



## CHEMICAL COMPOSITION

GRADE	UNS No.	EN No.	C	Mn	Si	P	S	Cr	Ni	Mo	other
<b>Exotic Nickel Alloys</b>											
Nickel 200	N02200	2.4066	0.01	0.35	0.35	-	0.01	-	99	-	Cu: 0.25
Nickel 201	N02201	2.4068	0.02	0.35	0.35	-	0.01	-	99	-	Cu: 0.25
Monel 400	N04400	2.4360	0.3	2	0.5	-	0.024	-	63	-	Cu: 28 - 34
Alloy 600	N06600	2.4816	0.15	1	0.5	-	0.015	14 - 17	72	-	Cu: 0.5
Alloy 625	N06625	2.4856	0.1	0.5	0.5	0.015	0.015	20 - 23	58	9	-
Alloy 800	N08800	1.4550	0.1	1.5	1	-	0.015	19 - 23.5	30 - 35	-	Cu: 0.75
Alloy 800H	N08810	1.4876	0.05 - 0.1	1.5	1	-	0.015	19 - 23.5	30 - 35	-	Cu: 0.75
Alloy 800HT	N08811	2.4602	0.01	0.5	0.08	0.02	0.02	20 - 22.50	-	12.5 - 14.5	-
Alloy 20	N08020	2.4660	0.07	2	1	0.045	0.035	19 - 21	32 - 38	2 - 3	Cu: 3 - 4
Alloy 825	N08825	2.4858	0.05	1	0.5	-	0.03	19 - 23.5	38 - 46	2.5 - 3.5	Cu: 1.5 - 3
Alloy 28	N08028	1.4563	-	≤ 2.5	-	-	-	26 - 28	30 - 34	3 - 4	-
Hastelloy C - 22	N06022	2.4602	0.015 max	0.5 max	0.08 max	0.02 max	0.02 max	20 - 22.5	50.01 - 63	12.5 - 14.5	-
Hastelloy C - 276	N10276	2.4819	0.01	1	0.08	0.04	0.03	14 - 16.5	Rest	15 - 17	-

<b>Austenitic Stainless Steel</b>											
TP 304	S30400	1.4301	0.07	2.00	1.00	0.045	0.015 - 2.00	17.50 - 19.50	8.00 - 10.50	-	N: 0.11
TP 304L	S30403	1.4307	0.03	2.00	1.00	0.045	0.3	18.00 - 20.00	8.00 - 12.00	-	N: 0.10
TP 304H	S30409	1.4948	0.04 - 0.08	2.00	1.00	0.035	0.015 - 2.00	17.00 - 19.00	8.00 - 11.00	-	N: 0.11
TP 309	S30900	1.4828	0.20	2.00	1.50 - 2.50	0.045	0.015	19.00 - 21.00	11.00 - 13.00	-	N: 0.11
TP 310S	S31008	1.4845	0.10	2.00	1.50	0.045	0.015	24.00 - 26.00	19.00 - 22.00	-	N: 0.11
TP 316	S31600	1.4401	0.0 - 0.07	0.00 - 2.00	0.00 - 1.00	0.00 - 0.05	0.0 - 1.00	16.50 - 18.50	10.00 - 13.00	2.00 - 2.50	N: 0.0 - 0.11
TP 316L	S31603	1.4404	0.030	2.00	1.00	0.045	0.015 - 2.00	16.50 - 18.50	10.00 - 13.00	2.00 - 2.50	N: 0.11
TP 316H	S31609	1.4918	0.04 - 0.08	2.00	0.75	0.035	0.015	16.00 - 18.00	12.00 - 14.00	2.00 - 2.50	N: 0.10
TP 316 Ti	S31635	1.4571	0.08	2.00	1.00	0.045	0.015 - 2.00	16.50 - 18.50	10.50 - 13.50	2.00 - 2.50	Ti: 5 x C to 0.70
TP 317	S31700	1.4449	0.08	2.00	1.00	0.045	0.3	19.00	13.00	3.5	Fe: 61
TP 317L	S21703	1.4438	0.030	2.00	1.00	0.045	0.015 - 2.00	17.50 - 19.50	13.00 - 16.00	3.00 - 4.00	N: 0.11
TP 321	S32100	1.4541	0.08	2.00	1.00	0.045	0.015 - 2.00	17.00 - 19.00	9.00 - 12.00	-	Ti: 5 x C to 0.70
TP 321H	S32109	1.4878	0.04 - 0.10	2.00	1.00	0.045	0.03	17.00 - 19.00	9.00 - 12.00	-	Ti: 0.35
TP 347	S34700	1.4550	0.08	2.00	1.00	0.045	0.015	17.00 - 19.00	9.00 - 12.00	-	-
TP 347H	S34709	1.4961	0.04 - 0.10	2.00	1.00	0.040	0.03	17.00 - 20.00	9.00 - 13.00	-	Fe: 62.83 - 73.64
TP 304L	S30403	1.4306	0.03	2.00	1.00	0.045	0.015	18.00 - 20.00	10.00 - 12.00	-	N: 0.11

