

Table 8
AUSTENITIC STAINLESS STEELS

| Chemical Analysis % (Max. unless noted otherwise) | | | | | | | | | | Nominal Mechanical Properties (Annealed Sheet unless noted otherwise) | | | | | | |
|---|-----------|-------------|-------|------------|-----------|-------------|-------------|-----------|--|--|-----|---------------------------------|-----|----------------------------|---------------------|--------------|
| Type | C | Mn | P | S | Si | Cr | Ni | Mo | Other | Tensile Strength | | Yield Strength (0.2% offset) | | Elongation in 2" (50.80mm) | Hardness (Rockwell) | Product Form |
| | | | | | | | | | | ksi | MPa | ksi | MPa | % | | |
| 201 | 0.15 | 5.50/7.50 | 0.060 | 0.030 | 1.00 | 16.00/18.00 | 3.50/5.50 | | 0.25N | 95 | 655 | 45 | 310 | 40 | B90 | (Plate) |
| 202 | 0.15 | 7.50/10.00 | 0.060 | 0.030 | 1.00 | 17.00/19.00 | 4.00/6.00 | | 0.25N | 90 | 612 | 45 | 310 | 40 | B90 | |
| 205 | 0.12/0.25 | 14.00/15.50 | 0.030 | 0.030 | 0.50 | 16.50/18.00 | 1.00/1.75 | | 0.32/0.40N | 120.5 | 831 | 69 | 476 | 58 | B98 | |
| 301 | 0.15 | 2.00 | 0.045 | 0.030 | 1.00 | 16.00/18.00 | 6.00/8.00 | | | 110 | 758 | 40 | 276 | 60 | B85 | |
| 302 | 0.15 | 2.00 | 0.045 | 0.030 | 1.00 | 17.00/19.00 | 8.00/10.00 | | | 90 | 612 | 40 | 276 | 50 | B85 | |
| 302B | 0.15 | 2.00 | 0.045 | 0.030 | 2.00/3.00 | 17.00/19.00 | 8.00/10.00 | | | 95 | 655 | 40 | 276 | 55 | B85 | (Bar) |
| 303 | 0.15 | 2.00 | 0.20 | 0.15 (min) | 1.00 | 17.00/19.00 | 8.00/10.00 | 0.60* | | 90 | 621 | 35 | 241 | 50 | | |
| 303Se | 0.15 | 2.00 | 0.20 | 0.060 | 1.00 | 17.00/19.00 | 8.00/10.00 | | 0.15Se (min) | 90 | 621 | 35 | 241 | 50 | | |
| 304 | 0.08 | 2.00 | 0.045 | 0.030 | 1.00 | 18.00/20.00 | 8.00/10.50 | | | 84 | 579 | 42 | 290 | 55 | B80 | |
| 304L | 0.030 | 2.00 | 0.045 | 0.030 | 1.00 | 18.00/20.00 | 8.00/12.00 | | | 81 | 558 | 39 | 269 | 55 | B79 | |
| S30430 | 0.08 | 2.00 | 0.045 | 0.030 | 1.00 | 17.00/19.00 | 8.00/10.00 | | 3.00/4.00Cu | 73 | 503 | 31 | 214 | 70 | B70 | (Wire) |
| 304N | 0.08 | 2.00 | 0.045 | 0.030 | 1.00 | 18.00/20.00 | 8.00/10.50 | | 0.10/0.16N | 90 | 621 | 48 | 331 | 50 | B85 | (Wire) |
| 305 | 0.12 | 2.00 | 0.045 | 0.030 | 1.00 | 17.00/19.00 | 10.50/13.00 | | | 85 | 586 | 38 | 262 | 50 | B80 | |
