>
<td>108 Nom.</td>
<td>105 Min.</td>
</tr>
<tr>
<td>Elong</td>
<td>1 Min.</td>
<td>1 Min.</td>
<td>1 Nom.</td>
<td>2 Min.</td>
</tr>
<tr>
<td>Rockwell</td>
<td>77-83</td>
<td>76-82</td>
<td>79-84</td>
<td>76-80</td>
</tr>
</tbody>
</table>

Yield, Elongation, and Rockwell values are presented as reference values only for materials > .0080 and are not to be construed as actual specifications. For chemistry data, see appropriate ASTM/CDA specification.

**Notes:**
- (1) Lbs. per cu. in. @ 68°F (annealed) (2) 106 PSI (0.2% offset); (3) % IACS at 68°F (20°C) as annealed; (4) BTU per sq. ft. per ft. per hr. per F° at 68°F (20°C);
- (5) inches/ft/°F from 68°F to 572°F (20°C to 300°C); (6) x 1,000 PSI; (7) x 1,000 PSI (0.2% offset); (8) % in 2 inches; (9) .020" gauge and above (30T scale); Certain properties reprinted with permission of Olin Corp.