

# Stainless Steel

## Bar, Sheet, Plate, Structural, Tube & Pipe

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 **WARNING:** These products can potentially expose you to chemicals including Nickel, Chromium, Lead, Cobalt, Mercury and Beryllium, which are known to the state of California to cause cancer and/or birth defects or other reproductive harm. For more information, visit [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

# Grade 201

201 alloy is a high performance austenitic stainless steel formulated to have a lower and more stable cost due to the substitution of manganese for a portion of the nickel used in 300 series stainless steels such as Type 304.

In addition, the chemical composition of alloy 201 provides higher annealed mechanical properties than type 304 which can result in an additional benefit of weight reduction. The 201 tensile strength is about 10% higher than Type 304 which may allow for thinner gauges and therefore less material. However, due to the lower Chromium and Nickel content, Type 201 stainless may not have the same corrosion resistance as Type 304.

## Typical Applications

Commercial and residential food service applications, architectural end uses such as handrails and support frame work, washing machines, hose clamps, sinks, containers and structural components of truck trailers and railcars.

| Typical Analysis                 | Grade 201          |
|----------------------------------|--------------------|
| Chrome                           | 16.00 - 18.00      |
| Nickel                           | 3.50 - 5.50        |
| Carbon                           | 0.15 max.          |
| Manganese                        | 5.50 - 7.50        |
| Silicon                          | 1.00 max.          |
| Sulphur                          | 0.03 max.          |
| Phosphorus                       | 0.06 max.          |
| Nitrogen                         | 0.25 max.          |
| Iron                             | Balance            |
| <b>Mechanical Properties</b>     | <b>(Annealed)</b>  |
| Brinell Hardness                 | 175                |
| Tensile-KSI                      | 105                |
| Yield-KSI                        | 45                 |
| Elongation in 2"-%               | 58                 |
| Red. in Area-% Min               | 88                 |
| <b>Welding Characteristics</b>   | Very good          |
| <b>Machining</b>                 |                    |
| Compared to B1112<br>Screw Stock | 45%                |
| <b>Specifications</b>            | <b>201 (Sheet)</b> |
| ASTM                             | A240               |



# Grade 303

303 is a free-machining variation of 304. The addition of sulfur for better machinability makes this a favorite for use in automatic screw machines. Corrosion resistant to atmospheric exposures, as well as a wide range of chemicals; most dyes, foods and nitric acid.

## Typical Applications

Bolts, bushings, nuts, shafts, and parts produced on automatic screw machines.

| Typical Analysis                                     | Grade 303/303 G&P              |
|--|--------------------------------|
| Chrome   | 17.0 - 19.0                    |
| Nickel   | 8.0 - 10.0                     |
| Carbon   | 0.15 max.                      |
| Manganese  | 2.00 max.                      |
| Silicon  | 1.00 max.                      |
| Molybdenum   | 0.60 max.                      |
| Sulphur  | 0.15 min.                      |
| <b>Mechanical Properties</b>                         | <b>(Annealed)</b>              |
| Brinell Hardness                                     | 160                            |
| Tensile–KSI  | 90                             |
| Yield–KSI  | 35                             |
| Elongation in 2"-%                                   | 50                             |
| Red. in Area-% Min                                   | 55                             |
| <b>Welding Characteristics</b>                       | Fusion welding not recommended |
| <b>Machining</b><br>Compared to B1112<br>Screw Stock | 70%                            |
| <b>Specifications</b>                                | <b>303 (Bar)</b>               |
| AISI   | 303                            |
| ASTM   | A581, A582                     |
| AMS  | 5640                           |

# Grade 304/304L

The most widely used of the austenitic grades, 304 offers good corrosion resistance to many chemicals and industrial atmospheres. Generally considered non-magnetic, it can become slightly magnetic when cold-worked. 304 is non-hardenable by heat treatment. In 304L, the carbon content has been lowered to .03% max. for corrosion resistance at heat affected zones from welding.

## Typical Applications

Architectural trim, beer barrels, cryogenic vessels, dairy equipment, and a wide variety of most food applications.

| Typical Analysis                                     | Grade 304               | Grade 304L         |
|--|-------------------------|--------------------|
| Chrome   | 18.00 - 20.00           | 18.00 - 20.00      |
| Nickel   | 8.00 - 11.00            | 8.00 - 11.00       |
| Carbon   | 0.08 max.               | 0.03 max.          |
| Manganese  | 2.00 max.               | 2.00 max.          |
| Silicon  | 1.00 max.               | 1.00 max.          |
| Molybdenum   |                         |                    |
| Other  |                         |                    |
| <b>Mechanical Properties</b>                         |                         | <b>(Annealed)</b>  |
| Brinell Hardness                                     | 170                     | 160                |
| Tensile-KSI  | 85                      | 75                 |
| Yield-KSI  | 34                      | 30                 |
| Elongation in 2"-%                                   | 60                      | 60                 |
| Red. in Area-% Min                                   | 70                      | -                  |
| <b>Welding Characteristics</b>                       | Very good - tough welds |                    |
| <b>Machining</b><br>Compared to B1112<br>Screw Stock | 45%                     |                    |
| <b>Specifications</b>                                |                         |                    |
| AISI   | <b>304 (Bar)</b>        | <b>304L (Bar)</b>  |
| ASTM   | A276, A479,<br>A580     | A276,A479          |
| AMS  | 5639                    | 5647               |
| QQS  | 763                     | 763                |
| AISI   | <b>304 (Sheet)</b>      | <b>304 (Plate)</b> |
| ASTM   | A240                    | A240               |
| AMS  | 5513                    | 5513               |



# Grade 309

Type 309 is an austenitic chromium nickel stainless steel (.08% max carbon). Type 309 is employed for parts requiring both corrosion and heat resistance and oxidation resistance up to 2000 °F. Strength at elevated temperatures is similar to that of 18-8 Stainless Steels.

The 309 grades of stainless steel are noted for excellent corrosion and heat resistance. In general 309 and 309S are more resistant than type 304. They provide high resistance to sulfite liquors and are often chosen for applications where the metal may be exposed to acids including nitric, nitric-sulfur, citric, lactic and more.

Plates can be hot or cold formed as well as annealed to optimize corrosion resistance. It can also be welded by typical methods The machinability of 309 is similar to grade 304.

## Typical Applications

Furnace equipment, oven linings, annealing boxes, thermowells, baffle plates, quenching pots for salt, valves and fittings.

| Typical Analysis                                     | Grade 309         |
|--|-------------------|
| Chrome   | 22.0 - 24.0       |
| Nickel   | 12.0 - 15.0       |
| Carbon   | 0.08 max.         |
| Manganese  | 2.00 max.         |
| Silicon  | 1.00 max.         |
| Molybdenum   | 0.75 max.         |
| Sulphur  | 0.03 max.         |
| Phosphorus   | 0.04 max.         |
| Copper   | 0.75 max.         |
| Iron   | Balance           |
| <b>Mechanical Properties</b>                         | <b>(Annealed)</b> |
| Brinell Hardness                                     | 160               |
| Tensile–KSI  | 75                |
| Yield–KSI  | 30                |
| Elongation in 2"-%                                   | 40                |
| Red. in Area-% Min                                   | -                 |
| <b>Welding Characteristics</b>                       | -                 |
| <b>Machining</b><br>Compared to B1112<br>Screw Stock | 45%               |
| <b>Specifications</b>                                | <b>309</b>        |
| AISI   | 309               |
| ASTM   | A167              |
| AMS  | 5523              |

# Grade 316L

316L is an austenitic chrome nickel steel with superior corrosion resistance to that of other chrome nickel steels. Widely used when exposed to chemical corrodents, as well as marine atmospheres. 316L is generally considered non-magnetic, but can become magnetic when cold worked. In 316L, the carbon content has been lowered to .03% max. for corrosion resistance at heat affected zones from welding.

## Typical Applications

Acetic acid compounds, kettles for cooking catsup, pulp and paper processing equipment, water softener tanks, and many marine applications.

| Typical Analysis                                     | Grade 316L                |
|--|---------------------------|
| Chrome   | 16.00 - 18.00             |
| Nickel   | 10.00 - 14.00             |
| Carbon   | 0.03 max.                 |
| Manganese  | 2.00 max.                 |
| Silicon  | 1.00 max.                 |
| Molybdenum   | 2.00 - 3.00               |
| Other  |                           |
| <b>Mechanical Properties</b>                         | <b>(Annealed)</b>         |
| Brinell Hardness                                     | 160                       |
| Tensile-KSI  | 75                        |
| Yield-KSI  | 30                        |
| Elongation in 2"-%                                   | 60                        |
| Red. in Area-% Min                                   | —                         |
| <b>Welding Characteristics</b>                       | Very good - tough welds   |
| <b>Machining</b><br>Compared to B1112<br>Screw Stock | 45%                       |
| <b>Specifications</b>                                | <b>316L (Bar)</b>         |
| AISI   | A276, A479, A580          |
| ASTM   | 5653                      |
| AMS  | 763                       |
| QQS  | <b>316L (Sheet/Plate)</b> |
| AISI   | A240                      |
| ASTM   | 5507                      |
| AMS  |                           |



# Grade 409

409 is a general purpose stainless steel with 11% chromium. 409 is especially useful for applications requiring oxidation or corrosion protection beyond the capability of carbon steel and some coated steels. 409 has good oxidation resistance and formability, but lower corrosion resistance due to the chromium content. 409 is not as corrosion resistant as 304, 430 or 439 grades, but far superior to mild carbon steel. 409 can be formed by roll forming, stretch bending, deep drawing or pressing.

## Typical Applications

Automotive exhaust system applications such as manifolds, exhaust pipes, catalytic converters, mufflers, tail pipes and other components. Non automotive exhaust applications such as home heating systems, automotive thermostats and fuel filters, electrical transformer cases, caskets and heat exchanger tubing.

| Typical Analysis                                     | Grade 409   |
|--|---|
| Chrome   | 10.50 - 11.70                                     |
| Nickel   | 0.50  |
| Carbon   | 0.03  |
| Manganese  | 1.00  |
| Silicon  | 1.00  |
| Molybdenum   | -   |
| Other  | -   |
| <b>Mechanical Properties</b>                         |   |
| Brinell Hardness                                     | ≤ 88 (179)  |
| Tensile–KSI  | 55 (380)  |
| Yield–KSI  | 25 (170)  |
| Elongation in 2"-%                                   | ≥ 20  |
| Red. in Area-% Min                                   | -   |
| <b>Welding Characteristics</b>                       | Successful in TIG-laser, HF, MIG and Spot Welding |
| <b>Machining</b><br>Compared to B1112<br>Screw Stock |   |
| <b>Specifications</b>                                |   |
| AISI   |   |
| ASTM   | A240  |
| AMS  |   |
| QQS  |   |
| AISI   |   |
| ASTM   |   |
| AMS  |   |

# Grade 410

410 is a martensitic stainless steel that is air or oil hardened and responds well to hardening and tempering operations. Considered a 12% chromium steel, it offers superb combinations of strength and toughness depending on degree of heat treatments. In the annealed condition, it is a ready choice for forming and cold heading.