| 308 | 0.08 | 2.00 | 0.045 | 0.030 | 1.00 | 19.00/21.00 | 10.00/12.00 | | | 115 | 793 | 80 | 552 | 40 | | |
| 309 | 0.20 | 2.00 | 0.045 | 0.030 | 1.00 | 22.00/24.00 | 12.00/15.00 | | | 90 | 621 | 45 | 310 | 45 | B85 | |
| 309S | 0.08 | 2.00 | 0.045 | 0.030 | 1.00 | 22.00/24.00 | 12.00/15.00 | | | 90 | 621 | 45 | 310 | 45 | B85 | |
| 310 | 0.25 | 2.00 | 0.045 | 0.030 | 1.50 | 24.00/26.00 | 19.00/22.00 | | | 95 | 655 | 45 | 310 | 45 | B85 | (Wire) |
| 310S | 0.08 | 2.00 | 0.045 | 0.030 | 1.50 | 24.00/26.00 | 19.00/22.00 | | | 95 | 655 | 45 | 310 | 45 | B85 | |
| 314 | 0.25 | 2.00 | 0.045 | 0.030 | 1.50/3.00 | 23.00/26.00 | 19.00/22.00 | | | 100 | 689 | 50 | 345 | 40 | B85 | |
| 316 | 0.08 | 2.00 | 0.045 | 0.030 | 1.00 | 16.00/18.00 | 10.00/14.00 | 2.00/3.00 | | 84 | 579 | 42 | 290 | 50 | B79 | |
| 316F | 0.08 | 2.00 | 0.20 | 0.10min | 1.00 | 16.00/18.00 | 10.00/14.00 | 1.75/2.50 | | 85 | 586 | 38 | 262 | 60 | B85 | |
| 316L | 0.030 | 2.00 | 0.045 | 0.030 | 1.00 | 16.00/18.00 | 10.00/14.00 | 2.00/3.00 | | 81 | 558 | 42 | 290 | 50 | B79 | (Wire) |
| 316N | 0.08 | 2.00 | 0.045 | 0.030 | 1.00 | 16.00/18.00 | 10.00/14.00 | 2.00/3.00 | 0.10/0.16N | 90 | 621 | 48 | 331 | 48 | B85 | |
| 317 | 0.08 | 2.00 | 0.045 | 0.030 | 1.00 | 18.00/20.00 | 11.00/15.00 | 3.00/4.00 | | 90 | 621 | 40 | 276 | 45 | B85 | |
| 317L | 0.030 | 2.00 | 0.045 | 0.030 | 1.00 | 18.00/20.00 | 11.00/15.00 | 3.00/4.00 | | 86 | 593 | 38 | 262 | 55 | B85 | |
| 317LMN | 0.030 | 2.00 | 0.045 | 0.030 | 0.75 | 17.00/20.00 | 13.50/17.50 | 4.00/5.00 | 0.10/0.20N | 96 | 662 | 54 | 373 | 49 | B88 | |
| 321 | 0.08 | 2.00 | 0.045 | 0.030 | 1.00 | 17.00/19.00 | 9.00/12.00 | | 5xC Ti (min.) | 90 | 621 | 35 | 241 | 45 | B80 | (Wire) |
| 330 | 0.08 | 2.00 | 0.040 | 0.030 | 0.75/1.50 | 17.00/20.00 | 34.00/37.00 | | 0.10Ta 0.20Cb | 80 | 552 | 38 | 262 | 40 | B80 | |
| 347 | 0.08 | 2.00 | 0.045 | 0.030 | 1.00 | 17.00/19.00 | 9.00/13.00 | | 10xC Cb (min) | 95 | 655 | 40 | 276 | 45 | B85 | |
| 348 | 0.08 | 2.00 | 0.045 | 0.030 | 1.00 | 17.00/19.00 | 9.00/13.00 | | Cb + Ta 10xC (min) Ta 0.10 max Co 0.20 max | 95 | 655 | 40 | 276 | 45 | B85 | |
| 384 | 0.08 | 2.00 | 0.045 | 0.030 | 1.00 | 15.00/17.00 | 17.00/19.00 | | | 75 | 517 | 35 | 241 | 55 | B70 | |

