



## Stainless Steel Information

These low-maintenance materials are often used in applications where corrosion resistance is critical. Stainless steels have a higher resistance to rust in many natural and man-made environments; however, it is important to use the appropriate grade of steel regarding strength, hardness, and workability requirements. See page 2188 for Stainless Steel Perforated Sheets.

### 300 SERIES—AUSTENITIC CHROMIUM-NICKEL ALLOYS

**Type 302**—Same corrosion resistance as 304, with slightly higher strength due to additional carbon.

**Type 303**—Free-machining version of 304, via addition of sulfur and phosphorus.

**Type 304**—The most-common grade; the classic 18/8 stainless steel. Offers excellent machining and welding characteristics. Widely accepted in dairy, beverage, and food product industries where sanitation and cleanliness are essential.

**Type 316**—The second most-common grade (after 304). Also known as marine-grade stainless steel, due to its increased resistance to chloride corrosion (compared to 304). It is resistant to the damaging effects of salts, reducing acids, and atmospheric and general corrosive conditions. For food and surgical stainless steel uses.

### 400C SERIES—FERRITIC AND MARTENSITIC CHROMIUM ALLOYS

**Type 416**—Easy to machine due to additional sulfur.

**Type 430**—Good formability, but with reduced temperature and corrosion resistance.

**Type 440**—A higher grade of cutlery steel, with more carbon, allowing better edge retention when properly heat treated. Can be hardened to above Rockwell 55 hardness.

### 600 SERIES—MARTENSITIC PRECIPITATION HARDENING ALLOYS

**Type 630**—Most common PH stainless; better known as 17-4 (17% chromium, 4% nickel).

| Material      | Tensile Strength* (psi) | Yield Strength* (psi) | Stainless Steel Comparison Chart<br>Hardness* | Corrosion Resistance | Formability     | Machinability | Weldability     |
|---------------|-------------------------|-----------------------|---|----------------------|-----------------|---------------|-----------------|
| Type 302      | N/A                     | 40,000                | N/A   | Good                 | Not Recommended | Good          | Not Recommended |
| Type 303      | 90,000                  | 35,000                | 160 (BHN)                                     | Fair                 | Not Recommended | Excellent     | Not Recommended |
| Type 304/304L | 70,000                  | 25,000                | 160 (BHN)                                     | Good                 | Excellent       | Good          | Good            |
| Type 316      | 81,900                  | 30,000                | 160 (BHN)                                     | Excellent            | Excellent       | Good          | Good            |
| Type 416      | 75,000                  | 40,000                | 155 (BHN)                                     | Poor                 | Not Recommended | Excellent     | Not Recommended |
| Type 430      | N/A                     | 30,000                | N/A   | Good                 | Good            | Good          | Good            |
| Type 440C     | 110,000                 | 65,000                | 230 (BHN)                                     | Poor                 | Poor            | Fair          | Poor            |
| Type 17-4 PH  | 150,000                 | 110,000               | Max. 38 (Rc)                                  | Good                 | Good            | Fair          | Good            |

\* Typical levels @ 1" dia.



## Stainless Steel Rod Stock

Note: Additional sizes are available; call 1-800-GRAINGER (472-4643).