## Typical Applications

Machined parts, pump shafts, bushings, mining machinery, screws, valves, cutlery, oil burner parts and hardware.

| Typical Analysis                                     | Grade 410                                     |
|--|---|
| Chrome   | 11.5-13.5                                     |
| Carbon   | .15 max.                                      |
| Manganese  | 1.00 max.                                     |
| Phosphorus   | .040 max.                                     |
| Sulphur  | .025 max.                                     |
| Silicon  | 1.00 max.                                     |
| <b>Mechanical Properties</b>                         | <b>(Annealed)</b>                             |
| Brinell Hardness                                     | 185   |
| Tensile-KSI  | 95  |
| Yield-KSI  | 65  |
| Elongation in 2"-%                                   | 30  |
| Red. in Area-% Min                                   | 70  |
| <b>Welding Characteristics</b>                       | Can be readily welded<br>Pre-heat recommended |
| <b>Machining</b><br>Compared to B1112<br>Screw Stock | 54%   |
| <b>Specifications</b>                                |   |
| AISI   | 410   |
| ASTM   | A193, A194, A276, A314, A479                  |
| AMS  | 5612, 5613                                    |





# Grade 416

416 is a martensitic chromium steel to which elements have been added to enhance the machinability. 416 is the most readily machinable of all the stainless steels and is suitable for use in automatic screw machines. 416 is less corrosion resistant than the chrome-nickel steels. It is magnetic in all conditions.

## Typical Applications

Aircraft fittings, bolts, nuts, studs, rivets, screws, many nonseizing and nongalling applications.

| Typical Analysis               | Grade 416          |
|--------------------------------|--------------------|
| Chrome                         | 12.00-14.00        |
| Nickel                         |                    |
| Carbon                         | .15 max.           |
| Manganese                      | 1.25 max.          |
| Silicon                        | 1.00 max.          |
| Molybdenum                     | .06 max.           |
| Sulphur                        | .15 min.           |
| <b>Mechanical Properties</b>   | <b>(Annealed)</b>  |
| Brinell Hardness               | 155                |
| Tensile-KSI                    | 75                 |
| Yield-KSI                      | 40                 |
| Elongation in 2"-%             | 30                 |
| Red. in Area-% Min             | 60                 |
| <b>Welding Characteristics</b> | Poor brittle welds |
| <b>Machining</b>               |                    |
| Compared to B1112              |                    |
| Screw Stock                    | 90%                |
| <b>Specifications</b>          | <b>416 (Bar)</b>   |
| AISI                           | 416                |
| ASTM                           | A581, A582         |
| AMS                            | 5610               |

# Grade 420

420 is a martensitic chrome steel capable of hardening to a maximum of approximately 500 Brinell. It has its optimum corrosion resisting qualities in the hardened and tempered condition. 420 is magnetic in all conditions.

## Typical Applications

Flatware knife blades, glass molds, hand tools, vegetable choppers.

| Typical Analysis                                     | Grade 420  |
|--|--|
| Chrome   | 12.00-14.00  |
| Carbon   | .15 min.   |
| Manganese  | 1.0 max.   |
| Silicon  | 1.0 max.   |
| Molybdenum   |  |
| Other  |  |
| <b>Mechanical Properties</b>                         | <b>(Annealed)</b>  |
| Brinell Hardness                                     | 195  |
| Tensile-KSI  | 95   |
| Yield-KSI  | 50   |
| Elongation in 2"-%                                   | 25   |
| Red. in Area-% Min                                   | 55   |
| <b>Welding Characteristics</b>                       | Fair - Preheat 400°-500°<br>Anneal at 1300°<br>after welding |
| <b>Machining</b><br>Compared to B1112<br>Screw Stock | 54%  |
| <b>Specifications</b>                                | <b>420 (Bar)</b>   |
| AISI   | 420  |
| ASTM   | A276   |
| AMS  | 5621   |
| QQS  | 763  |



# Grade 430

430 stainless steel has good corrosion resistance combined with good formability. 430 is very similar to 439 grade stainless steel with slightly less chromium at 16% minimum content. 430 is more oxidation resistant and corrosion resistant than 409 grade. 430 is a popular non-hardenable grade most commonly used in indoor environments. 430 is readily cold formed by bending, deep drawing and stretch forming. 430 is relatively easy to machine and is comparable to that of structural carbon steel requiring the same recommendations regarding tooling, cutting speeds and cutting feeds. 430 can be welded although it may require annealing.

## Typical Applications

Appliances, food equipment, automotive, flue liners and roofing.

| Typical Analysis                                     | Grade 430  |
|--|--|
| Chrome   | 14.00 - 18.00  |
| Carbon   | .12 max.   |
| Nickel   |  |
| Manganese  | 1.0 max.   |
| Silicon  | 1.0 max.   |
| Molybdenum   |  |
| Other  |  |
| <b>Mechanical Properties</b>                         | <b>(Annealed)</b>                                    |
| Brinell Hardness                                     | 155  |
| Tensile–KSI  | 75   |
| Yield–KSI  | 45   |
| Elongation in 2"-%                                   | 30   |
| Red. in Area-% Min                                   | 65   |
| <b>Welding Characteristics</b>                       | Fair - Brittle welds<br>Slight response to annealing |
| <b>Machining</b><br>Compared to B1112<br>Screw Stock | 54%  |
| <b>Specifications</b>                                | <b>430 (Sheet/Plate)</b>                             |
| AISI   | 430  |
| ASTM   | A176   |
| AMS  | 5503   |

# Grade 439

439 stainless steel has good corrosion resistance due to its 17% minimum chromium content. 439 can be formed using a wide range of roll forming or mild stretch bending operations as well as more common drawing and bending operations. Special adjustment to chemical composition give this alloy excellent formability. 439 is more oxidation resistant and corrosion resistant than 409 grade. 439 has high thermal conductivity and low thermal expansion.

## Typical Applications

Automotive exhaust components, heating units and evaporator tubes.

| Typical Analysis                                     | Grade 439   |
|--|---|
| Chrome   | 17.00 - 19.00   |
| Carbon   | 0.030   |
| Nickel   | 0.50  |
| Manganese  | 1.00  |
| Silicon  | 1.00  |
| Molybdenum   |   |
| Other  |   |
| <b>Mechanical Properties</b>                         | <b>(Annealed)</b>   |
| Brinell Hardness                                     | ≤ 89 (183)  |
| Tensile–KSI  | 60 (415)  |
| Yield–KSI  | 30 (205)  |
| Elongation in 2"-%                                   | ≥ 22  |
| Red. in Area-% Min                                   | -   |
| <b>Welding Characteristics</b>                       | Prone to grain growth in heat affected zone of weldment = poor tensile, fatigue and toughness in welded area. |
| <b>Machining</b><br>Compared to B1112<br>Screw Stock |   |
| <b>Specifications</b>                                | <b>439 (Sheet)</b>  |
| AISI   | 439   |
| ASTM   | A240  |
| AMS  |   |



# Grade 440C

440C is a martensitic chrome steel that is capable of acquiring, upon heat treatment, the highest hardness of any type of corrosion resisting steels. It has its optimum corrosion resisting qualities in the hardened and tempered condition and is magnetic in all conditions.

## Typical Applications

Instrument bearings, nozzles, steel balls and seats for oil well pumps, valve parts.

| Typical Analysis                                     | Grade 440C        |
|--|-------------------|
| Chrome   | 16.00-18.00       |
| Nickel   |                   |
| Carbon   | .95-1.20          |
| Manganese  | 1.0 max.          |
| Silicon  | 1.0 max.          |
| Molybdenum   | .75 max.          |
| Other  |                   |
| <b>Mechanical Properties</b>                         | <b>(Annealed)</b> |
| Brinell Hardness                                     | 230               |
| Tensile—KSI  | 110               |
| Yield—KSI  | 65                |
| Elongation in 2"—%                                   | 14                |
| Red. in Area—% Min                                   | 25                |
| <b>Welding Characteristics</b>                       | Not recommended   |
| <b>Machining</b><br>Compared to B1112<br>Screw Stock | 30%               |
| <b>Specifications</b>                                | <b>440C (Bar)</b> |
| AISI   | 440C              |
| ASTM   | A276, A580        |
| AMS  | 5630              |
| QQS  | 763               |

# Grade 17-4 PH (630)/17-4 G&P/17-4 H900 G&P

17-4 is a martensitic precipitation hardening (maraging) steel that combines high strength and hardness with a moderate level of corrosion resistance. A simple one-step aging treatment in the range of 900 to 1150 degrees hardens the alloy to its design strength levels.

## Typical Applications

High strength fittings, valves, bolts, shafting, pump parts, medical instruments.

| Typical Analysis                 | Gr. 17-4, 17-4 G&P, 17-4 H900 G&P |
|----------------------------------|-----------------------------------|
| Chrome                           | 15.00-17.50                       |
| Nickel                           | 3.00-5.00                         |
| Carbon                           | .07 max.                          |
| Manganese                        | 1.00 max.                         |
| Silicon                          | 1.00 max.                         |
| Molybdenum                       |                                   |
| Copper                           | 3.00-5.00                         |
| <b>Mechanical Properties</b>     | <b>(Solution Treated)</b>         |
| Brinell Hardness                 | 332                               |
| Tensile-KSI                      | 160                               |
| Yield-KSI                        | 145                               |
| Elongation in 2"-%               | 15                                |
| Red. in Area-% Min               | 55                                |
| <b>Welding Characteristics</b>   |                                   |
| <b>Machining</b>                 |                                   |
| Compared to B1112<br>Screw Stock | 45%                               |
| <b>Specifications</b>            | <b>17-4 (Bar)</b>                 |
| AISI                             | S17400                            |
| ASTM                             | A564                              |
| AMS                              | 5643                              |
| QQS                              | -                                 |

| Hardness Properties |                     |                    |                  |                  |                             |                             |                          | Gr. 17-4, 17-4 G&P, 17-4 H900 G&P |
|---------------------|---------------------|--------------------|------------------|------------------|-----------------------------|-----------------------------|--------------------------|-----------------------------------|
| Code                | UTS<br>min<br>(kis) | YS<br>min<br>(kis) | EI<br>min<br>(%) | RA<br>min<br>(%) | Hardness<br>min<br>HRC / HB | Hardness<br>max<br>HRC / HB | Charpy<br>min<br>(ft-lb) |                                   |
| H925                | 170                 | 155                | 10               | 44               | 38 / 375                    | 45 / 429                    | 5                        |                                   |
| H1025               | 155                 | 145                | 12               | 45               | 35 / 331                    | 42 / 401                    | 15                       |                                   |
| H1050               | 155                 | 145                | 13               | 45               | 32 / 311                    | 38 / 375                    | 15                       |                                   |
| H1075               | 145                 | 125                | 13               | 45               | 32 / 311                    | 38 / 375                    | 20                       |                                   |
| H1100               | 140                 | 115                | 14               | 45               | 31 / 302                    | 37 / 363                    | 25                       |                                   |
| H1150               | 135                 | 105                | 16               | 50               | 28 / 277                    | 37 / 352                    | 30                       |                                   |
| H1150M              | 115                 | 75                 | 18               | 55               | 24 / 255                    | ---                         | 55                       |                                   |
| H1150D              | 125                 | 105                | 16               | 50               | 24 / 255                    | 33 / 311                    | 30                       |                                   |