* May be added at manufacturer's option.

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Table 2.7.1.0(b). Design Mechanical and Physical Properties of AISI 301 and Related^{a,b,c} Stainless Steels

| Specification | AMS 5901 | AMS 5517 | | AMS 5518 | | AMS 5902 | | AMS 5519 | |
|--|--------------------|----------|-----|----------|-----|----------|-----|-----------|-----|
| Form | Sheet and strip | | | | | | | | |
| Condition | Annealed | ¼ Hard | | ½ Hard | | ¾ Hard | | Full Hard | |
| Thickness, in. | ≤0.187 | ... | | ... | | ... | | ... | |
| Basis | S | A | B | A | B | A | B | A | B |
| Mechanical Properties: | | | | | | | | | |
| <i>F_{tu}</i> , ksi: | | | | | | | | | |
| L | 73 | 124 | 129 | 141 | 151 | 157 | 168 | 174 | 185 |
| LT | 75 | 122 | 127 | 142 | 152 | 163 | 173 | 175 | 186 |
| <i>F_{ty}</i> , ksi: | | | | | | | | | |
| L | 26 | 69 | 83 | 93 | 110 | 118 | 135 | 137 | 153 |
| LT | 30 | 67 | 82 | 92 | 105 | 113 | 133 | 125 | 142 |
| <i>F_{cy}</i> , ksi: | | | | | | | | | |
| L | 23 | 44 | 54 | 61 | 69 | 75 | 88 | 83 | 94 |
| LT | 29 | 71 | 88 | 100 | 116 | 127 | 152 | 142 | 164 |
| <i>F_{su}</i> , ksi | 50 | 66 | 69 | 77 | 82 | 88 | 93 | 95 | 100 |
| <i>F_{bru}</i> , ksi: | | | | | | | | | |
| (e/D = 1.5) | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| (e/D = 2.0) | 162 | 262 | 273 | 292 | 310 | 327 | 342 | 346 | 361 |
| <i>F_{bry}</i> , ksi: | | | | | | | | | |
| (e/D = 1.5) | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| (e/D = 2.0) | 55 | 123 | 149 | 167 | 189 | 202 | 234 | 222 | 249 |
| <i>e</i> , percent (S basis): | | | | | | | | | |
| LT | 40 | 25 | ... | d | ... | d | ... | d | ... |
| <i>E</i> , 10 ³ ksi: | | | | | | | | | |
| L | 29.0 | 27.0 | | 26.0 | | 26.0 | | 26.0 | |
| LT | 29.0 | 28.0 | | 28.0 | | 28.0 | | 28.0 | |
| <i>E_c</i> , 10 ³ ksi: | | | | | | | | | |
| L | 28.0 | 26.0 | | 26.0 | | 26.0 | | 26.0 | |
| LT | 28.0 | 27.0 | | 27.0 | | 27.0 | | 27.0 | |
| <i>G</i> , 10 ³ ksi | 11.2 | 10.6 | | 10.5 | | 10.5 | | 10.5 | |
| <i>μ</i> | 0.27 | 0.27 | | 0.27 | | 0.27 | | 0.27 | |
| Physical Properties: | | | | | | | | | |
| <i>ω</i> , lb/in. ³ | 0.286 | | | | | | | | |
| <i>C</i> , <i>K</i> , and <i>α</i> | See Figure 2.7.1.0 | | | | | | | | |

a Properties also applicable to AISI 302 for the following; AMS 5516 for annealed condition, AMS 5903 for 1/4H condition, AMS 5904 for 1/2H condition, AMS 5905 for 3/4H condition, and AMS 5906 for full hard condition.

b Properties also applicable to AISI 304 for the following; AMS 5513 for annealed condition, AMS 5910 for 1/4H condition, AMS 5911 for 1/2H condition, AMS 5912 for 3/4H condition, and AMS 5913 for full hard condition.

c Properties also applicable to AISI 316 for the following; AMS 5524 for annealed condition and AMS 5907 for 1/4H condition.

d See Table 2.7.1.0(c).

Note: Yield strength, particularly in compression, and modulus of elasticity in the longitudinal direction may be raised appreciably by thermal stress-relieving treatment in the range 500 to 800°F.