

Welded Stainless Steel Tubing

MECHANICAL PROPERTIES

Type	Round and square			Round			
	Tension test			Bending	Flattering		Flaring
	Yield strength kg/mm ²	Tensile strength kg/mm ²	Elongation (longitudinal) %		No.1	No.2	
AISI 430	> 25	> 42	>20	180° 4D	< ² / ₃ D	< ¹ / ₂ D	1.14D
AISI 304	> 21	> 53	>35	180° 3D	< ² / ₃ D	< ¹ / ₂ D	1.2D
AISI 316	> 21	> 53	>35	180° 3D	< ² / ₃ D	< ¹ / ₂ D	1.2D

Notes:

- (1) Yield strength test shall not be conducted unless requested. Other mechanical property values are available on request.
- (2) For the tension test of round tubing, test piece No. 11 or 12 specified in JIS Z 2201 (Tension Test Pieces for Materials) shall be used. Test piece No. 12 shall be taken from an unwelded portion.
- (3) For the tension test of square tubing, test tubing, test piece No. 5 specified in JIS Z 2201 shall be used. However, for a side length of less than 25 mm, the test shall be conducted on a test piece with a width equivalent to its side length. The test piece shall be taken from an unwelded portion.
- (4) Unless otherwise specified, the values of No. 1 shall be used.

TYPES OF MANUFACTURES

Surface Finish

	Finish	Nisshin Code	Description
Round tubing	Unpolished	S2	As welded
	120 GRIT	S 240	Polished by #120 belt
	120 GRIT	SB 240	Buffed S 240
	180 GRIT	SB 400	Buffed after polishing by #180 belt
	180 GRIT	GL	Hair-line finished after polishing by #180 belt
	320 GRIT	SB 600	Buffed after polishing by #320 belt
	400 GRIT	BL 400	Buffed after polishing by #400 belt
	MIRROR	MR	Buffed after polishing by #600 belt
Square & rectangular tubing	Unpolished	S2	As welded
	180 GRIT	HL 180	Hair-line finished after polishing by #180 belt

CHEMICAL COMPOSITION

Type	Chemical Composition (%)							
	C	Si	Mn	P	S	Ni	Cr	Mo
AISI 430	<0.12	<1.00	<1.00	<0.04	<0.03	--	16 ~18	--
AISI 304	<0.08	<1.00	<2.00	<0.04	<0.03	8 ~ 11	18 ~20	--
AISI 316	<0.08	<1.00	<2.00	<0.04	<0.03	11 ~14	16 ~18	200 ~300