# Stainless Rounds

Standard Lengths: 12 foot random

|      |              |            |                |              |
|------|--------------|------------|----------------|--------------|
| AISI | 303, 303 G&P | 304 / 304L | 316L, 316L BSQ | 416, 416 PSQ |
|      | 17-4 PH      | 17-4 G&P   | 17-4 H900      | 410          |
|      | 420          | 440C       |                |              |

| Size (inches) | Weight (lbs./ft.) | Size (inches) | Weight (lbs./ft.) | Size (inches) | Weight (lbs./ft.) | Size (inches) | Weight (lbs./ft.) |
|---------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|-------------------|
| 1/16          | .010              | 1-1/8         | 3.379             | 2-5/8         | 19.322            | 6-1/2         | 117.584           |
| 3/32          | .023              | 1-3/16        | 3.766             | 2-11/16       | 20.248            | 6-3/4         | 127.532           |
| 1/8           | .042              | 1-1/4         | 4.173             | 2-3/4         | 21.181            | 7             | 136.987           |
| 5/32          | .065              | 1-5/16        | 4.600             | 2-13/16       | 22.150            | 7-1/4         | 146.780           |
| 3/16          | .094              | 1-3/8         | 5.049             | 2-7/8         | 23.125            | 7-1/2         | 156.911           |
| 7/32          | .128              | 1-7/16        | 5.518             | 2-15/16       | 24.121            | 7-3/4         | 167.380           |
| 1/4           | .167              | 1-1/2         | 6.008             | 3             | 25.155            | 8             | 178.187           |
| 9/32          | .211              | 1-9/16        | 6.520             | 3-1/8         | 27.270            | 8-1/2         | 201.935           |
| 5/16          | .261              | 1-5/8         | 7.051             | 3-1/4         | 29.470            | 9             | 225.981           |
| 11/32         | .316              | 1-11/16       | 7.604             | 3-3/8         | 31.756            | 9-1/2         | 251.379           |
| 3/8           | .376              | 1-3/4         | 8.178             | 3-7/16        | 32.941            | 10            | 278.129           |
| 13/32         | .441              | 1-13/16       | 8.773             | 3-1/2         | 34.128            | 11            | 335.685           |
| 7/16          | .511              | 1-7/8         | 9.388             | 3-5/8         | 36.824            | 12            | 398.651           |
| 15/32         | .587              | 1-15/16       | 10.024            | 3-3/4         | 39.375            | 13            | 468.698           |
| 1/2           | .668              | 2             | 10.681            | 4             | 44.731            | 14            | 542.609           |
| 9/16          | .845              | 2-1/16        | 11.879            | 4-1/4         | 50.429            | 15            | 621.928           |
| 5/8           | 1.043             | 2-1/8         | 12.607            | 4-1/2         | 56.468            | 16            | 708.669           |
| 11/16         | 1.262             | 2-3/16        | 13.357            | 4-3/4         | 63.166            | 18            | 884.603           |
| 3/4           | 1.502             | 2-1/4         | 14.117            | 5             | 69.905            | 20            | 1102.171          |
| 13/16         | 1.763             | 2-5/16        | 14.910            | 5-1/4         | 76.985            | 22            | 1331.376          |
| 7/8           | 2.044             | 2-3/8         | 15.712            | 5-1/2         | 83.074            | 24            | 1582.217          |
| 15/16         | 2.347             | 2-7/16        | 16.549            | 5-3/4         | 93.289            |               |                   |
| 1             | 2.670             | 2-1/2         | 17.393            | 6             | 100.428           |               |                   |
| 1-1/16        | 3.014             | 2-9/16        | 18.431            | 6-1/4         | 108.837           |               |                   |

Available in Ground & Polished -- (+/- .0005)

# Stainless Half-Rounds

Type 304

| Width (inches) | Height (inches) | Weight (lbs./ft.) |
|----------------|-----------------|-------------------|
| 1/2            | 1/4             | 0.334             |
| 5/8            | 5/16            | 0.520             |
| 3/4            | 3/8             | 0.751             |

# Stainless Squares

Annealed & Cold Drawn

Standard Lengths: 12 foot random

| AISI | 303 | 304/304L | 316L | 416 | 17-4 | 420 |
|------|-----|----------|------|-----|------|-----|
|------|-----|----------|------|-----|------|-----|

| Size (inches) | Weight (lbs./ft.) | Weight (lbs./12 ft.) |
|---------------|-------------------|----------------------|
| 1/8           | .054              | .64                  |
| 3/16          | .120              | 1.44                 |
| 1/4           | .213              | 2.55                 |
| 5/16          | .332              | 3.98                 |
| 3/8           | .480              | 5.76                 |
| 7/16          | .666              | 7.99                 |
| 1/2           | .850              | 10.20                |
| 9/16          | 1.076             | 12.91                |
| 5/8           | 1.330             | 15.96                |
| 3/4           | 1.910             | 22.92                |
| 7/8           | 2.600             | 31.20                |

| Size (inches) | Weight (lbs./ft.) | Weight (lbs./12 ft.) |
|---------------|-------------------|----------------------|
| 1             | 3.400             | 40.80                |
| 1-1/8         | 4.303             | 51.63                |
| 1-1/4         | 5.310             | 63.72                |
| 1-1/2         | 7.650             | 91.80                |
| 1-3/4         | 10.410            | 124.92               |
| 2             | 13.600            | 163.20               |
| 2-1/2         | 21.250            | 255.00               |
| 3             | 31.030            | 372.36               |
| 3-1/2         | 42.740            | 512.88               |
| 4             | 54.450            | 653.40               |
| 5             | 85.000            | 1020.00              |

Note: Squares 2-1/2" and under are typically CF products. All squares over 2-1/2" are HRAP products.

# Stainless Hexagons

Annealed & Cold Drawn

Standard Lengths: 12 foot random

| AISI | 303 | 304/304L | 316L | 416 |
|------|-----|----------|------|-----|
|------|-----|----------|------|-----|

| Size (inches) | Weight (lbs./ft.) | Weight (lbs./12 ft.) |
|---------------|-------------------|----------------------|
| 1/8           | .046              | .56                  |
| 3/16          | .104              | 1.24                 |
| 1/4           | .184              | 2.21                 |
| 5/16          | .288              | 3.45                 |
| 3/8           | .414              | 4.97                 |
| 7/16          | .564              | 6.77                 |
| 1/2           | .736              | 8.83                 |
| 9/16          | .932              | 11.18                |
| 5/8           | 1.150             | 13.80                |
| 11/16         | 1.393             | 16.72                |
| 3/4           | 1.660             | 19.92                |
| 13/16         | 1.940             | 23.28                |
| 7/8           | 2.250             | 27.00                |
| 15/16         | 2.590             | 31.08                |
| 1             | 2.950             | 35.40                |
| 1-1/16        | 3.324             | 39.89                |

| Size (inches) | Weight (lbs./ft.) | Weight (lbs./12 ft.) |
|---------------|-------------------|----------------------|
| 1-1/8         | 3.730             | 44.76                |
| 1-3/16        | 4.152             | 49.82                |
| 1-1/4         | 4.600             | 55.20                |
| 1-5/16        | 5.080             | 60.96                |
| 1-3/8         | 5.570             | 66.84                |
| 1-1/2         | 6.630             | 79.56                |
| 1-5/8         | 7.775             | 93.24                |
| 1-3/4         | 9.026             | 108.31               |
| 1-7/8         | 10.360            | 124.32               |
| 2             | 11.780            | 141.36               |
| 2-1/4         | 14.920            | 179.04               |
| 2-3/8         | 16.610            | 199.32               |
| 2-1/2         | 18.400            | 220.80               |
| 2-3/4         | 22.290            | 267.41               |
| 3             | 26.530            | 318.36               |



# Stainless Flats

Hot Rolled Annealed, Pickled, True Mill Bar, Cold Drawn (303 only), Processed Plate Flat\*, or Sheared and Edged

Standard Lengths: 12 foot

|             |            |                 |             |             |                   |            |
|-------------|------------|-----------------|-------------|-------------|-------------------|------------|
| <b>AISI</b> | <b>303</b> | <b>304/304L</b> | <b>316L</b> | <b>17-4</b> | <b>17-4 H1150</b> | <b>420</b> |
|-------------|------------|-----------------|-------------|-------------|-------------------|------------|

"L" grade sizes available upon request.

| Size (inches)     | Wgt. (lbs./ft.) |
|-------------------|-----------------|
| <b>1/8 x</b> 3/4  | .326            |
| 1                 | .435            |
| 1-1/4             | .544            |
| 1-1/2             | .653            |
| 1-3/4             | .761            |
| 2                 | .870            |
| 2-1/2             | 1.090           |
| 3                 | 1.310           |
| 3-1/2             | 1.489           |
| 4                 | 1.740           |
| 6                 | 2.610           |
| <b>3/16 x</b> 3/4 | .489            |
| 1                 | .653            |
| 1-1/4             | .816            |
| 1-1/2             | .979            |
| 1-3/4             | 1.150           |
| 2                 | 1.305           |
| 2-1/2             | 1.630           |
| 3                 | 1.960           |
| 3-1/2             | 2.160           |
| 4                 | 2.610           |
| 5                 | 3.260           |
| 6                 | 3.910           |
| <b>1/4 x</b> 3/4  | .638            |
| 1                 | .870            |
| 1-1/4             | 1.088           |
| 1-1/2             | 1.305           |
| 1-3/4             | 1.488           |
| 2                 | 1.740           |
| 2-1/4             | 1.913           |
| 2-1/2             | 2.175           |
| 3                 | 2.610           |
| 3-1/2             | 3.045           |
| 4                 | 3.480           |
| 4-1/2             | 3.915           |
| 5                 | 4.350           |
| 6                 | 5.220           |
| 8                 | 6.960           |
| <b>5/16 x</b> 1   | 1.088           |
| 2                 | 2.291           |

| Size (inches)    | Wgt. (lbs./ft.) |
|------------------|-----------------|
| <b>3/8 x</b> 1/2 | .653            |
| 3/4              | .979            |
| 1                | 1.305           |
| 1-1/8            | 1.468           |
| 1-1/4            | 1.630           |
| 1-1/2            | 1.956           |
| 1-3/4            | 2.284           |
| 2                | 2.550           |
| 2-1/2            | 3.263           |
| 3                | 3.915           |
| 3-1/2            | 4.800           |
| 4                | 5.220           |
| 5                | 6.505           |
| 6                | 7.830           |
| 8                | 10.440          |
| <b>1/2 x</b> 3/4 | 1.305           |
| 1                | 1.740           |
| 1-1/4            | 2.175           |
| 1-1/2            | 2.610           |
| 1-3/4            | 2.975           |
| 2                | 3.480           |
| 2-1/2            | 4.350           |
| 3                | 5.220           |
| 3-1/2            | 6.090           |
| 4                | 6.960           |
| 5                | 8.700           |
| 6                | 10.440          |
| 8                | 13.420          |
| <b>5/8 x</b> 3/4 | 1.631           |
| 1                | 2.130           |
| 1-1/4            | 2.656           |
| 1-1/2            | 3.188           |
| 2                | 4.250           |
| 2-1/2            | 5.313           |
| 3                | 6.380           |
| 3-1/2            | 7.438           |
| 4                | 8.500           |
| 5                | 11.183          |
| 6                | 13.419          |

