Specification for MINOX product

Surface texture (Ra μm)

Description	Internal surface	Welded area	External	According to
Sanitary Tubes	< 0.8 (pickled)	<1.6	< 1.0 (brushed)	DIN 11850
Sanitary Tubes	< 0.4 (MP)		< 1.0 (brushed)	A 270
BPE Welded Tubes SF1	< 0.5 (MP)	< 0.5 (MP)	< 1.0 (brushed)	ASME BPE
BPE Welded Tubes SF4	< 0.4 (EP)	< 0.5 (EP)	< 1.0 (brushed)	ASME BPE
Sanitary Unions	< 0.4 (as machined)		< 0.4 (as machined)	SMS,DIN,IDF,RJT,DS
Bend, Tee, Reducer (basic)	< 0.8 (pickled)	<1.6	< 1.0 (brushed)	SMS,DIN,ISO
Bend, Tee, Reducer (imperial)	< 0.4 (MP)		< 1.0 (brushed)	SMS,DIN,ISO

Surface Roughness Convertion Table

Ra (μm)	Ra (μ in.)	US Grit
0.25	10	320
0.45	18	240
0.80	31	180
1.00	40	120
1.65	70	80

Chemical Composition Table

Steel Grade		Chemical Composition in % (Maximum) By Mass							
Number	Standard	Carbon (C)	Manganese (Mn)	Phosphorus (P)	Sulphur (S)	Silicon (Si)	Chromium (Cr)	Nickel (Ni)	Molybdenum (Mo)
304	ASTM	0.08	2	0.045	0.030	1	18.0 ~ 20.0	8.0 ~ 11.0	-
316	ASTM	0.08	2	0.045	0.030	1	16.0 ~ 18.0	10.0 ~ 14.0	2.0 ~ 3.0
304L	ASTM	0.03	2	0.045	0.030	1	18.0 ~ 20.0	8.0 ~ 11.0	-
316L	ASTM	0.03	2	0.045	0.030	1	16.0 ~ 18.0	10.0 ~ 14.0	2.0 ~ 3.0
316L	ASME BPE	0.03	2	0.045	0.005~ 0.017	1	16.0 ~ 18.0	10.0 ~ 15.0	2.0 ~ 3.0
1.4301	DIN - EN	0.07	2	0.045	0.015	1	17.0 ~ 19.5	8.0 ~ 10.5	-
1.4307	DIN - EN	0.03	2	0.045	0.015	1	17.5 ~ 19.5	8.0 ~ 10.0	-
1.4404	DIN - EN	0.03	2	0.045	0.015	1	16.5 ~ 18.5	10.0 ~ 13.0	2.0 ~ 2.5
1.4435	DIN - EN	0.03	2	0.045	0.015	1	17.0 ~ 19.0	12.5 ~ 15.0	2.5 ~ 3.0