Round Tubing

TABLE OF UNIT WEIGHT

Outside diameter		Type	Wall Thickness (mm)																				
			0.5		0.6		0.7		0.8		1.0		1.2		1.5		2.0		2.5		3.0		
			kg/m	kg/20'	kg/m	kg/20'	kg/m	kg/20'	kg/m	kg/20'	kg/m	kg/20'	kg/m	kg/20'	kg/m	kg/20'	kg/m	kg/20'	kg/m	kg/20'	kg/m	kg/20'	
in	mm																						
1/2	12.7	AISI 304	0.152	0.927	0.181	1.10	0.209	1.27	0.237	1.44	0.291	1.77	0.344	2.10	0.418	2.55							
		AISI 430	0.148	0.902	0.176	1.07	0.203	1.24	0.203	1.40	0.283	1.73	0.334	2.04	0.406	2.47							
5/8	15.9	AISI 304	0.192	1.17	0.229	1.40	0.265	1.62	0.301	1.83	0.371	2.26	0.439	2.68	0.538	3.28							
		AISI 430	0.186	1.13	0.222	1.35	0.257	1.57	0.292	1.78	0.36	2.19	0.427	2.60	0.522	3.18							
16		AISI 304	0.193	1.18	0.23	1.40	0.267	1.63	0.303	1.85	0.374	2.28	0.442	2.69	0.542	3.30							
		AISI 430	0.187	1.14	0.224	1.37	0.259	1.58	0.294	1.79	0.363	2.21	0.43	2.62	0.562	3.21							
3/4	19.1	AISI 304	0.232	1.41	0.277	1.69	0.321	1.96	0.365	2.23	0.451	2.75	0.533	3.26	0.658	4.01							
		AISI 430	0.225	1.37	0.269	1.64	0.321	1.90	0.354	2.16	0.438	2.67	0.52	3.17	0.639	3.90							
7/8	22.2	AISI 304			0.323	1.97	0.375	2.29	0.426	2.60	0.528	3.22	0.628	3.83	0.773	4.71	101	6.16					
		AISI 430			0.314	1.91	0.364	2.33	0.414	2.52	0.513	3.13	0.61	3.72	0.751	4.58	0.977	5.96					
	25	AISI 304			0.365	2.23	0.429	2.62	0.482	2.94	0.598	3.65	0.711	4.33	0.878	5.35	115	7.01					
		AISI 430			0.354	2.16	0.411	2.51	0.468	2.85	0.581	3.54	0.691	4.21	0.853	5.20	111	6.77					
1	25.4	AISI 304			0.371	2.26	0.431	2.63	0.49	2.99	0.608	3.71	0.723	4.41	0.893	5.44	117	7.13					
		AISI 430			0.36	2.19	0.417	2.54	0.476	2.90	0.59	3.60	0.702	4.28	0.867	5.29	113	6.89					
1 1/8	28.6	AISI 304			0.418	2.55	0.486	2.96	0.554	3.38	0.687	4.19	0.819	4.99	101	6.16	132	8.05					
		AISI 430			0.406	2.47	0.472	2.88	0.538	3.28	0.668	4.07	0.795	4.85	0.983	5.99	129	7.86					
1 1/4	31.8	AISI 304					0.542	3.30	0.618	3.77	0.767	4.68	0.915	5.58	113	6.89	148	9.02	1.82	111	2.15	131	
		AISI 430					0.527	3.21	0.60	3.66	0.745	4.54	0.888	5.41	110	6.71	144	8.78	1.77	10.8	2.09	12.7	
	32	AISI 304					0.546	3.33	0.622	3.79	0.772	4.71	0.921	5.61	114	6.95	149	9.08	1.84	112	2.17	13.2	
		AISI 430					0.53	3.23	0.604	3.68	0.75	4.57	0.894	5.45	111	6.77	145	8.84	1.78	10.9	2.10	19.8	
1 1/2	38.1	AISI 304					0.652	3.97	0.743	4.53	0.924	5.63	1.10	6.71	137	8.35	180	110	2.22	13.5	2.62	16.0	
		AISI 430					0.633	3.86	0.722	4.40	0.897	5.47	1.07	6.52	133	8.11	175	10.7	2.15	13.1	2.55	15.3	
1 3/8	41.3	AISI 304							0.807	4.92	1.00	6.10	1.20	7.32	149	9.08	196	119	2.42	14.8	2.86	17.4	
		AISI 430							0.784	4.78	0.974	5.94	1.16	7.07	144	8.78	190	116	2.35	14.3	2.78	16.9	
1 3/4	44.5	AISI 304							0.871	5.31	1.08	6.58	1.29	7.86	161	9.81	2.12	12.9	2.62	16.0	3.10	18.9	
		AISI 430							0.846	5.16	1.05	6.40	1.26	7.68	156	9.51	2.06	12.6	2.54	15.5	3.01	18.3	
	45	AISI 304							0.881	5.37	1.10	6.71	1.31	7.99	163	9.94	2.14	13.0	2.65	16.2	3.14	19.1	
		AISI 430							0.855	5.21	1.06	6.46	1.27	7.74	158	9.63	2.08	12.7	2.57	15.7	3.05	18.6	
19	48.3	AISI 304							0.947	5.77	1.18	7.19	1.41	8.60	175	10.7	2.31	14.1	2.85	17.4	3.39	20.7	
		AISI 430							0.92	5.61	1.14	6.95	1.37	8.35	170	10.4	2.24	13.7	2.77	16.9	3.29	20.1	
	50	AISI 304									1.22	7.44	1.46	8.90	181	110	2.39	14.6	2.96	18.0	3.51	21.4	
		AISI 430									1.19	7.25	1.42	8.66	176	10.7	2.32	14.1	2.87	17.5	3.41	20.8	
2	50.8	AISI 304									1.24	7.56	1.48	9.02	1.84	112	2.43	14.8	3.01	18.3	3.57	21.8	
		AISI 430									1.20	7.32	1.44	8.78	1.79	10.9	2.36	14.4	2.92	17.8	3.47	21.2	
	60.8	AISI 304											1.77	10.8	2.20	13.4	2.91	17.7	3.61	22.0	4.30	26.2	
		AISI 430											1.72	10.5	2.14	13.0	2.83	17.3	3.51	21.4	4.17	25.4	
2 1/2	63.5	AISI 304											1.86	11.3	2.32	14.1	3.06	18.7	3.80	23.2	4.52	27.6	
		AISI 430											1.81	11.0	2.25	13.7	2.98	18.2	3.69	22.5	4.39	26.8	
3	76.2	AISI 304												2.24	13.7	2.79	17.0	3.70	22.6	4.59	28.0	5.47	33.3
		AISI 430												2.18	13.3	2.71	16.5	3.59	21.9	4.46	27.2	5.31	32.4

