InternationalTube

# DESIGNATION OF STAINLESS STEELS

| STRUCTURE | HARDENABLE | GROUP | AISI TYPE | ANALYSES BUILT UP FROM BASIC TYPES |
|---|---|---|---|---|
| **Austenitic** | **Hardenable by Cold Work** | **Chromium-Nickel Manganese** | 201 | Cr and Ni Lower for more work hardening |
| | | | 202 | **Basic Type - Cr 18% - Ni 5% - Mn 8%** |
| | | | 204 | C lower to avoid carbide precipitation |
| | | | 204L | C lower for welding application |
| **Austenitic** | **Hardenable by Cold Work** | **Chromium-Nickel** | 301 | Cr and Ni lower for more work hardening |
| | | | 302 | **Basic Type - Cr 18% - Ni 8%** |
| | | | 302B | Si higher for more scaling resistance |
| | | | 303 | S or Se added for easier machining |
| | | | 304 | C lower to avoid carbide precipitation |
| | | | 304L | C lower for welding application |
| | | | 305 | Ni higher for less work hardening |
| | | | 308 | Cr and Ni higher with C Low for more corrosion and scaling resistance |
| | | | 309 | Cr and Ni still higher for more corrosion and scaling resistance |
| | | | 309C | Cb. Ta added to avoid carbide precipitation |
| | | | 309S | C lower to avoid carbide precipitation |
| | | | 310 | Cr and Ni highest to increase scaling resistance |
| | | | 314 | Si higher to increase scaling resistance |
| | | | 316 | Mo added for more corrosion resistance |
| | | | 316L | C lower for welding application |
| | | | 317 | Mo higher for more corrosion resistance and strength at heat |
| | | | 318 | Cb, Ta added to avoid carbide precipitation |
| | | | 321 | Ti added to avoid carbide precipitation |
| | | | 347 | Cb, Ta added to avoid carbide precipitation |
| | | | 347F or Se | S or Se added to improve machinability |
| | | | 348 | Similar to 347 but low titanium content (.10) |
| **Martensitic** | **Hardenable by Heat Treatment** | **Chromium-Iron** | 403 | Cr 12% adjusted for special physicals |
| | | | 410 | **Basic Type - Cr 12%** |
| | | | 414 | Ni added to increase corrosion resistance and physicals |
| | | | 416 | S or Se added for easier machining |
| | | | 418 Spec | W added to improve high temperature properties |
| | | | 420 | C higher for cutting purposes |
| | | | 420F or Se | S or Se added for easier machining |
| | | | 431 | Cr higher and Ni added for better resistance and properties |
| | | | 440A | C higher for cutting applications |
| | | | 440B | C higher for cutting applications |
| | | | 440C | C still higher for wear resistance |
| | | | 440F or Se | S or Se added for easier machining |
| | | | 405 | AL added to Cr 12% to prevent hardening |
| | | | 430 | **Basic Type - Cr 17%** |
| | | | 430F or Se | S or Se added for easier machining |
| | | | 430Ti | Titanium stabilized |
| | | | 442 | Cr higher to increase scaling resistance |
| | | | 446 | Cr much higher for improved scaling resistance |

**ALLOY ABBREVIATIONS**

Carbon.....C
Chromium.....Cr
Columbium.....Cb
Manganese....MN
Moybdenum.....Mo
Nickel.....N
Phosphorus.....P
Selenium.....Se
Silicon.....Si
Sulfer.....S
Titanium.....Ti
Tantalum.....Ta
Tungsten.....VV