| Size (inches)        | Wgt. (lbs./ft.) |
|----------------------|-----------------|
| <b>3/4 x</b> 1       | 2.550           |
| 1-1/4                | 3.190           |
| 1-1/2                | 3.830           |
| 1-3/4                | 4.88            |
| 2                    | 5.100           |
| 2-1/2                | 6.380           |
| 3                    | 7.650           |
| 3-1/2                | 8.930           |
| 4                    | 10.200          |
| 5                    | 12.750          |
| 6                    | 15.300          |
| <b>1x</b> 1-1/4      | 4.250           |
| 1-12                 | 5.100           |
| 1-3/4                | 6.000           |
| 2                    | 6.800           |
| 2-1/2                | 8.500           |
| 3                    | 10.200          |
| 3-1/2                | 11.900          |
| 4                    | 13.600          |
| 5                    | 17.000          |
| 6                    | 20.400          |
| <b>1-1/4 x</b> 1-1/2 | 6.490           |
| 2                    | 8.500           |
| 2-1/2                | 10.630          |
| 3                    | 12.750          |
| 4                    | 17.670          |
| 6                    | 25.520          |
| <b>1-1/2 x</b> 2     | 10.200          |
| 2-1/2                | 13.196          |
| 3                    | 15.300          |
| 4                    | 20.400          |
| 6                    | 30.600          |
| <b>2 x</b> 2-1/2     | 17.000          |
| 3                    | 20.400          |
| 4                    | 27.200          |
| <b>3 x</b> 4         | 40.800          |

\* Weight per foot on Processed Plate Flats slightly higher and specifications would be plate specifications.



# Stainless Sheet

## Cold Rolled, Annealed & Pickled Finishes:

- 2B Paper Interleaved
- 2B Laser Film, 1 Side
- #4 Laser Film, 1 Side
- BA Laser Film, 1 Side
- #8 Laser Film, 1 Side

|             |            |            |             |             |
|-------------|------------|------------|-------------|-------------|
| <b>AISI</b> | <b>201</b> | <b>304</b> | <b>304L</b> | <b>316L</b> |
|-------------|------------|------------|-------------|-------------|

| Gauge<br>(nom. dec.)    | Sheet<br>Size<br>(inches) | Weight<br>(lbs./sqft.) | Approx.<br>Sheet Wgt.<br>(lbs.) |
|-------------------------|---------------------------|------------------------|---------------------------------|
| <b>7 ga</b><br>(.1874)  | 48 x 96                   | 7.871                  | 251.87                          |
|                         | 48 x 120                  | 7.871                  | 314.80                          |
|                         | 48 x 144                  | 7.871                  | 377.80                          |
|                         | 60 x 96                   | 7.871                  | 314.84                          |
|                         | 60 x 120                  | 7.871                  | 393.55                          |
|                         | 60 x 144                  | 7.871                  | 472.26                          |
|                         | 72 x 96                   | 7.871                  | 377.80                          |
|                         | 72 x 120                  | 7.871                  | 472.26                          |
|                         | 72 x 144                  | 7.871                  | 566.71                          |
| <b>8 ga</b><br>(.1644)  | 48 x 96                   | 7.014                  | 224.44                          |
|                         | 48 x 120                  | 7.014                  | 280.56                          |
|                         | 60 x 120                  | 7.014                  | 350.70                          |
|                         | 60 x 144                  | 7.014                  | 420.84                          |
| <b>10 ga</b><br>(.1350) | 36 x 96                   | 5.670                  | 136.08                          |
|                         | 36 x 120                  | 5.670                  | 170.10                          |
|                         | 48 x 96                   | 5.670                  | 181.44                          |
|                         | 48 x 120                  | 5.670                  | 226.80                          |
|                         | 48 x 144                  | 5.670                  | 272.16                          |
|                         | 60 x 96                   | 5.670                  | 226.80                          |
|                         | 60 x 120                  | 5.670                  | 283.50                          |
|                         | 60 x 144                  | 5.670                  | 340.20                          |
|                         | 72 x 96                   | 5.670                  | 272.16                          |
|                         | 72 x 120                  | 5.670                  | 340.20                          |
|                         | 72 x 144                  | 5.670                  | 408.24                          |
| <b>11 ga</b><br>(.1200) | 36 x 96                   | 5.050                  | 121.20                          |
|                         | 36 x 120                  | 5.050                  | 151.50                          |
|                         | 36 x 144                  | 5.050                  | 181.80                          |
|                         | 48 x 96                   | 5.050                  | 161.60                          |
|                         | 48 x 120                  | 5.050                  | 202.00                          |
|                         | 48 x 144                  | 5.050                  | 242.40                          |
|                         | 60 x 96                   | 5.050                  | 202.00                          |
|                         | 60 x 120                  | 5.050                  | 252.50                          |
|                         | 60 x 144                  | 5.050                  | 303.00                          |
|                         | 72 x 96                   | 5.050                  | 242.40                          |
|                         | 72 x 120                  | 5.050                  | 303.00                          |
| 72 x 144                | 5.050                     | 363.60                 |                                 |

| Gauge<br>(nom. dec.)    | Sheet<br>Size<br>(inches) | Weight<br>(lbs./sqft.) | Approx.<br>Sheet Wgt.<br>(lbs.) |
|-------------------------|---------------------------|------------------------|---------------------------------|
| <b>12 ga</b><br>(.1054) | 36 x 96                   | 4.420                  | 106.08                          |
|                         | 36 x 120                  | 4.420                  | 132.60                          |
|                         | 36 x 144                  | 4.420                  | 159.12                          |
|                         | 48 x 96                   | 4.420                  | 141.44                          |
|                         | 48 x 120                  | 4.420                  | 176.80                          |
|                         | 48 x 144                  | 4.420                  | 212.16                          |
|                         | 60 x 96                   | 4.420                  | 176.80                          |
|                         | <b>12 ga</b><br>(.1054)   | 60 x 120               | 4.420                           |
| 60 x 144                |                           | 4.420                  | 265.20                          |
| 72 x 96                 |                           | 4.420                  | 272.16                          |
| 72 x 120                |                           | 4.420                  | 265.20                          |
| <b>13 ga</b><br>(.0900) | 72 x 144                  | 4.420                  | 318.24                          |
|                         | 48 x 96                   | 3.780                  | 120.96                          |
|                         | 48 x 120                  | 3.780                  | 151.20                          |
| <b>14 ga</b><br>(.075)  | 48 x 144                  | 3.780                  | 181.44                          |
|                         | 36 x 96                   | 3.155                  | 75.72                           |
|                         | 36 x 120                  | 3.155                  | 94.65                           |
|                         | 36 x 144                  | 3.155                  | 113.58                          |
|                         | 48 x 96                   | 3.155                  | 100.96                          |
|                         | 48 x 120                  | 3.155                  | 126.20                          |
|                         | 48 x 144                  | 3.155                  | 151.44                          |
|                         | 60 x 96                   | 3.155                  | 126.20                          |
|                         | 60 x 120                  | 3.155                  | 157.75                          |
|                         | 60 x 144                  | 3.155                  | 189.30                          |
|                         | 72 x 96                   | 3.155                  | 151.44                          |
| <b>16 ga</b><br>(.060)  | 72 x 120                  | 3.155                  | 189.30                          |
|                         | 72 x 144                  | 3.155                  | 227.16                          |
|                         | 36 x 96                   | 2.520                  | 60.48                           |
|                         | 36 x 120                  | 2.520                  | 75.60                           |
|                         | 36 x 144                  | 2.520                  | 90.72                           |
|                         | 48 x 96                   | 2.520                  | 80.64                           |
|                         | 48 x 120                  | 2.520                  | 100.80                          |
|                         | 48 x 144                  | 2.520                  | 120.96                          |
|                         | 60 x 96                   | 2.520                  | 100.80                          |
|                         | 60 x 120                  | 2.520                  | 126.00                          |
|                         | 60 x 144                  | 2.520                  | 151.20                          |
| 72 x 96                 | 2.520                     | 120.96                 |                                 |
| 72 x 120                | 2.520                     | 151.20                 |                                 |
| 72 x 144                | 2.520                     | 181.44                 |                                 |

Special length sheets available by request, please inquire with your Alro sales representative.

\*Note: Laser Film is dual purpose fiber optic / CO2 laser film.

Continued on next page



# Stainless Sheet

**Cold Rolled, Annealed and Pickled Finishes:**

- 2B Paper Interleaved
- 2B Laser Film, 1 Side
- #4 Laser Film, 1 Side
- BA Laser Film, 1 Side
- #8 Laser Film, 1 Side

| AISI | 201 | 304 | 304L | 316L |
|------|-----|-----|------|------|
|------|-----|-----|------|------|

| Gauge<br>(nom. dec.)   | Sheet Size<br>(inches) | Weight<br>(lbs./sqft.) | Approx. Sheet Wgt.<br>(lbs.) |
|------------------------|------------------------|------------------------|------------------------------|
| <b>18 ga</b><br>(.048) | 36 x 96                | 2.020                  | 48.48                        |
|                        | 36 x 120               | 2.020                  | 60.60                        |
|                        | 36 x 144               | 2.020                  | 72.72                        |
|                        | 48 x 96                | 2.020                  | 64.64                        |
|                        | 48 x 120               | 2.020                  | 80.80                        |
|                        | 48 x 144               | 2.020                  | 96.96                        |
|                        | 60 x 96                | 2.020                  | 80.80                        |
|                        | 60 x 120               | 2.020                  | 101.00                       |
|                        | 60 x 144               | 2.020                  | 121.20                       |
| <b>20 ga</b><br>(.036) | 36 x 96                | 1.512                  | 36.28                        |
|                        | 36 x 120               | 1.512                  | 45.36                        |
|                        | 36 x 144               | 1.512                  | 54.43                        |
|                        | 48 x 96                | 1.512                  | 48.38                        |
|                        | 48 x 120               | 1.512                  | 60.48                        |
|                        | 48 x 144               | 1.512                  | 72.57                        |
|                        | 60 x 96                | 1.512                  | 60.48                        |
|                        | 60 x 120               | 1.512                  | 75.60                        |
|                        | 60 x 144               | 1.512                  | 90.72                        |

| Gauge<br>(nom. dec.)   | Sheet Size<br>(inches) | Weight<br>(lbs./sqft.) | Approx. Sheet Wgt.<br>(lbs.) |
|------------------------|------------------------|------------------------|------------------------------|
| <b>22 ga</b><br>(.030) | 36 x 96                | 1.260                  | 30.24                        |
|                        | 36 x 120               | 1.260                  | 37.80                        |
|                        | 36 x 144               | 1.260                  | 45.36                        |
|                        | 48 x 96                | 1.260                  | 40.32                        |
|                        | 48 x 120               | 1.260                  | 50.40                        |
|                        | 48 x 144               | 1.260                  | 60.48                        |
|                        | 60 x 96                | 1.260                  | 50.40                        |
|                        | 60 x 120               | 1.260                  | 63.00                        |
|                        | 60 x 144               | 1.260                  | 75.60                        |
| <b>24 ga</b><br>(.024) | 36 x 96                | 1.008                  | 24.19                        |
|                        | 36 x 120               | 1.008                  | 30.24                        |
|                        | 48 x 96                | 1.008                  | 32.25                        |
|                        | 48 x 120               | 1.008                  | 40.32                        |
|                        | 48 x 144               | 1.008                  | 48.38                        |
| <b>26 ga</b><br>(.018) | 36 x 96                | .756                   | 18.14                        |
|                        | 36 x 120               | .756                   | 22.68                        |
|                        | 48 x 96                | .756                   | 24.19                        |
|                        | 48 x 120               | .756                   | 30.24                        |
|                        | 48 x 144               | .756                   | 36.29                        |

