# Chemical Analysis

## Stainless Steel Wrought Alloys

| Type | UNS Desig-nation | ASTM Mat'l Spec | Carbon % Max | Manga-nese % Max | Phos-phorus % Max | Sulfer % Max | Silcon % Max | Molyb-denum % | Chrom-ium % | Nickel % | Other Elements % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 304 | S30400 | A 240 | .08 | 2.0 | .045 | 0.03 | 1.0 | | 18.0-20.0 | 8.0-10.5 | N .10 max |
| 304L | S30403 | A 240 | .03 | 2.0 | .045 | 0.03 | 1.0 | | 18.0-20.0 | 8.0-12.0 | N .10 max |
| 304H | S30409 | A 240 | .04-.10 | 2.0 | .045 | 0.03 | 1.0 | | 18.0-20.0 | 8.0-10.5 | |
| 309S | S30908 | A 240 | .08 | 2.0 | .045 | 0.03 | 1.0 | | 22.0-24.0 | 12.0-15.0 | |
| 310S | S31008 | A 240 | .08 | 2.0 | .045 | 0.03 | 1.5 | | 24.0-26.0 | 19.0-22.0 | |
| 316 | S31600 | A 240 | .08 | 2.0 | .045 | 0.03 | 1.0 | 2.0-3.0 | 16.0-18.0 | 10.0-14.0 | N .10 max |
| 316L | S31603 | A 240 | .03 | 2.0 | .045 | 0.03 | 1.0 | 2.0-3.0 | 16.0-18.0 | 10.0-14.0 | N .10 max |
| 316H | S31609 | A 240 | .04-.10 | 2.0 | .045 | 0.03 | 1.0 | 2.0-3.0 | 16.0-18.0 | 10.0-14.0 | |
| 317 | S31700 | A 240 | .08 | 2.0 | .045 | 0.03 | 1.0 | 3.0-4.0 | 18.0-20.0 | 11.0-15.0 | N .10 max |
| 317L | S31703 | A 240 | .03 | 2.0 | .045 | 0.03 | 1.0 | 3.0-4.0 | 18.0-20.0 | 11.0-15.0 | N .10 max |
| 321 | S32100 | A 240 | .08 | 2.0 | .045 | 0.03 | 1.0 | | 17.0-19.0 | 9.0-12.0 | Ti=5 x C to .7 |
| 321H | S32109 | A 240 | .04-.10 | 2.0 | .045 | 0.03 | 1.0 | | 17.0-19.0 | 9.0-12.0 | Ti=4 x C to .7 |
| 347 | S34700 | A 240 | .08 | 2.0 | .045 | 0.03 | 1.0 | | 17.0-19.0 | 9.0-13.0 | Cb+Ta=10 x C to 1.1 |
| 347H | S34709 | A 240 | .04-.10 | 2.0 | .045 | 0.03 | 1.0 | | 17.0-19.0 | 9.0-13.0 | Cb+Ta=8 x C to 1.0 |
| * | S31803 | A 240 | .03 | 2.0 | .030 | 0.02 | 1.0 | 2.5-3.5 | 21.0-23.0 | 4.5-6.5 | N .08 -.20 |
| ** | S32550 | A 240 | .04 | 1.5 | .040 | 0.03 | 1.0 | 2.0-4.0 | 24.0-27.0 | 4.5-6.5 | Cu 1.5-2.5<br>N .10-.25 |
| 254 SMO | S31254 | A 240 | .020 | 1.0 | .030 | .010 | .80 | | 19.5-20.5 | 17.5-18.5 | Mo 6.0-6.5<br>Cu 0.5-1.0<br>N 0.18-0.22 |
| AL-6XN | N08367 | | .020 | | | | | | 19.75-20.75 | 24.0-26.0 | Mo 6.0-6.5<br>Cu<br>N 0.19-0.21 |

## Stainless Steel Cast Alloys

| A.C.I.[1] Type | Wrought Equivalent | Carbon %Max | Manganese %Max | Phosphorus %Max | Sulfur %Max | Silicon %Max | Chromium % | Nickel % | Other Elements % |
|---|---|---|---|---|---|---|---|---|---|
| CF-8 | 304 | .08 | 1.5 | .04 | .04 | 2.0 | 18.0-21.0 | 8.0-11.0 | Mo .50 max |
| CF-3 | 304L | .03 | 1.5 | .04 | .04 | 2.0 | 17.0-21.0 | 8.0-12.0 | Mo .50 max |
| CH-20 | 309 | .20 | 1.5 | .04 | .04 | 2.0 | 22.0-26.0 | 12.0-15.0 | Mo .50 max |
| CK-20 | 310 | .20 | 1.5 | .04 | .04 | 1.75 | 23.0-27.0 | 19.0-22.0 | Mo .50 max |
| CF-8M | 316 | .08 | 1.5 | .04 | .04 | 1.5 | 18.0-21.0 | 9.0-12.0 | Mo 2.0-3.0 |
| CF-3M | 316L | .03 | 1.5 | .04 | .04 | 1.5 | 17.0-21.0 | 9.0-13.0 | Mo 2.0-3.0 |
| CG-8M | 317 | .08 | 1.5 | .04 | .04 | 1.5 | 18.0-21.0 | 9.0-13.0 | Mo 3.0-4.0 |
| *** | 317L | .03 | 1.5 | .04 | .04 | 1.5 | 18.0-21.0 | 9.0-13.0 | Mo 3.0-4.0 |
| CF-8C | 347 | .08 | 1.5 | .04 | .04 | 2.0 | 18.0-21.0 | 9.0-12.0 | Cb= 8 x C to 1.0 |
| CN-7M | 20CB | .07 | 1.5 | .04 | .04 | 1.5 | 19.0-22.0 | 27.5-30.5 | Mo 2.0 to 3.0<br>Cu 3.0 to 4.0 |

## Aluminum Wrought Alloys

| Alloy | UNS Desig-nation | ASTM Mat'l Spec | Manganese %Max | Magnesium % | Iron %Max | Zinc %Max | Silicon %Max | Titanium %Max | Copper %Max | Chromium % | Aluminum % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3003 | A93003 | B 209 | 1.0-1.5 | | .7 | .10 | .6 | | .05-.20 | | r |
| 5083 | A95083 | B 209 | .40-1.0 | 4.0-4.9 | .40 | .25 | .40 | .15 | .10 | .05-.25 | r |
| 5086 | A95086 | B 209 | .20-.7 | 3.5-4.5 | .50 | .25 | .40 | .15 | .10 | .05-.25 | r |
| 6061 | A96061 | B 209 | .15 | .80-1.2 | .7 | .25 | .40-.8 | .15 | .15-.40 | .04-.35 | r |

[1] Formerly Alloy Casting Institute, now called Steel Founders Society of America
*Commonly referred to as Al 2205™
** Commonly referred to as Ferralium 255®
*** Not an ACI alloy
r = remainder
Note: Chemistry for wrought alloys is for sheet and plate only. Different material specifications apply to other forms.