Square Tubing

TABLE OF UNIT WEIGHT

Side length mm (inch)	Type	Wall thickness mm, BWG (inch)													
		1.0		1.2		1.5		2.0		3.0		BWG18(0.049)		BWG16(0.65)	
		kg/m	kg/20'	kg/m	kg/20'	kg/m	kg/20'	kg/m	kg/20'	kg/m	kg/20'	kg/ft	kg/20'	kg/ft	kg/20'
12 x 12	AISI 304	0.347	2.12	0.409	2.49							0.128	2.57		
	AISI 430	0.337	2.05	0.397	2.42							0.125	2.49		
12.7 x 12.7 (1/2 x 1/2)	AISI 304	0.369	2.25	0.436	2.66							0.137	2.74		
	AISI 430	0.359	2.19	0.423	2.58							0.133	2.66		
14 x 14	AISI 304	0.411	2.51	0.485	2.96							0.152	3.05		
	AISI 430	0.399	2.43	0.471	2.87							0.148	2.96		
15.9 x 15.9 (5/8 x 5/8)	AISI 304	0.471	2.87	0.558	3.40							0.175	3.51		
	AISI 430	0.457	2.79	0.542	3.30							0.17	3.40		
16 x 16	AISI 304	0.474	2.89	0.562	3.43							0.176	3.53		
	AISI 430	0.46	2.8	0.545	3.32							0.171	3.43		
19 x 19	AISI 304	0.569	3.47	0.676	4.12	0.831	5.07					0.212	4.25	0.276	5.52
	AISI 430	0.553	3.37	0.656	4.00	0.807	4.92					0.206	4.13	0.268	5.36
19.1 x 19.1 (3/4 x 3/4)	AISI 304	0.572	3.49	0.68	4.15	0.836	5.10					0.214	4.27	0.278	5.56
	AISI 430	0.556	3.39	0.66	4.02	0.811	4.94					0.207	4.15	0.27	5.39
20 x 20	AISI 304	0.601	3.66	0.714	4.35	0.878	5.35					0.224	4.49	0.292	5.85
	AISI 430	0.584	3.56	0.693	4.22	0.853	5.20					0.218	4.36	0.284	5.68
21 x 21	AISI 304	0.633	3.86	0.752	4.58	0.926	5.64					0.236	4.72	0.308	6.16
	AISI 430	0.614	3.74	0.73	4.45	0.899	5.48					0.23	4.59	0.299	5.99
22.2 x 22.2 (7/8 x 7/8)	AISI 304	0.671	4.09	0.798	4.86	0.983	5.99					0.251	5.02	0.326	6.52
	AISI 430	0.651	3.97	0.774	4.72	0.955	5.82					0.244	4.88	0.317	6.34
25 x 25	AISI 304	0.76	4.63	0.904	5.51	1.12	6.83					0.284	5.69	0.372	7.44
	AISI 430	0.738	4.5	0.878	5.35	1.08	6.58					0.276	5.52	0.36	7.19
25.4 x 25.4 (1 x 1)	AISI 304	0.772	4.71	0.919	5.60	1.14	6.95					0.289	5.79	0.378	7.56
	AISI 430	0.75	4.57	0.893	5.44	1.10	6.71					0.281	5.61	0.369	7.38
28 x 28	AISI 304	0.855	5.21	1.02	6.22	1.26	7.68					0.32	6.40	0.421	8.41
	AISI 430	0.83	5.06	0.989	6.03	1.22	7.44					0.311	6.22	0.408	8.17