*Special length sheets available by request, please inquire with your Alro sales representative.*

*\*Note: Laser Film is dual purpose fiber optic / CO2 laser film.*

# Stainless Sheet

**Cold Rolled, Annealed and Pickled Finishes:**

- 2B Paper Interleaved
- 2B Laser Film, 1 Side
- #4 Laser Film, 1 Side
- BA Laser Film, 1 Side
- #8 Laser Film, 1 Side

| AISI | 409-2D | 430 | 439-2D |
|------|--------|-----|--------|
|------|--------|-----|--------|

| Gauge<br>(Nominal Decimal) | Sheet Size<br>(inches) | Weight<br>(lbs./sqft.) | Approx. Weight<br>(lbs./sheet) |
|----------------------------|------------------------|------------------------|--------------------------------|
| 24 ga<br>(.024)            | 48 x 96                | 1.008                  | 32.25                          |
|                            | 48 x 120               | 1.008                  | 40.32                          |
| 22 ga<br>(.030)            | 48 x 96                | 1.260                  | 40.32                          |
|                            | 48 x 120               | 1.260                  | 50.40                          |
| 20 ga<br>(.036)            | 48 x 96                | 1.512                  | 48.38                          |
|                            | 48 x 120               | 1.512                  | 60.48                          |
| 18 ga<br>(.048)            | 48 x 96                | 2.020                  | 64.64                          |
|                            | 48 x 120               | 2.020                  | 80.80                          |
| 16 ga<br>(.060)            | 48 x 96                | 2.520                  | 80.64                          |
|                            | 48 x 120               | 2.520                  | 100.80                         |
| 14 ga<br>(.075)            | 48 x 96                | 3.155                  | 100.96                         |
|                            | 48 x 120               | 3.155                  | 126.20                         |
| 12 ga<br>(.1054)           | 48 x 96                | 4.420                  | 141.44                         |
|                            | 48 x 120               | 4.420                  | 176.80                         |
| 11 ga<br>(.1200)           | 48 x 96                | 5.050                  | 161.60                         |
|                            | 48 x 120               | 5.050                  | 202.00                         |

*\*Note: Laser Film is dual purpose fiber optic / CO2 laser film.*



# Stainless Plate

Hot Rolled, Annealed & Pickled

|             |             |             |             |             |
|-------------|-------------|-------------|-------------|-------------|
| <b>AISI</b> | <b>201</b>  | <b>304</b>  | <b>304L</b> | <b>316L</b> |
| <b>ASTM</b> | <b>A240</b> | <b>A240</b> | <b>A240</b> | <b>A240</b> |

| Thickness (inches)<br>(lbs./sqft.) | Width<br>(inches)      |
|------------------------------------|------------------------|
| <b>3/16</b><br>(8.579)             | 48                     |
|                                    | 60                     |
|                                    | 72                     |
|                                    | 96                     |
| <b>3/16</b><br>(304L only)         | <b>78.74</b>           |
| <b>1/4</b><br>(11.162)             | 48                     |
|                                    | 60                     |
|                                    | 72                     |
|                                    | 96                     |
| <b>1/4</b><br>(304L only)          | <b>78.74</b>           |
| <b>5/16</b><br>(13.746)            | 48                     |
|                                    | 60                     |
|                                    | 72                     |
|                                    | 96                     |
| <b>3/8</b><br>(16.496)             | 48                     |
|                                    | 60                     |
|                                    | 72                     |
|                                    | 96                     |
| <b>1/2</b><br>(21.663)             | 48                     |
|                                    | 60                     |
|                                    | 72                     |
|                                    | 96                     |
| <b>5/8</b><br>(26.831)             | 48                     |
|                                    | 60                     |
|                                    | 72                     |
|                                    | 96                     |
| <b>3/4</b><br>(32.123)             | 48                     |
|                                    | 60                     |
|                                    | 96                     |
|                                    | <b>7/8</b><br>(37.290) |
| 96                                 |                        |

| Thickness (inches)<br>(lbs./sqft.) | Width<br>(inches) |
|------------------------------------|-------------------|
| <b>1</b><br>(43.013)               | 48                |
|                                    | 60                |
|                                    | 96                |
| <b>1-1/4</b><br>(53.453)           | 60                |
| <b>1-1/2</b><br>(63.893)           | 60                |
|                                    | 96                |
| <b>1-3/4</b><br>(74.333)           | 60                |
|                                    | 96                |
| <b>2</b><br>(85.921)               | 60                |
|                                    | 96                |
| <b>2-1/4</b><br>(96.361)           | 60                |
|                                    | 96                |
| <b>2-1/2</b><br>(106.801)          | 60                |
|                                    | 96                |
| <b>2-3/4</b><br>(117.241)          | 60                |
|                                    | 96                |
| <b>3</b><br>(128.725)              | 60                |
|                                    | 96                |
| <b>3-1/2</b><br>(149.605)          | 60                |
|                                    | 96                |
| <b>4</b><br>(172.051)              | 60                |
|                                    | 96                |
| <b>5</b><br>(213.811)              | 60                |
|                                    | 72                |
| <b>6</b><br>(255.571)              | 60                |
|                                    | 72                |



# Stainless 304L 2B Plate

## Hot Rolled, Annealed & Pickled

- 2B with Laser Film, 1 Side
- #4 Polished with Laser Film, 1 Side

|      |      |
|------|------|
| AISI | 304L |
|------|------|

| Thickness<br>(nominal dec.) | Plate<br>Size<br>(inches) | Weight<br>(lbs./sqft.) | Approx.<br>Sheet Wgt.<br>(lbs.) |
|-----------------------------|---------------------------|------------------------|---------------------------------|
| <b>1/4"</b><br>(.250)       | 48 x 96                   | 11.162                 | 357.184                         |
|                             | 48 x 120                  | 11.162                 | 446.480                         |
|                             | 48 x 144                  | 11.162                 | 535.776                         |
| <b>1/4"</b>                 | 60 x 120                  | 11.162                 | 558.100                         |
|                             | 60 x 144                  | 11.162                 | 669.720                         |
| <b>1/4"</b>                 | 72 x 120                  | 11.162                 | 669.720                         |
|                             | 72 x 144                  | 11.162                 | 803.664                         |

\*Note: Laser Film is dual purpose fiber optic / CO2 laser film.

# Stainless Tread Plate

## Hot Rolled, Annealed & Pickled

|      |                |
|------|----------------|
| AISI | 304            |
| ASTM | A793 Pattern B |

| Thickness<br>(Inches) | Width<br>(inches) |
|-----------------------|-------------------|
| 1/8                   | 48<br>60          |
| 3/16                  | 48<br>60          |

| Thickness<br>(Inches) | Width<br>(inches) |
|-----------------------|-------------------|
| 1/4                   | 48<br>60          |
| 3/8                   | 48<br>60          |

Stainless  
Steel

# Stainless Angle

Hot Rolled, Annealed & Pickled  
20 - 24 foot Random Lengths

|                |                |             |             |
|----------------|----------------|-------------|-------------|
| <b>AISI</b>    | <b>304</b>     | <b>304L</b> | <b>316L</b> |
| <b>ASTM</b>    | <b>A276</b>    | <b>A276</b> | <b>A276</b> |
| <b>FEDERAL</b> | <b>QQS-763</b> |             |             |

| Size (inches)        | Weight (lbs./ft.) |
|----------------------|-------------------|
| 3/4 x 3/4 x 1/8      | .592              |
| 1 x 1 x 1/8          | .807              |
| 1 x 1 x 3/16         | 1.171             |
| 1 x 1 x 1/4          | 1.507             |
| 1-1/4 x 1-1/4 x 1/8  | 1.023             |
| 1-1/4 x 1-1/4 x 3/16 | 1.494             |
| 1-1/4 x 1-1/4 x 1/4  | 1.938             |
| 1-1/2 x 1-1/2 x 1/8  | 1.238             |
| 1-1/2 x 1-1/2 x 3/16 | 1.817             |
| 1-1/2 x 1-1/2 x 1/4  | 2.369             |
| 2 x 2 x 1/8          | 1.669             |
| 2 x 2 x 3/16         | 2.463             |
| 2 x 2 x 1/4          | 3.230             |
| 2 x 2 x 3/8          | 4.683             |
| 2-1/2 x 2-1/2 x 3/16 | 3.109             |
| 2-1/2 x 2-1/2 x 1/4  | 4.091             |
| 2-1/2 x 2-1/2 x 3/8  | 5.975             |

| Size (inches)       | Weight (lbs./ft.) |
|---------------------|-------------------|
| 3 x 2 x 3/16        | 3.070             |
| 3 x 2 x 1/4         | 4.100             |
| 3 x 3 x 3/16        | 3.710             |
| 3 x 3 x 1/4         | 4.952             |
| 3 x 3 x 3/8         | 7.267             |
| 3 x 3 x 1/2         | 9.474             |
| 3-1/2 x 3-1/2 x 1/4 | 5.800             |
| 3-1/2 x 3-1/2 x 3/8 | 8.650             |
| 4 x 3 x 1/4         | 5.800             |
| 4 x 3 x 3/8         | 8.500             |
| 4 x 4 x 1/4         | 6.675             |
| 4 x 4 x 3/8         | 9.851             |
| 4 x 4 x 1/2         | 12.920            |
| 5 x 3 x 3/8         | 9.850             |
| 5 x 5 x 1/4         | 8.895             |
| 5 x 5 x 3/8         | 12.802            |
| 6 x 4 x 3/8         | 12.300            |
| 6 x 6 x 1/4         | 10.755            |
| 6 x 6 x 3/8         | 15.551            |