| Dia.  | Dia. Tolerance | 1 FT. LENGTH*<br>Item No. | 3 FT. LENGTH†<br>Item No. | 6 FT. LENGTH‡<br>Item No. |
|---|----------------|---------------------------|---------------------------|---------------------------|
| <b>Type 303 - Unpolished/Annealed</b>   |                |                           |                           |                           |
| Meets standards AISI 303, AMS 5640 T Type 1, ASTM A484, ASTM A582, UNS# S30300              |                |                           |                           |                           |
| 1/4"  | +/-0.0015 in   | —                         | —                         | 2EXC8                     |
| 3/16"   | +/-0.0015 in   | —                         | —                         | 2EXC9                     |
| 5/16"   | +/-0.0015 in   | —                         | —                         | 2EXD1                     |
| 1/2"  | +/-0.002 in    | —                         | 2EXB1                     | 2EXD2                     |
| 5/8"  | +/-0.002 in    | —                         | —                         | 2EXD3                     |
| <b>Meets standards AISI 303, AMS 5640 T Type 1, ASTM A484, ASTM A582, UNS# S30300</b>       |                |                           |                           |                           |
| 3/8"  | +/-0.002 in    | 2EWZ4                     | 2EXB2                     | —                         |
| 7/16"   | +/-0.002 in    | 2EWZ5                     | 2EXB3                     | 2EXD4                     |
| 1"  | +/-0.002 in    | 2EWZ6                     | 2EXB4                     | 2EXD5                     |
| 1 1/8"  | +/-0.0025 in   | 2EWZ7                     | 2EXB5                     | 2EXD6                     |
| 1 1/4"  | +/-0.0025 in   | 2EWZ8                     | 2EXB6                     | 2EXD7                     |
| 1 1/2"  | +/-0.0025 in   | 2EWZ9                     | 2EXB7                     | 2EXD8                     |
| 1 3/8"  | +/-0.0025 in   | 2EXA1                     | 2EXB8                     | 2EXD9                     |
| 1 1/2"  | +/-0.003 in    | 2EXA2                     | 2EXB9                     | 2EXE1                     |
| 1 3/8"  | +/-0.003 in    | 2EXA3                     | 2EXC1                     | 2EXE2                     |
| 1 1/2"  | +/-0.003 in    | 2EXA4                     | 2EXC2                     | 2EXE3                     |
| 2"  | +/-0.003 in    | 2EXA5                     | 2EXC3                     | 2EXE4                     |
| 2 1/4"  | +/-0.003 in    | 2EXA6                     | 2EXC4                     | —                         |
| 2 1/2"  | +/-0.003 in    | 2EXA7                     | 2EXC5                     | —                         |
| 2 3/4"  | +/-0.003 in    | 2EXA8                     | 2EXC6                     | —                         |
| 3"  | +/-0.003 in    | 2EXA9                     | —                         | —                         |
| <b>Meets standards ASTM A582</b>  |                |                           |                           |                           |
| 1/2"  | +/-0.0015 in   | —                         | —                         | 2EXC7                     |
| 2 1/4"  | +/-0.003 in    | —                         | —                         | 1ZDF4                     |
| 2 1/2"  | +/-0.003 in    | —                         | —                         | 1ZDF5                     |
| 2 3/4"  | +/-0.003 in    | —                         | —                         | 1ZDF6                     |
| 3"  | +/-0.003 in    | —                         | 1ZDF3                     | 1ZDF7                     |
| <b>Type 304 - Unpolished/Annealed</b>   |                |                           |                           |                           |
| Meets standards AISI 304 304L, AMS 5639, AMS 5647, ASTM A182, ASTM A479, UNS# S30400 S30403 |                |                           |                           |                           |
| 3/8"  | +/-0.0015 in   | —                         | —                         | 2EXJ5                     |
| 1/2"  | +/-0.002 in    | —                         | 2EXH3                     | 2EXJ6                     |
| 5/8"  | +/-0.002 in    | —                         | 2EXH4                     | 2EXJ7                     |
| 3/4"  | +/-0.002 in    | —                         | 2EXH5                     | 2EXJ8                     |
| 1"  | +/-0.0025 in   | —                         | —                         | 2EXK1                     |
| <b>Meets standards AMS 5639, ASTM A276, ASTM A479</b>                                       |                |                           |                           |                           |
| 3/4"  | +/-0.002 in    | 2EXG3                     | —                         | —                         |
| 7/8"  | +/-0.002 in    | 2EXG4                     | 2EXH6                     | 2EXJ9                     |
| 1"  | +/-0.0025 in   | 2EXG5                     | 2EXH7                     | —                         |
| 1 1/4"  | +/-0.0025 in   | 2EXG6                     | 2EXH8                     | 2EXK2                     |
| 1 1/2"  | +/-0.0025 in   | 2EXG7                     | 2EXH9                     | 2EXK3                     |
| 1 3/8"  | +/-0.003 in    | 2EXG8                     | 2EXJ1                     | 2EXK4                     |
| 1 1/2"  | +/-0.003 in    | 2EXG9                     | 2EXJ2                     | 2EXK5                     |
| 1 3/4"  | +/-0.003 in    | 2EXH1                     | 2EXJ3                     | 2EXK6                     |
| 2"  | +/-0.003 in    | 2EXH2                     | 2EXJ4                     | 2EXK7                     |
| <b>Type 316 - Unpolished/Annealed</b>   |                |                           |                           |                           |
| Meets standards AISI 316 316L, AMS 5648, AMS 5653, ASTM A182, ASTM A479, UNS# S31600 S31603 |                |                           |                           |                           |
| 3/8"  | +/-0.0015 in   | —                         | 3ANH3                     | 3GTD4                     |
| 1/2"  | +/-0.002 in    | 3ANN6                     | —                         | 3GTD5                     |
| 5/8"  | +/-0.002 in    | —                         | —                         | 3GTD4                     |

