

## Appendix G: Properties of structural materials<sup>a</sup>

| Material        | Composition                                                  | Density<br>(g/cm <sup>3</sup> ) |
|-----------------|--------------------------------------------------------------|---------------------------------|
| Aluminum        | pure                                                         | 2.70                            |
| Copper          | pure                                                         | 8.93                            |
| Iron            | pure                                                         | 7.85                            |
| Stainless steel | type 304                                                     | 8.02                            |
| Carbon steel    | type 1020                                                    | 7.86                            |
| Brass           | 70 Cu, 30 Zn                                                 | 8.5                             |
| Lucite          | (C <sub>5</sub> H <sub>8</sub> O <sub>2</sub> ) <sub>n</sub> | 1.18                            |
| G-10            | glass-filled epoxy                                           | 1.82                            |
| Glass           | Pyrex                                                        | 2.23                            |

<sup>a</sup> Approximate values at room temperature.

<sup>b</sup> In tension.

| Thermal conductivity<br>(mW/cm <sup>2</sup> · K · cm) | Thermal expansion<br>(× 10 <sup>-6</sup> K <sup>-1</sup> ) | Resistivity<br>(μΩ-cm) | Elastic modulus<br>(Mpsi) |
|-------------------------------------------------------|------------------------------------------------------------|------------------------|---------------------------|
| 2370                                                  | 25                                                         | 2.74                   | 10                        |
| 3980                                                  | 16.6                                                       | 1.70                   | 17                        |
| 803                                                   | 12                                                         | 9.8                    | 30                        |
| 300                                                   | 17                                                         | 72                     | 28                        |
| 1000                                                  | 12                                                         | 10                     | 30                        |
| 2200                                                  | 19                                                         | 7                      | 15                        |
| 2                                                     | 70                                                         | > 10 <sup>20</sup>     | 0.4 <sup>b</sup>          |
| 3                                                     | 25                                                         | > 10 <sup>20</sup>     | 3 <sup>b</sup>            |
| 16                                                    | 3.2                                                        | > 10 <sup>18</sup>     | 9.3                       |

*Source: Handbook of Chemistry and Physics*, 64th ed., Boca Raton: CRC Press, 1983; *Physics Vade Mecum*, New York: American Institute of Physics, 1981; *Modern Plastics Encyclopedia*, New York: McGraw-Hill, 1976; Catalog, Oriel Corp., Stratford, CT.