# Stainless Channel

Type 304/304L, Rolled or Extruded  
20 foot Random Lengths

|                |                |
|----------------|----------------|
| <b>ASTM</b>    | <b>A276</b>    |
| <b>ASME</b>    | <b>A279</b>    |
| <b>FEDERAL</b> | <b>QQS-763</b> |

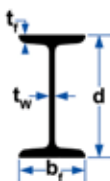
| Size (inches)     | Weight (lbs./ft.) |
|-------------------|-------------------|
| 1-1/2 x 3/4 x 1/8 | 1.200             |
| 2 x 1 x 3/16      | 2.650             |
| 2 x 1 x 1/4       | 3.080             |
| 3 x 1-3/8 x 3/16  | 3.533             |
| 3 x 1-1/2 x 3/16  | 3.703             |
| 3 x 1-1/2 x 1/4   | 4.784             |

| Size (inches)   | Weight (lbs./ft.) |
|-----------------|-------------------|
| 4 x 1-3/4 x 1/4 | 6.055             |
| 4 x 2 x 1/4     | 6.484             |
| 5 x 2-1/2 x 1/4 | 8.200             |
| 6 x 1.90 x .343 | 8.300             |
| 6 x 3 x 1/4     | 10.140            |
| 8 x 4 x 3/8     | 20.000            |



# Stainless Beams

Type 304/304L - 20 foot Random Lengths  
 ASTM A276, ASME A279, Federal QQS-763



| Shape         | Web           |                            | Flange                     |                            |
|---------------|---------------|----------------------------|----------------------------|----------------------------|
|               | d<br>(inches) | t <sub>w</sub><br>(inches) | b <sub>f</sub><br>(inches) | t <sub>f</sub><br>(inches) |
| HR S 3 x 5.7  | 3.00          | .170                       | 2.330                      | .260                       |
| HR S 4 x 7.7  | 4.00          | .193                       | 2.663                      | .293                       |
| HR S 6 x 12.5 | 6.00          | .232                       | 3.332                      | .359                       |

| Laser Fused | d<br>(inches) | t <sub>w</sub><br>(inches) | b <sub>f</sub><br>(inches) | t <sub>f</sub><br>(inches) |
|-------------|---------------|----------------------------|----------------------------|----------------------------|
| LC W 6 x 12 | 6.03          | .230                       | 4.000                      | .280                       |
| LC W 6 x 15 | 5.99          | .230                       | 5.990                      | .260                       |
| LC W 6 x 20 | 6.20          | .260                       | 6.020                      | .365                       |
| LC W 8 x 15 | 8.11          | .245                       | 4.015                      | .315                       |
| LC W 8 x 18 | 8.14          | .230                       | 5.250                      | .330                       |
| LC W 8 x 31 | 8.00          | .285                       | 7.995                      | .435                       |

# Stainless Ornamental Tubing

Type 304 Welded, Type 316L - 20 foot Random Lengths  
 ASTM: A-554 (Polished finish available upon request)

## Squares & Rectangles

| Outside Dimension and Gauge | Wall (inches) | Weight (lbs./ft.) |
|-----------------------------|---------------|-------------------|
| <b>1/2" x 1/2"</b>          |               |                   |
| 16                          | .062          | .389              |
| <b>5/8" x 5/8"</b>          |               |                   |
| 16                          | .062          | .510              |
| <b>3/4" x 3/4"</b>          |               |                   |
| 18                          | .049          | .469              |
| 16                          | .062          | .610              |
| 14                          | .083          | .763              |
| 11                          | .120          | 1.020             |
| <b>1" x 1"</b>              |               |                   |
| 18                          | .049          | .630              |
| 16                          | .062          | .827              |
| 14                          | .083          | 1.035             |
| 11                          | .120          | 1.440             |
| <b>1-1/4" x 1-1/4"</b>      |               |                   |
| 18                          | .049          | .790              |
| 16                          | .062          | 1.048             |
| 14                          | .083          | 1.317             |
| 11                          | .120          | 1.844             |
| 7                           | .180          | 2.620             |

| Outside Dimension and Gauge | Wall (inches) | Weight (lbs./ft.) |
|-----------------------------|---------------|-------------------|
| <b>1-1/2" x 1-1/2"</b>      |               |                   |
| 18                          | .049          | 0.970             |
| 16                          | .062          | 1.268             |
| 14                          | .083          | 1.610             |
| 11                          | .120          | 2.252             |
| 7                           | .180          | 3.630             |
| 1/4                         | .250          | 4.067             |
| <b>1-3/4" x 1-3/4"</b>      |               |                   |
| 11                          | .120          | 2.660             |
| <b>2" x 2"</b>              |               |                   |
| 16                          | .062          | 1.710             |
| 14                          | .083          | 2.140             |
| 11                          | .120          | 3.050             |
| 7                           | .180          | 4.320             |
| 1/4                         | .250          | 6.010             |
| <b>2-1/2" x 2-1/2"</b>      |               |                   |
| 11                          | .120          | 3.880             |
| 7                           | .180          | 5.680             |
| 1/4                         | .250          | 7.343             |

Continued on next page

# Stainless Ornamental Tubing

Type 304 Welded, Type 316L - 20 foot Random Lengths  
 ASTM: A-554 (Polished finish available upon request)

## Squares & Rectangles

| Outside Dimension and Gauge | Wall (inches) | Weight (lbs./ft.) |
|-----------------------------|---------------|-------------------|
| <b>3" x 3"</b>              |               |                   |
| 14                          | .083          | 3.290             |
| 11                          | .120          | 4.970             |
| 7                           | .180          | 6.900             |
| 1/4                         | .250          | 9.350             |
| <b>3-1/2" x 3-1/2"</b>      |               |                   |
| 1/4                         | .250          | 11.015            |
| <b>4" x 4"</b>              |               |                   |
| 11                          | .120          | 6.450             |
| 7                           | .180          | 9.410             |
| 1/4                         | .250          | 12.680            |
| 3/8                         | .375          | 18.485            |
| <b>5" x 5"</b>              |               |                   |
| 7                           | .180          | 11.799            |
| 1/4                         | .250          | 16.150            |
| 3/8                         | .375          | 23.588            |
| <b>6" x 6"</b>              |               |                   |
| 7                           | .180          | 14.247            |
| 1/4                         | .250          | 18.770            |
| 3/8                         | .375          | 28.688            |
| <b>8" x 8"</b>              |               |                   |
| 1/4                         | .250          | 26.350            |
| 3/8                         | .375          | 38.888            |
| <b>1" x 1/2"</b>            |               |                   |
| 16                          | .062          | .606              |
| <b>1-1/2" x 1/2"</b>        |               |                   |
| 16                          | .062          | .830              |
| <b>1-1/2" x 3/4"</b>        |               |                   |
| 16                          | .062          | .990              |
| <b>1-1/2" x 1"</b>          |               |                   |
| 16                          | .062          | 1.048             |
| 11                          | .120          | 1.884             |
| <b>2" x 1"</b>              |               |                   |
| 16                          | .062          | 1.269             |
| 11                          | .120          | 2.252             |
| <b>2" x 1-1/2"</b>          |               |                   |
| 11                          | .120          | 2.660             |
| <b>3 x 1</b>                |               |                   |
| 11                          | .120          | 3.070             |

| Outside Dimension and Gauge | Wall (inches) | Weight (lbs./ft.) |
|-----------------------------|---------------|-------------------|
| <b>3" x 1-1/2"</b>          |               |                   |
| 14                          | .083          | 3.030             |
| 11                          | .120          | 3.480             |
| 7                           | .180          | 4.960             |
| <b>3" x 2"</b>              |               |                   |
| 11                          | .120          | 3.884             |
| 7                           | .180          | 5.679             |
| 1/4                         | .250          | 7.100             |
| <b>4" x 2"</b>              |               |                   |
| 11                          | .120          | 4.750             |
| 7                           | .180          | 6.903             |
| 1/4                         | .250          | 9.350             |
| <b>4" x 3"</b>              |               |                   |
| 11                          | .120          | 5.516             |
| 7                           | .180          | 8.130             |
| 1/4                         | .250          | 11.024            |
| <b>5" x 3"</b>              |               |                   |
| 1/4                         | .250          | 12.683            |
| <b>6" x 2"</b>              |               |                   |
| 7                           | .180          | 9.270             |
| 1/4                         | .250          | 12.680            |
| <b>6" x 3"</b>              |               |                   |
| 7                           | .180          | 10.520            |
| 1/4                         | .250          | 13.730            |
| <b>6" x 4"</b>              |               |                   |
| 7                           | .180          | 11.900            |
| 1/4                         | .250          | 16.350            |
| <b>8" x 2"</b>              |               |                   |
| 7                           | .180          | 11.900            |
| 1/4                         | .250          | 18.270            |
| <b>8" x 4"</b>              |               |                   |
| 1/4                         | .250          | 18.770            |
| 3/8                         | .375          | 28.688            |
| <b>8" x 6"</b>              |               |                   |
| 1/4                         | .250          | 22.910            |
| <b>10" x 2"</b>             |               |                   |
| 1/4                         | .250          | 18.770            |





# Stainless Round Tube

Type 304 Welded, Type 316L Welded, 409 Welded  
 ASTM A554, Seamless ASTM A269 - 20 foot Random Lengths

|             |            |             |            |
|-------------|------------|-------------|------------|
| <b>AISI</b> | <b>304</b> | <b>316L</b> | <b>409</b> |
|-------------|------------|-------------|------------|

| O.D.<br>(inches) | Wall<br>(inches) | Weight<br>(lbs./ft.) |
|------------------|------------------|----------------------|
| 1/4              | .028             | .066                 |
| 1/4              | .035             | .080                 |
| 1/4              | .049             | .105                 |
| 1/4              | .065             | .129                 |
| 1/4              | .083             | .148                 |
| 5/16             | .028             | .086                 |
| 5/16             | .049             | .139                 |
| 5/16             | .065             | .172                 |
| 3/8              | .028             | .104                 |
| 3/8              | .035             | .127                 |
| 3/8              | .049             | .171                 |
| 3/8              | .065             | .215                 |
| 3/8              | .083             | .220                 |
| 1/2              | .035             | .174                 |
| 1/2              | .049             | .236                 |
| 1/2              | .065             | .302                 |
| 1/2              | .083             | .370                 |
| 1/2              | .095             | .411                 |
| 1/2              | .120             | .487                 |
| 5/8              | .035             | .221                 |
| 5/8              | .049             | .301                 |
| 5/8              | .065             | .389                 |
| 5/8              | .120             | .647                 |
| 3/4              | .035             | .267                 |
| 3/4              | .049             | .367                 |
| 3/4              | .065             | .476                 |
| 3/4              | .083             | .591                 |
| 3/4              | .120             | .807                 |
| 3/4              | .188             | .850                 |
| 7/8              | .049             | .432                 |
| 7/8              | .065             | .562                 |
| 7/8              | .120             | .968                 |
| 1                | .035             | .361                 |
| 1                | .049             | .498                 |
| 1                | .065             | .649                 |
| 1                | .083             | .813                 |
| 1                | .120             | 1.128                |
| 1                | .188             | 1.630                |
| 1                | .250             | 2.004                |

