

**ALLOY**  
**DATA**

**C77000**  
ASTM B122



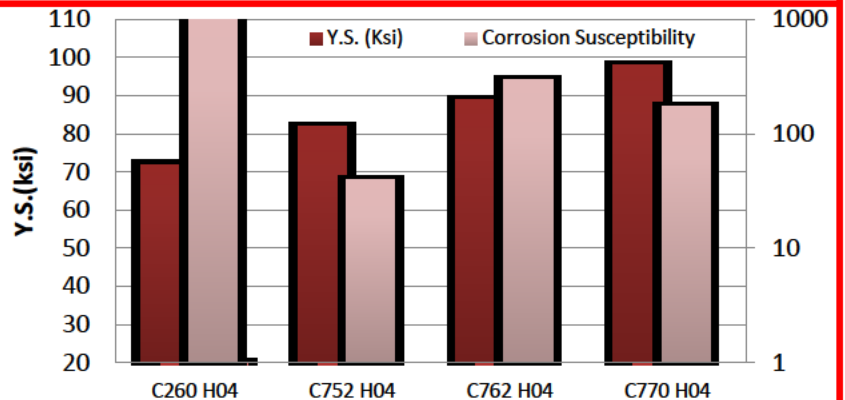
An excellent spring material, C770 combines high strength with excellent stiffness, formability, corrosion resistance and solderability. These characteristics make it extremely adaptable to a range of spring applications including flat and slightly formed springs. It is also used for switches, jacks and relays; in food processing, hospital medical equipment and in ferrules. Perhaps the most "white" of the copper alloys, C770 finds use as decorative metal trim on saddles, harness, and belt buckles. For more information contact Olin Brass Market Development Engineering at 618-258-5255, OlinBrass.com or email us at info@olinbrass.com.

**Chemical Composition**

|                           |                   |
|---------------------------|-------------------|
| <b>Copper<sup>1</sup></b> | <b>53.5-56.5%</b> |
| <b>Nickel<sup>2</sup></b> | <b>16.5-19.5%</b> |
| <b>Zinc</b>               | <b>Remainder</b>  |
| Iron                      | 0.25% Max         |
| Lead                      | 0.05% Max         |
| Manganese                 | 0.50% Max         |

<sup>1</sup> Cu includes Ag, Copper plus named elements = 99.5%

<sup>2</sup> Ni Values Include Co



**Figure 1:** Comparison of Yield Strength and relative susceptibility to stress corrosion (Mattsson's solution and moist ammonia, 1000 = most susceptible).

**Physical Properties**

|  | English Units                    | Metric Units           |
|--|----------------------------------|------------------------|
| Density  | 0.314 lb/in <sup>3</sup> @ 68°F  | 8.70 g/cm <sup>3</sup> |
| Thermal Conductivity                               | 17 BTU-ft/ft <sup>2</sup> -hr-°F | 29 W/m°K               |
| Electrical Resistivity                             | 189 ohm circ mils/ft             | 31.4 microhm-cm        |
| Electrical Conductivity (annealed)                 | 5.5% IACS*                       | 0.0319 megamho/cm      |
| Modulus of Elasticity                              | 18,000,000 psi                   | 124 kN/mm <sup>2</sup> |
| Thermal Capacity(Specific Heat)                    | 0.090 Btu/lb/F° @ 68°F           | 377.1 J/kg · °C @ 20°C |
| Coeff. Of Thermal Expansion<br>68-572°F (20-300°C) | 9.3 PPM/°F                       | 16.7 PPM/°C            |

\*International Annealed Copper Standard

**Mechanical Properties**

| Temper <sup>1</sup> | Tensile Strength |                   | Yield Strength <sup>2</sup> |                   | % Elongation <sup>2</sup> | Typical 90° Bend Formability<br>GW/BW <sup>3</sup> |     |
|---------------------|------------------|-------------------|-----------------------------|-------------------|---------------------------|--|-----|
|                     | ksi              | N/mm <sup>2</sup> | ksi                         | N/mm <sup>2</sup> |                           |  |     |
| Annealed            | 61-76            | 420-525           | 32                          | 220               | 43                        | -  | -   |
| 1/4 Hard            | 69-87            | 475-600           | 63                          | 435               | 26                        | 0.8  | 0.8 |
| 1/2 Hard            | 78-95            | 540-655           | 78                          | 540               | 14                        | 1.0  | 1.0 |
| 3/4 Hard            | 88-101           | 605-695           | 92                          | 635               | 8                         | 1.5  | 1.5 |
| Hard                | 92-107           | 635-740           | 98                          | 675               | 4                         | 2.0  | 2.0 |
| Extra Hard          | 102-115          | 705-795           | 107                         | 740               | 1 min                     | 2.5  | 2.5 |
| Spring              | 108-120          | 745-825           | 112                         | 770               | 1 Max                     | 3.0  | 3.0 |
| Extra Spring        | 116 min          | 800 min           | 115 min                     | 795 min           | 1 Max                     |  |     |

<sup>1</sup> Mechanical properties subject to change. All tempers listed are made to a Tensile Strength specification unless otherwise noted.