| Dia.  | Dia. Tolerance   | 1 FT. LENGTH*<br>Item No. | 3 FT. LENGTH†<br>Item No. | 6 FT. LENGTH‡<br>Item No. |
|---|------------------|---------------------------|---------------------------|---------------------------|
| 3/4"  | +/-0.002 in      | —                         | —                         | 3GTC5                     |
| 1"  | +/-0.0025 in     | —                         | —                         | 3GTC6                     |
| <b>Meets standards AMS 5648, ASTM A276, ASTM A479</b> |                  |                           |                           |                           |
| 3/8"  | +/-0.0015 in     | 3ANN5                     | —                         | —                         |
| 1/2"  | +/-0.002 in      | —                         | 3ANH4                     | —                         |
| 5/8"  | +/-0.002 in      | 3ANL5                     | 3ANG3                     | —                         |
| 3/4"  | +/-0.002 in      | 3ANL6                     | 3ANG4                     | —                         |
| 7/8"  | +/-0.002 in      | 3ANP6                     | 3ANJ4                     | 3GTH4                     |
| 1"  | +/-0.0025 in     | 3ANL7                     | 3ANG5                     | —                         |
| 1 1/4"  | +/-0.0025 in     | 3ANL8                     | 3ANG6                     | 3GTC7                     |
| 1 1/2"  | +/-0.0025 in     | 3ANL9                     | 3ANG7                     | 3GTC8                     |
| 1 3/4"  | +/-0.003 in      | 3ANN1                     | 3ANG8                     | 3GTC9                     |
| 1 1/2"  | +/-0.003 in      | 3ANN2                     | 3ANG9                     | 3GTD1                     |
| 1 3/4"  | +/-0.003 in      | 3ANN3                     | 3ANH1                     | 3GTD2                     |
| 2"  | +/-0.003 in      | 3ANN4                     | 3ANH2                     | 3GTD3                     |
| <b>Type 416 - Unpolished/Annealed</b>                 |                  |                           |                           |                           |
| Meets standards AMS 5610, ASTM A314, ASTM A582        |                  |                           |                           |                           |
| 1/2"  | +/-0.002 in      | —                         | 2EXL5                     | —                         |
| 3/4"  | +/-0.002 in      | 2EXK8                     | 2EXL6                     | 2AVA8                     |
| 1"  | +/-0.0025 in     | 2EXK9                     | 2EXL7                     | 2AVA9                     |
| 1 1/4"  | +/-0.0025 in     | 2EXL1                     | 2EXL8                     | 2AVB1                     |
| 1 1/2"  | +/-0.003 in      | 2EXL2                     | 2EXL9                     | 2AVB2                     |
| 1 3/4"  | +/-0.003 in      | 2EXL3                     | —                         | 2AVB3                     |
| 2"  | +/-0.003 in      | 2EXL4                     | 2AVA6                     | 2AVB4                     |
| <b>Meets standards AMS 5610, ASTM A582</b>            |                  |                           |                           |                           |
| 1/2"  | +/-0.002 in      | —                         | —                         | 2AVA7                     |
| <b>Meets standards ASTM A582</b>                      |                  |                           |                           |                           |
| 1 3/4"  | +/-0.003 in      | —                         | 2AVA5                     | —                         |
| <b>Type 440C - Unpolished/Annealed</b>                |                  |                           |                           |                           |
| Meets standards AMS 5630, ASTM A276, ASTM A580        |                  |                           |                           |                           |
| 1/2"  | +/-0.002 in      | 2EXN1                     | 2EXN9                     | 2EXP5                     |
| 1"  | +/-0.0025 in     | 2EXN2                     | —                         | 2EXP6                     |
| 1 1/2"  | +/-0.003 in      | 2EXN3                     | 2EXP2                     | 2EXP7                     |
| 2"  | +/-0.003 in      | 2EXN4                     | 2EXP3                     | —                         |
| 2 1/2"  | +0.047/-0.000 in | 2EXN5                     | 2EXP4                     | —                         |
| 3"  | +0.047/-0.000 in | 2EXN6                     | —                         | —                         |
| 3 1/2"  | +0.047/-0.000 in | 2EXN7                     | —                         | —                         |
| 4"  | +0.062/-0.000 in | 2EXN8                     | —                         | —                         |
| <b>Meets standards ASTM A276</b>                      |                  |                           |                           |                           |
| 2"  | +/-0.003 in      | —                         | —                         | 1ZDG2                     |
| 2 1/2"  | +0.047/-0.000 in | —                         | —                         | 1ZDG3                     |
| 3"  | +0.047/-0.000 in | —                         | 1ZDF8                     | 1ZDG4                     |
| 3 1/2"  | +0.047/-0.000 in | —                         | 1ZDF9                     | 1ZDG5                     |
| 4"  | +0.062/-0.000 in | —                         | 1ZDG1                     | 1ZDG6                     |