| O.D.<br>(inches) | Wall<br>(inches) | Weight<br>(lbs./ft.) |
|------------------|------------------|----------------------|
| 1-1/4            | .049             | .629                 |
| 1-1/4            | .065             | .823                 |
| 1-1/4            | .083             | 1.034                |
| 1-1/4            | .120             | 1.467                |
| 1-1/4            | .188             | 2.132                |
| 1-1/4            | .250             | 2.670                |
| 1-1/2            | .049             | .759                 |
| 1-1/2            | .065             | .996                 |
| 1-1/2            | .083             | 1.257                |
| 1-1/2            | .120             | 1.770                |
| 1-1/2            | .188             | 2.634                |
| 1-1/2            | .250             | 3.338                |
| 1-5/8            | .065             | 1.083                |
| 1-3/4            | .065             | 1.170                |
| 1-3/4            | .120             | 2.089                |
| 1-3/4            | .188             | 3.136                |
| 1-3/4            | .250             | 4.005                |
| 2                | .049             | 1.021                |
| 2                | .056             | 1.204                |
| 2                | .065             | 1.343                |
| 2                | .071             | 1.498                |
| 2                | .120             | 2.409                |
| 2                | .188             | 3.670                |
| 2                | .250             | 4.673                |
| 2                | .375             | 6.508                |
| 2-1/4            | .056             | 1.359                |
| 2-1/4            | .065             | 1.530                |
| 2-1/4            | .071             | 1.692                |
| 2-1/4            | .120             | 2.730                |
| 2-1/4            | .188             | 4.140                |
| 2-1/4            | .250             | 5.340                |
| 2-1/4            | .375             | 7.509                |
| 2-1/2            | .056             | 1.514                |
| 2-1/2            | .065             | 1.683                |
| 2-1/2            | .071             | 1.887                |
| 2-1/2            | .120             | 3.050                |
| 3                | .056             | 1.824                |
| 3                | .065             | 2.030                |
| 3                | .071             | 2.276                |
| 3                | .120             | 3.691                |
| 4                | .065             | 2.732                |

# Stainless Welded Pipe

20 foot Random Lengths

|      |      |      |
|------|------|------|
| AISI | 304  | 316L |
| ASTM | A312 | A312 |

Alro Steel Metals Guide

| Nominal Pipe Size  | O.D. (inches) | I.D. (inches) | Wall Thickness | Weight (lbs./foot) |
|--------------------|---------------|---------------|----------------|--------------------|
| <b>Schedule 10</b> |               |               |                |                    |
| 1/2                | .840          | .674          | .083           | .671               |
| 3/4                | 1.050         | .884          | .083           | .857               |
| 1                  | 1.315         | 1.097         | .109           | 1.420              |
| 1-1/4              | 1.660         | 1.442         | .109           | 1.806              |
| 1-1/2              | 1.900         | 1.682         | .109           | 2.080              |
| 2                  | 2.375         | 2.157         | .109           | 2.638              |
| 2-1/2              | 2.875         | 2.635         | .120           | 3.530              |
| 3                  | 3.500         | 3.260         | .120           | 4.332              |
| 4                  | 4.500         | 4.260         | .120           | 5.610              |
| 5                  | 5.563         | 5.295         | .134           | 7.840              |
| 6                  | 6.625         | 6.357         | .134           | 9.290              |
| 8                  | 8.625         | 8.329         | .148           | 13.400             |
| 10                 | 10.750        | 10.420        | .165           | 18.650             |
| <b>Schedule 40</b> |               |               |                |                    |
| 1/8                | .405          | .269          | .068           | .240               |
| 1/4                | .540          | .364          | .088           | .420               |
| 3/8                | .675          | .493          | .091           | .570               |
| 1/2                | .840          | .622          | .109           | .851               |
| 3/4                | 1.050         | .824          | .113           | 1.131              |
| 1                  | 1.315         | 1.049         | .133           | 1.680              |
| 1-1/4              | 1.660         | 1.380         | .140           | 2.270              |
| 1-1/2              | 1.900         | 1.610         | .145           | 2.720              |
| 2                  | 2.375         | 2.067         | .154           | 3.650              |
| 2-1/2              | 2.875         | 2.469         | .203           | 5.850              |
| 3                  | 3.500         | 3.068         | .216           | 7.580              |
| 3-1/2              | 4.000         | 3.548         | .226           | 9.110              |
| 4                  | 4.500         | 4.026         | .237           | 10.790             |
| 5                  | 5.563         | 5.047         | .258           | 14.620             |
| 6                  | 6.625         | 6.065         | .280           | 18.970             |
| 8                  | 8.625         | 7.981         | .322           | 28.550             |
| 10                 | 10.750        | 10.020        | .365           | 40.480             |
| <b>Schedule 80</b> |               |               |                |                    |
| 1/4                | .540          | .302          | .119           | .540               |
| 3/8                | .675          | .423          | .126           | .730               |
| 1/2                | .840          | .546          | .147           | 1.090              |
| 3/4                | 1.050         | .742          | .154           | 1.470              |
| 1                  | 1.315         | .957          | .179           | 2.170              |
| 1-1/4              | 1.660         | 1.278         | .191           | 3.030              |
| 1-1/2              | 1.900         | 1.500         | .200           | 3.630              |
| 2                  | 2.375         | 1.939         | .218           | 5.070              |
| 2-1/2              | 2.875         | 2.323         | .276           | 7.660              |
| 3                  | 3.500         | 2.900         | .300           | 10.250             |
| 4                  | 4.500         | 3.826         | .337           | 14.980             |

Stainless Steel



# Stainless Bar Tolerances

## Rounds, Cold Finished (CF) Drawn, Turned or Centerless Ground

| Specified Size (inches) | Over (inches) | Under (inches) |
|-------------------------|---------------|----------------|
| 1/16 to 5/16, excl.     | 0.0010        | 0.0010         |
| 5/16 to 1/2, excl.      | 0.0015        | 0.0015         |
| 1/2 to 1, excl.         | 0.0020        | 0.0020         |
| 1 to 1-1/2, excl.       | 0.0025        | 0.0025         |
| 1-1/2 to 3-1/4, incl.   | 0.0030        | 0.0030         |
| 3-1/4 to 4, incl.       | 0.0050        | 0.0050         |

Unless otherwise specified, size tolerances are over and under as shown in the above table. When required, however, they may be specified all over and nothing under, or all under and nothing over, or any combination of over and under, if the total spread in size tolerance for a specified is not less than the total spread shown in the table.

When it is necessary to heat treat or heat treat and pickle after cold finishing, size tolerances are double those shown in the table.

Cold-finished bars over 4 inch in diameter are produced; size tolerances for such bars are not included herein.

## Rounds, Rough Turned (RT)

| Specified Size (inches) | Over (inches) | Under (inches) |
|-------------------------|---------------|----------------|
| >2 to 2-1/2             | 0.031         | 0.000          |
| >2-1/2 to 3-1/2         | 0.046         | 0.000          |
| >3-1/2 to 4-1/2         | 0.062         | 0.000          |
| >4-1/2 to 5-1/2         | 0.078         | 0.000          |
| >5-1/2 to 6-1/2         | 0.125         | 0.000          |
| >6-1/2 to 8             | 0.156         | 0.000          |
| >8 to 12                | 0.187         | 0.000          |
| >12 and up              | 0.218         | 0.000          |

# Stainless Rounds Straightness Tolerances

|  |  |
|--|--|
| <b>Hot Rolled</b><br>1/8" in any 5 foot section of the bar | <b>Cold Finished</b><br>1/16" in any 5 foot section of the bar |
|--|--|

# Stainless Hex and Squares

| Specified Size (inches) | Over (inches) | Under (inches) | Finish        |
|-------------------------|---------------|----------------|---------------|
| 1/8 to 5/16             | 0.000         | 0.002          | Cold Finished |
| 5/16 to 1/2             | 0.000         | 0.003          | Cold Finished |
| 1/2 to 1                | 0.000         | 0.004          | Cold Finished |
| > 1 to 2                | 0.000         | 0.006          | Cold Finished |
| > 2 to 3                | 0.000         | 0.008          | Cold Finished |
| > 3 to < 3-1/2          | 0.000         | 0.010          | Cold Finished |
| 3-1/2 to 4*             | 0.100         | 0.100          | Forged        |
| 4 to 4-1/2*             | 0.100         | 0.100          | Forged        |
| 4-1/2 to 6*             | 0.100         | 0.100          | Forged        |
| 6 to 6-3/8*             | 0.100         | 0.100          | Forged        |
| 6-3/8 to 6-5/8*         | 0.100         | 0.100          | Forged        |
| 6-5/8 and Over*         | 0.100         | 0.100          | Forged        |

\* Forged HRAP Square Bars over 3-1/2" square - Billets and other semi-finished material shall conform to shape and dimensions specified by the purchaser within a permitted variation of +/-5%.

# Stainless Ground Bar Tolerances

| Abbreviation           | Description              | Tolerance             | Microfinish  | Straightness         |
|------------------------|--------------------------|-----------------------|--------------|----------------------|
| CG                     | Centerless Ground        | +/- Tolerance by size | 45<br>RMS    | .008"<br>TIR/FT      |
| G&P                    | Ground & Polished        | +/- .0005"            | 32/20<br>RMS | .006"<br>TIR/FT      |
| PG                     | Precision Ground         | +0/- .0005"           | 16<br>RMS    | .006"<br>TIR/FT      |
| TG&P<br>Stainless      | Turned Ground & Polished | +/- .0005"            | 32<br>RMS    | .006"<br>TIR/FT      |
| RT                     | Rough Turned             | + .032/-0"            | 125<br>RMS   | .012"<br>TIR/FT      |
|                        | STN                      | Straightened          | ---          | .008/.006"<br>TIR/FT |
| P STN                  | Precision Straightened   | ---                   | ---          | .004"<br>TIR/FT      |
| BSQ                    | Bearing Shaft Quality    | -.0005/- .0015"       | 32<br>RMS    | .006"<br>TIR/FT      |
| PSQ<br>-.500"-<1.500"  | Pump Shaft Quality       | +0/- .0015"           | 32/25<br>RMS | .0015"<br>TIR/FT     |
| PSQ<br>-1.500"-4.000"  | Pump Shaft Quality       | +0/- .002"            | 32/25<br>RMS | .0015"<br>TIR/FT     |
| PSQ<br>->4.000"-5.000" | Pump Shaft Quality       | +0/- .003"            | 32/25<br>RMS | .0015"<br>TIR/FT     |

# Stainless Sheet Thickness Tolerances

| Gauge | Nominal Decimal | Tolerance Plus/Minus |
|-------|-----------------|----------------------|
| 7     | .1874           | .007                 |
| 8     | .1650           | .007                 |
| 10    | .1350           | .006                 |
| 11    | .1200           | .005                 |
| 12    | .1054           | .005                 |
| 13    | .0900           | .004                 |
| 14    | .0751           | .004                 |
| 16    | .0595           | .003                 |
| 18    | .0480           | .003                 |
| 19    | .0420           | .003                 |
| 20    | .0355           | .002                 |
| 22    | .0293           | .002                 |
| 24    | .0235           | .0015                |
| 26    | .0178           | .0015                |
| 28    | .0151           | .0015                |

# Stainless Sheet Tolerances

## Flatness, Stretcher Level Flatness

| Thickness (inches) | Width (inches) | Length (inches) | Flatness Tolerances |
|--------------------|----------------|-----------------|---------------------|
| under 3/16         | thru 48        | up to 96        | 1/8                 |
| under 3/16         | thru 48        | over 96         | 1/4                 |
| under 3/16         | over 48        | thru 96         | 1/4                 |
| under 3/16         | over 48        | over 96         | 1/4                 |

Note: Flatness is defined as maximum deviation from a horizontal flat surface.