<sup>2</sup> Nominal Values      <sup>3</sup> DATA FOR REFERENCE ONLY. R/T = Bend Radius/Material Thickness <0.016" (0.4mm) thick, 11/16 (17.5mm) wide.

**Olin Brass Headquarters**  
4801 Olympia Park  
Plaza, Suite 3500  
Louisville, KY 40241  
Ph: 502-873-3000

**GBC METALS ASIA PACIFIC PTE LTD**  
1 Kim Seng Promenade  
Great World City, E Tower  
Singapore 237994  
Ph: 65.6238.1155

**GBC METALS LLC SHANGHAI**  
Room 2004 Aetna Tower  
No. 107 Zunyi Rd  
Shanghai 200051 China  
Ph: 86.21.6237.5898

**OLIN BRASS-HEADQUARTERS**

4801 Olympia Park  
Plaza, Suite 3500  
Louisville, KY 40241  
Ph: 502-873-3000

**OLIN BRASS - MILL**

285 Lewis & Clark Blvd.  
East Alton, IL 62024  
Ph: 618-258-5255

**BRYAN METALS INC.**

1103 South Main Street  
Bryan OH 43506-0487  
Ph: 419-636-4571  
Fx: 419-636-3994

**SOMERS THIN STRIP**

215 Piedmont Street  
Waterbury, CT 06706  
Ph: 203-597-5000  
Fx: 203-597-5081

**A.J. OSTER COMPANY**

180 ALEXANDRA WAY  
Carol Stream, IL 60188-2068  
Ph: 630-260-1040  
Ph: 800-323-9644  
Fx: 630-260-1102

**A.J. OSTER CARIBE, INC.**

Centro industrial Rio Canas  
Lote 29, P.M.B HC-01  
Box 29030  
Caguas, PR 00725  
Ph: 787-747-7575

**A.J. OSTER FOILS, INC.**

2081 McCrea Street  
Alliance, OH 44601-2793  
Ph: 330-823-1700  
Ph: 800-321-9750  
Fx: 330-823-1705

**A.J. OSTER WEST INC.**

22833 La Palma Avenue  
Yorba Linda, CA 92887-4767  
Ph: 714-692-1000  
Ph: 800-933-5933  
Fx: 714-692-1225

**A.J. OSTER COMPANY**

457 Industrial Drive  
Warwick, RI 02886  
Ph: 401-739-0800  
Fx: 401-739-1276

**INTERNATIONAL SALES OFFICES & FACILITIES****GBC METALS ASIA PACIFIC PTE LTD.**

1 Kim Seng Road Promenade  
Great World City, East Tower #13-04  
Singapore 237994  
Ph: 65.6238.1155  
Fx: 65.6238.0660

**GBC METALS LLC SHANGHAI**

Room 2004, Aetna Tower  
No. 107 Zunyi Road  
Shanghai 200051, China  
Ph: 86.21.6237.5898  
Fx: 86.21.6237.5805

**OLIN LUOTONG METALS (GZ) Co Ltd**

No. 8 Jung Gong Road, East District  
Guangzhou Economic Technological & Dev District  
Guangzhou, P.R. China 510530  
Ph: 86.20.8226.6818  
Fx: 86.20.8226.6718

**DOWA-OLIN METAL CORPORATION**

2630, Shingai  
Iwata-shi, Shiznoka-ken  
438, Japan  
Ph: 81.538.37.5111  
Fx: 81.538.37.0147

**OLIN BRASS - INTERNATIONAL DISTRIBUTORS****UNITED KINGDOM / IRELAND****Aurubis UK Ltd.**

Rabone Park, Smethwick  
West Midlands B66 2NN  
England  
Ph: 44 (0) 121 555 1199  
Fx: 44 (0) 121 555 1188  
Email: info-uk@aurubis.com  
Website: www.aurubis.com

**EUROPE****Walter Türkis GmbH**

Struthstrasse 35  
55743 Idar-Oberstein  
Germany  
Ph: 49 (0) 6781 62-0  
Fx: 49 (0) 6781 62-28  
Email: service@tuerkis-schneid-center.de  
Website: www.tuerkis-schneid-center.de

**OLIN BRASS MEXICO S.A. de CV**

Av. La Griega # 117  
Parque Industrial Queretaro  
Santa Rosa, Jaurgui  
Queretaro, Mexico 76220  
Ph: 52 442 2 29 40 00  
Fx: 52 442 2 29 40 29