30 x 30	AISI 304	0.918	5.60	1.09	6.64	1.35	8.23	1.77	10.8			0.344	6.89	0.452	9.03
	AISI 430	0.892	5.44	1.06	6.46	1.32	8.05	1.72	10.5			0.335	6.71	0.439	8.78
31.8 x 31.8 (1 1/4 x 1 1/4)	AISI 304	0.975	5.94	1.16	7.07	1.44	8.78	1.89	11.5			0.366	7.32	0.482	9.63
	AISI 430	0.947	5.77	1.13	6.89	1.40	8.53	1.83	11.2			0.357	7.13	0.466	9.33
32 x 32	AISI 304	0.982	5.99	1.17	7.13	1.45	8.84	1.90	11.6			0.369	7.38	0.485	9.69
	AISI 430	0.953	5.81	1.14	6.95	1.41	8.60	1.85	11.3			0.357	7.13	0.469	9.39
34 x 34	AISI 304	1.05	6.40	1.25	7.62	1.54	9.39	2.03	12.4			0.393	7.86	0.515	10.3
	AISI 430	1.01	6.16	1.21	7.38	1.50	9.14	1.97	12.0			0.381	7.62	0.50	10.0
35 x 35	AISI 304	1.08	6.58	1.28	7.80	1.59	9.69	2.09	12.7			0.405	8.11	0.531	10.6
	AISI 430	1.05	6.40	1.25	7.62	1.55	9.45	2.03	12.4			0.393	7.86	0.515	10.3
38 x 38	AISI 304	1.17	7.13	1.40	8.53	1.73	10.5	2.28	13.9			0.439	8.78	0.579	11.6
	AISI 430	1.14	6.95	1.36	8.29	1.68	10.2	2.22	13.5			0.427	8.53	0.564	11.3
38.1 x 38.1 (1 1/2 x 1 1/2)	AISI 304	1.18	7.19	1.40	8.53	1.74	10.6	2.29	14.0			0.442	8.84	0.582	11.6
	AISI 430	1.14	6.95	1.36	8.29	1.69	10.3	2.22	13.5			0.43	8.60	0.564	11.3
40 x 40	AISI 304	1.24	7.56	1.48	9.02	1.83	11.2	2.41	14.7	3.52	21.5	0.463	9.27	0.613	12.3
	AISI 430	1.20	7.32	1.43	8.72	1.78	10.9	2.34	14.3	3.42	20.8	0.451	9.02	0.594	11.9
46 x 46	AISI 304	1.43	8.72	1.70	10.4	2.12	12.9	2.79	17.0	4.09	24.9	0.536	10.7	0.707	14.1
	AISI 430	1.38	8.41	1.65	10.1	2.05	12.5	2.71	16.5	3.97	24.2	0.521	10.4	0.686	13.7
50 x 50	AISI 304			1.86	11.3	2.31	14.1	3.04	18.5	4.47	27.2	0.585	11.7	0.771	15.4
	AISI 430			1.80	11.0	2.24	13.7	2.96	18.0	4.34	26.5	0.567	11.3	0.75	15.0
50.8 x 50.8 (2 x 2)	AISI 304			1.89	11.5	2.34	14.3	3.09	18.8	4.55	27.7	0.594	11.9	0.783	15.7
	AISI 430			1.83	11.2	2.28	13.9	3.00	18.3	4.42	26.9	0.576	11.5	0.762	15.2
60 x 60	AISI 304			2.24	13.7	2.78	16.9	3.68	22.4	5.42	33.0	0.704	14.1	0.93	18.6
	AISI 430			2.17	13.2	2.70	16.5	3.57	21.8	5.27	32.1	0.683	13.7	0.902	18.0