# Stainless Plate Tolerances

## Thickness Tolerance for Stainless and Heat Resisting Steels

| Specified Thickness (inches) | Width (inches)  |                  |
|------------------------------|-----------------|------------------|
|                              | Thru 84         | Over 84 thru 120 |
| 3/16 up to 3/8               | + .045 / - .010 | + .050 / - .010  |
| 3/8 up to 3/4                | + .055 / - .010 | + .060 / - .010  |
| 3/4 up to 1                  | + .060 / - .010 | + .065 / - .010  |
| 1 up to 2                    | + .070 / - .010 | + .075 / - .010  |
| 2 up to 3                    | + .125 / - .010 | + .150 / - .010  |
| 3 up to 4                    | + .175 / - .010 | + .210 / - .010  |
| 4 up to 6                    | + .250 / - .010 | + .300 / - .010  |
| 6 up to 8                    | + .350 / - .010 | + .420 / - .010  |
| 8 thru 10                    | + .450 / - .010 | + .540 / - .010  |

# Flatness Tolerance for Annealed Stainless and Heat Resisting Steel Plate

| Specified Thickness (inches) | Flatness Tolerance for Thickness & Widths |                  |               |               |               |
|------------------------------|---|------------------|---------------|---------------|---------------|
|                              | Widths (inches)                           |                  |               |               |               |
|                              | Up thru 48                                | Over 48 up to 60 | 60 up thru 72 | 72 up thru 84 | 84 up thru 96 |
| 3/16 up to 1/4               | 3/4                                       | 1-1/16           | 1-1/4         | 1-3/8         | 1-5/8         |
| 1/4 up to 3/8                | 11/16                                     | 3/4              | 15/16         | 1-1/8         | 1-3/8         |
| 3/8 up to 1/2                | 1/2                                       | 9/16             | 11/16         | 3/4           | 15/16         |
| 1/2 up to 3/4                | 1/2                                       | 9/16             | 5/8           | 5/8           | 13/16         |
| 3/4 up to 1                  | 1/2                                       | 9/16             | 5/8           | 5/8           | 3/4           |
| 1 up to 1-1/2                | 1/2                                       | 9/16             | 9/16          | 9/16          | 11/16         |
| 1-1/2 up to 4                | 3/16                                      | 5/16             | 3/8           | 7/16          | 1/2           |
| 4 thru 6                     | 1/4                                       | 3/8              | 1/2           | 9/16          | 5/8           |

Note: Flatness is defined as maximum deviation from a horizontal flat surface.

# Stainless Flats Tolerances

## Sheared and Edged Flats

| Order Thickness<br>(inches) | Permitted Variation in<br>Thickness (inches) |       | Permitted Variation in<br>Width (inches) |       |                |       |
|-----------------------------|--|-------|--|-------|----------------|-------|
|                             | Over   | Under | Width up to 4"                           |       | Widths Over 4" |       |
|                             |  |       | Over                                     | Under | Over           | Under |
| 1/8 Over 0.114 to 0.130     | 0.010  | 0.010 | 0.094                                    | 0.031 | 0.094          | 0.094 |
| 3/16 - 3/8                  | 0.050  | 0.010 | 0.094                                    | 0.031 | 0.094          | 0.094 |
| 3/8 - 3/4                   | 0.060  | 0.010 | 0.094                                    | 0.031 | 0.094          | 0.094 |

## True Bar Flats

| True Bar<br><br>Width<br>(inches) | Permitted Variations<br>in Thickness for<br>Thicknesses Given (inches) |                    |                  | Permitted Variations in<br>Width Tolerance<br>(inches) |       |
|-----------------------------------|--|--------------------|------------------|--|-------|
|                                   | 1/8 thru<br>1/2  | Over 1/2<br>thru 1 | Over 1<br>thru 2 | Over   | Under |
| Up thru 1                         | +/- .008   | +/- .010           | —                | .015   | .015  |
| Over 1 thru 2                     | +/- .012   | +/- .015           | +/- .031         | .031   | .031  |
| Over 2 thru 4                     | +/- .015   | +/- .020           | +/- .031         | .062   | .031  |
| Over 4 thru 6                     | +/- .015   | +/- .020           | +/- .031         | .093   | .062  |
| Over 6 thru 8                     | +/- .016   | +/- .025           | +/- .031         | .125   | .156  |
| Over 8 thru 10                    | +/- .021   | +/- .031           | +/- .031         | .156   | .187  |

## True Bar Straightness Tolerances

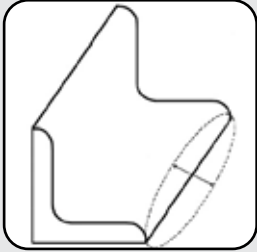
| Hot Rolled<br>1/8" in any 5 foot section of the bar | Cold Finished<br>1/16" in any 5 foot section of the bar |
|---|---|
|---|---|

Note: Straightness tolerances have not been established for sizes less than 1/2".

# Stainless Angle Tolerances

|                        |            |
|------------------------|------------|
| Leg Tolerance (Length) | +/- 1/8"   |
| Weight Tolerance       | +/- 7.5%   |
| Right Angle Tolerance  | +/- 2°     |
| Straightness or Camber | 1/8" in 5' |

# Stainless Channel Tolerances

|  |   |                  |               |                      |       |                         |       |         |       |
|--|---|------------------|---------------|----------------------|-------|-------------------------|-------|---------|-------|
| <p><b>Section (Leg Tolerance)</b><br/>                 Under 1" (Total)..... 0.040<br/>                 1" - 3" incl..... 0.062<br/>                 3" - 4" incl..... 0.093<br/>                 Over 4"..... 0.125</p> <p><b>Angular</b>                    +/-2"</p> <p><b>Corner Radii</b>            1/4" or less</p> <p><b>Leg Radii</b>                 1/4" or less</p> <p><b>Transverse Flatness</b><br/>                 .010" per inch of width, .050" max.</p> <p><b>Length</b><br/>                 Up to 12' incl.<br/>                 To 3" wide section<br/>                 Over 3" to 6" incl.        + 3/16 / - 0<br/>                 Over 6"                        + 1/4 / - 0<br/>                 Over 12'<br/>                 To 3" wide section        + 3/16 / - 0<br/>                 Over 3" to 6" incl.        + 1/4 / - 0<br/>                 Over 6"                        + 5/16 / - 0</p> | <p><b>Camber</b><br/>                 Camber or bow tolerances shall not exceed<br/>                 0.025 in. [0.60mm] x length in ft. [<math>\frac{m}{3}</math>]</p> <div style="text-align: center;">  </div> <p><b>Twist</b></p> <table border="1"> <tr> <td>Width of Section</td> <td>Rise in 5 ft.</td> </tr> <tr> <td>1/2" to 1-1/2" incl.</td> <td>.125"</td> </tr> <tr> <td>Over 1-1/2" to 4" incl.</td> <td>.188"</td> </tr> <tr> <td>Over 4"</td> <td>.250"</td> </tr> </table> | Width of Section | Rise in 5 ft. | 1/2" to 1-1/2" incl. | .125" | Over 1-1/2" to 4" incl. | .188" | Over 4" | .250" |
| Width of Section   | Rise in 5 ft.   |                  |               |                      |       |                         |       |         |       |
| 1/2" to 1-1/2" incl.   | .125"   |                  |               |                      |       |                         |       |         |       |
| Over 1-1/2" to 4" incl.  | .188"   |                  |               |                      |       |                         |       |         |       |
| Over 4"  | .250"   |                  |               |                      |       |                         |       |         |       |

# Stainless Round Tube Tolerances

| Nominal Round (inches)   | Wall Thickness (inches) | Outside Dia. Tolerance (inches) | Wall Tolerance (percent) |
|--------------------------|-------------------------|---------------------------------|--------------------------|
| 5/8 to 1 incl            | 0.035 to 0.062          | + or - 0.005                    | + or - 10%               |
| 5/8 to 1 incl            | Over 0.062              | + or - 0.010                    | + or - 10%               |
| Over 1 to 1-1/2 incl     | 0.035 to 0.062          | + or - 0.008                    | + or - 10%               |
| Over 1 to 1-1/2 incl     | Over 0.062              | + or - 0.010                    | + or - 10%               |
| Over 1 to 2-1/2 incl     | Over 0.035              | + or - 0.012                    | + or - 10%               |
| Over 2-1/2 to 3-1/2 incl | Over 0.049              | + or - 0.020                    | + or - 10%               |
| Over 3-1/2 to 5 incl     | Over 0.049              | + or - 0.025                    | + or - 10%               |
| Over 5                   | Over 0.083              | + or - 0.030                    | + or - 10%               |

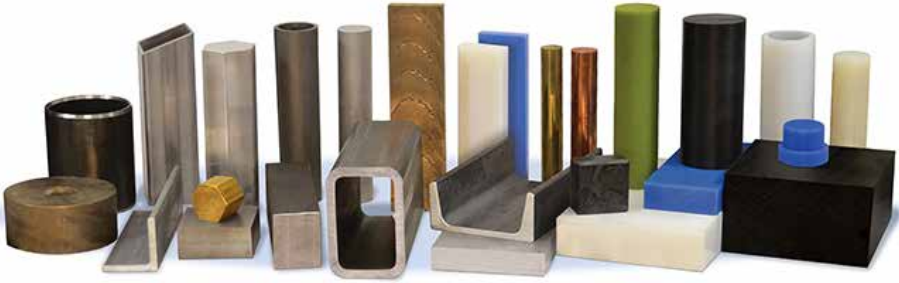
# Stainless Square & Rectangular Tube Tolerances

| Largest Nominal Outside Diameter (inches) | O.D. Tolerance Concavity or Convexity (inches) | Wall Tolerance (percent) |
|---|--|--------------------------|
| To 1-1/4 incl.                            | + or - 0.015                                   | + or - 10%               |
| Over 1-1/4 to 2-1/2 incl.                 | + or - 0.020                                   | + or - 10%               |
| Over 2-1/2 to 5-1/2 incl.                 | + or - 0.030                                   | + or - 10%               |
| Over 5-1/2                                | + or - 0.060                                   | + or - 10%               |



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