| Dia.                                 | Dia. Tolerance | 1 FT. LENGTH‡<br>Item No. | 1 FT. LENGTH‡<br>Item No. | 3 FT. LENGTH‡<br>Item No. |
|--------------------------------------|----------------|---------------------------|---------------------------|---------------------------|
| <b>Type 302 - Mill/</b>              |                |                           |                           |                           |
| Meets standards ASTM A313            |                |                           |                           |                           |
| 1/16 in                              | +/-0.002 in    | 48KU21                    | —                         | —                         |
| 3/32 in                              | +/-0.002 in    | —                         | 48KU25                    | —                         |
| 1/8 in                               | +/-0.002 in    | —                         | 48KU23                    | —                         |
| <b>Type 303 - Mill/</b>              |                |                           |                           |                           |
| Meets standards ASTM A581            |                |                           |                           |                           |
| 1/4 in                               | +/-0.003 in    | —                         | —                         | 16NJ05                    |
| 3/16 in                              | +/-0.003 in    | —                         | —                         | 16NJ06                    |
| 1/8 in                               | +/-0.003 in    | —                         | —                         | 16NJ07                    |
| <b>Type 303 - Mill/Annealed</b>      |                |                           |                           |                           |
| Meets standards ASTM A320, ASTM A582 |                |                           |                           |                           |
| 3/16 in                              | +/-0.002 in    | 48KU24                    | —                         | —                         |
| 1/4 in                               | +/-0.002 in    | —                         | 48KU29                    | —                         |
| 3/16 in                              | +/-0.002 in    | 48KU27                    | —                         | —                         |
| 1/8 in                               | +/-0.002 in    | —                         | 48KU26                    | —                         |
| 3/16 in                              | +/-0.002 in    | 48KU28                    | —                         | —                         |
| 1/2 in                               | +/-0.002 in    | 48KU22                    | —                         | —                         |

Length tolerance: \* ±1.000"; † ±3.000"; ‡ ±6.000"; §§ ±0.032".