Rectangular Tubing

TABLE OF UNIT WEIGHT

Side length mm (inch)	Type	Wall thickness mm, BWG (inch)											
		1.0		1.2		1.5		2.0		BWG 18 (0.049)		BWG 16 (0.065)	
		kg/m	kg/20'	kg/m	kg/20'	kg/m	kg/20'	kg/m	kg/20'	kg/ft	kg/20'	kg/ft	kg/20'
19x10	AISI 304	0.426	2.60	0.505	3.08					0.158	3.17		
	AISI 430	0.414	2.52	0.49	2.99					0.154	3.08		
20x10	AISI 304	0.442	2.69	0.524	3.19					0.164	3.29		
	AISI 430	0.43	2.62	0.508	3.10					0.16	3.19		
20x15	AISI 304	0.522	3.18	0.619	3.77					0.194	3.89		
	AISI 430	0.507	3.09	0.601	3.66					0.189	3.77		
22x10	AISI 304	0.474	2.89	0.562	3.43					0.176	3.53		
	AISI 430	0.46	2.80	0.545	3.32					0.171	3.43		
22x12	AISI 304	0.506	3.08	0.60	3.66					0.188	3.77		
	AISI 430	0.491	2.99	0.582	3.55					0.183	3.66		
24x14	AISI 304	0.569	3.47	0.676	4.12	0.831	5.07			0.212	4.25	0.276	5.52
	AISI 430	0.553	3.37	0.656	4.00	0.807	4.92			0.206	4.13	0.268	5.36
25x14	AISI 304	0.585	3.57	0.695	4.23	0.855	5.21			0.218	4.36	0.284	5.68
	AISI 430	0.568	3.46	0.675	4.11	0.83	5.06			0.212	4.24	0.276	5.52
25.4 x 12.7 (1 x 1/2)	AISI 304	0.571	3.48	0.678	4.13	0.833	5.08			0.213	4.26	0.277	5.54
	AISI 430	0.554	3.38	0.658	4.01	0.809	4.93			0.207	4.14	0.269	5.38
30x10	AISI 304	0.601	3.66	0.714	4.35	0.878	5.35			0.224	4.49	0.292	5.85
	AISI 430	0.584	3.56	0.693	4.22	0.853	5.20			0.218	4.36	0.284	5.68
30x20	AISI 304	0.76	4.63	0.904	5.51	1.12	6.83			0.284	5.69	0.372	7.44
	AISI 430	0.738	4.50	0.878	5.35	1.08	6.58			0.276	5.52	0.36	7.19
32x16	AISI 304	0.728	4.44	0.866	5.28	1.07	6.52			0.272	5.44	0.357	7.13
	AISI 430	0.707	4.31	0.841	5.13	1.04	6.34			0.265	5.29	0.344	6.89
32x17	AISI 304	0.744	4.54	0.885	5.39	1.09	6.64			0.278	5.57	0.363	7.25
	AISI 430	0.722	4.40	0.859	5.24	1.06	6.46			0.27	5.41	0.354	7.07
38.1 x 25.4 (1 1/2 x 1)	AISI 304	0.974	5.94	1.16	7.07	1.44	8.78			0.366	7.32	0.479	9.57
	AISI 430	0.945	5.76	1.13	6.89	1.40	8.53			0.354	7.07	0.466	9.33
40x10	AISI 304	0.76	4.63	0.904	5.51	1.12	6.83			0.284	5.69	0.372	7.44
	AISI 430	0.738	4.50	0.878	5.35	1.08	6.58			0.276	5.52	0.36	7.19
40x15	AISI 304	0.839	5.11	0.999	6.09	1.24	7.56			0.314	6.28	0.411	8.23
	AISI 430	0.815	4.97	0.97	5.91	1.20	7.32			0.305	6.10	0.399	7.99
40x18	AISI 304	0.886	5.40	1.06	6.46	1.31	7.99			0.332	6.64	0.436	8.72
	AISI 430	0.861	5.25	1.03	6.28	1.27	7.74			0.323	6.46	0.424	8.47
40x20	AISI 304	0.918	5.60	1.09	6.64	1.35	8.23	1.77	10.8	0.344	6.89	0.451	9.02
	AISI 430	0.892	5.44	1.06	6.46	1.31	7.99	1.72	10.5	0.335	6.71	0.439	8.78
40x25	AISI 304			1.19	7.25	1.47	8.96	1.93	11.8	0.375	7.50	0.491	9.81
	AISI 430			1.16	7.07	1.43	8.72	1.88	11.5	0.363	7.25	0.479	9.57
40x28	AISI 304			1.25	7.62	1.54	9.39	2.03	12.4	0.393	7.86	0.515	10.3
	AISI 430			1.21	7.38	1.50	9.14	1.97	12.0	0.381	7.62	0.50	10.0
50x25	AISI 304			1.38	8.41	1.71	10.4	2.25	13.7	0.433	8.66	0.57	11.4
	AISI 430			1.34	8.17	1.66	10.1	2.19	13.4	0.421	8.41	0.555	11.1
50.8 x 25.4 (2 x 1)	AISI 304			1.40	8.53	1.74	10.6	2.29	14.0	0.442	8.84	0.582	11.6
	AISI 430			1.36	8.29	1.69	10.3	2.22	13.5	0.43	8.60	0.564	11.3
51x26	AISI 304			1.42	8.66	1.76	10.7	2.31	14.1	0.445	8.90	0.588	11.8
	AISI 430			1.38	8.41	1.71	10.4	2.25	13.7	0.433	8.66	0.57	11.4
60x20	AISI 304			1.48	9.02	1.83	11.2	2.41	14.7	0.463	9.27	0.613	12.3
	AISI 430			1.43	8.72	1.78	10.9	2.34	14.3	0.451	9.02	0.594	11.9
60x40	AISI 304			1.86	11.3	2.31	14.1	3.04	18.5	0.585	11.7	0.771	15.4
	AISI 430			1.80	11.0	2.24	13.7	2.96	18.0	0.567	11.3	0.75	15.0
75x45	AISI 304					2.78	16.9	3.68	22.4			0.93	18.6
	AISI 430					2.70	16.5	3.57	21.8			0.902	18.0
76.2 x 25.4 (3 x 1)	AISI 304					2.34	14.3	3.09	18.8			0.783	15.7
	AISI 430					2.28	13.9	3.00	18.3			0.762	15.2
80x40	AISI 304					2.78	16.9	3.68	22.4			0.93	18.6
	AISI 430					2.70	16.5	3.57	21.8			0.902	18.0