<b>ASTM</b>	American Society for Testing of Materials
<b>DIN</b>	Deutsches Institute for Normung
<b>GOST</b>	Gosudarstvennyy Standart

<b>ASME</b>	American Society for Mechanical Engineers
<b>JIS</b>	Japan Industrial Standards
<b>TEMA</b>	Tubular Exchanger Manufacturers Association

<b>SAE</b>	Society of Automotive Engineers
<b>UNS</b>	Unified Numbering System
<b>PED</b>	Pressure Equipment Directive

## CHEMICAL COMPOSITION

GRADE	UNS No.	EN No.	C	Mn	Si	P	S	Cr	Ni	Mo	other
<b>Super Austenitic Stainless Steel</b>											
254 SMO / 6MO	S31254	1.4547	0.020	1.00	0.70	0.030	0.010	19.50 - 20.50	17.50 - 18.50	6.00 - 7.00	Cu: 0.50 - 1.00
TP 904L	N08904	1.4539	0.020	2.00	0.70	0.030	0.010	19.00 - 21.00	24.00 - 26.00	4.00 - 5.00	Cu: 1.20 - 2.00
253 MA	S30815	1.4835	0.05 - 0.12	1.00	1.40 - 2.50	0.045	0.015	20.00 - 22.00	10.00 - 12.00	-	N: 0.12 - 0.20
1.4435	S31603	1.4435	0.030	2.00	1.00	0.045	0.015 - 2.00	17.00 - 19.00	12.50 - 15.00	2.50 - 3.00	N: 0.11
TP 310L NAG	S31002	1.4335	0.20	2.00	0.25	0.025	0.010	24.00 - 26.00	20.00 - 22.00	0.020	N: 0.11
TP 304 LN	S30453	1.4311	0.030	2.00	1.00	0.045	0.015 - 2.00	17.50 - 19.50	8.50 - 11.50	-	N: 0.12 - 0.22
TP 314	S31400	1.4841	0.20	2.00	1.50 - 2.50	0.045	0.015	24.00 - 26.00	19.00 - 22.00	-	N: 0.11
TP 316 LN	S31653	1.4406	0.030	2.00	1.00	0.045	0.015 - 2.00	16.50 - 18.50	10.00 - 12.50	2.00 - 2.50	N: 0.12 - 0.22
TP 317 LMN	S31726	1.4439	0.030	2.00	1.00	0.045	0.015	16.50 - 18.50	12.50 - 14.50	4.00 - 5.00	N: 0.12 - 0.22

<b>Duplex &amp; Super Duplex Stainless Steel</b>											
2205	S31803	1.4462	0.030	2.00	1.00	0.035	0.015	21.00 - 23.00	4.50 - 6.50	2.50 - 3.50	N: 0.10 - 0.22
2205	S32205	1.4462	0.030	2.00	1.00	0.035	0.015	22.00 - 23.00	4.50 - 6.50	2.50 - 3.50	N: 0.14 - 0.20
2304	S32304	1.4362	0.030	2.00	1.00	0.035	0.015	22.00 - 24.00	3.50 - 5.50	0.10 - 0.60	N: 0.05 - 0.20
2507	S32750	1.4410	0.030	2.00	1.00	0.035	0.015	24.00 - 26.00	6.00 - 8.00	3.00 - 4.50	N: 0.24 - 0.35
F55	S32760	1.4501	0.030	1.00	1.00	0.035	0.015	24.00 - 26.00	6.00 - 8.00	3.00 - 4.00	N: 0.20 - 0.30

<b>Ferritic &amp; Martensitic Steel</b>											
TP 405	S40500	1.4002	0.08	1.00	1.00	0.040	0.015 - 2.00	12.00 - 14.00	-	-	Al: 0.10 - 0.30
TP 410	S41000	1.4006	0.08 - 0.15	1.50	1.00	0.040	0.015 - 2.00	11.50 - 13.50	0.75	-	-

## Surface Roughness Chart

ISO 1302	Ra		Rz
	µm	µinch	µm
N3-N6			
N3	0.1	4	0.4
N4	0.2	8	0.8
N5	0.4	16	1.6
N6	0.8	32	3.2

Ra
Roughness Average Micrometers

µm
Micrometers

Rz
Average Roughness Depth

µinch
Microinches

ISO 1302	Ra		Rz
	µm	µinch	µm
N7-N10			
N7	1.6	63	6.3
N8	3.2	125	12.5
N9	6.3	250	25
N10	12.5	500	50