

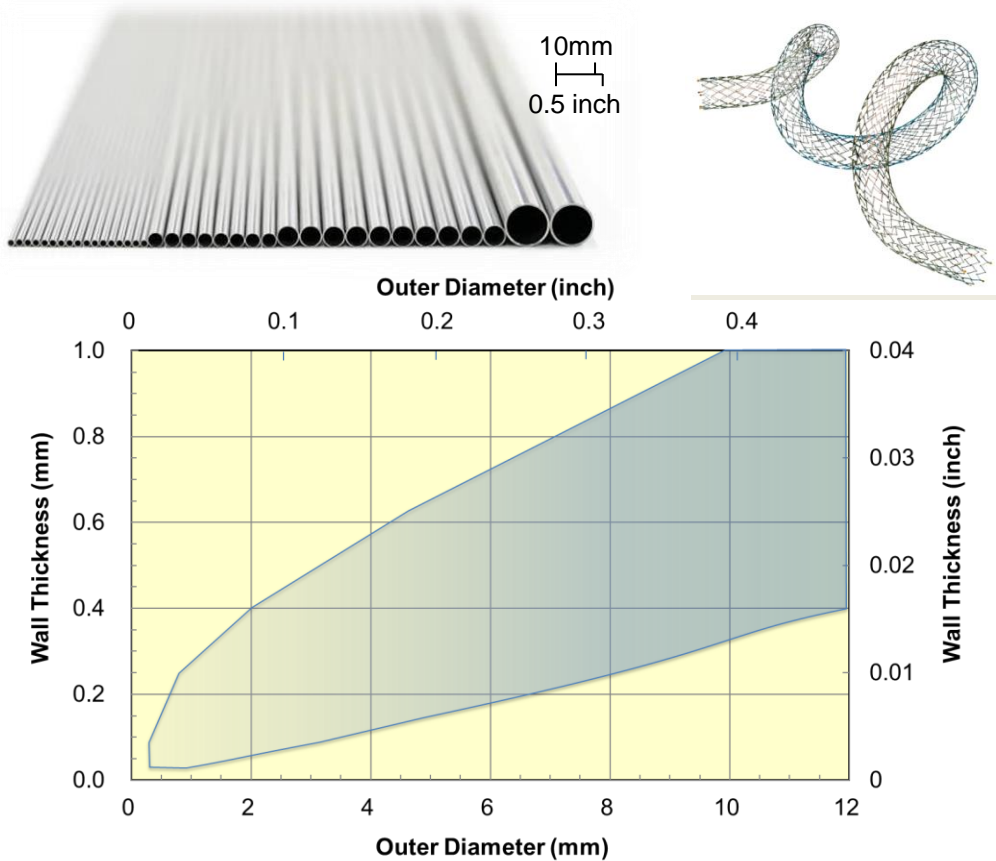
Ni-Ti Tubes for Medical Devices

Furukawa Techno Material
2E-GISI-08-01_Rev.4

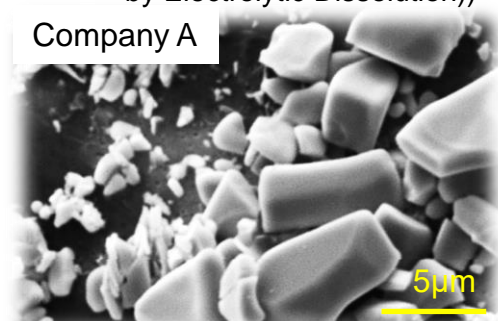
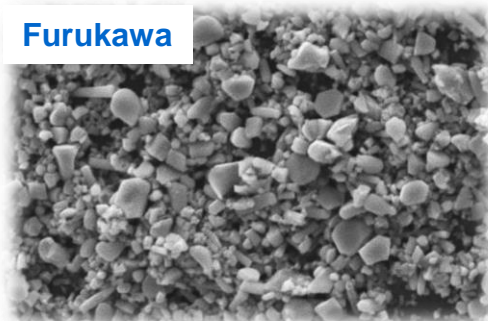
Furukawa Ni-Ti Tube has been selected for many medical devices such as Stents. Available in wide range of sizes with the strict OD & ID dimensions throughout the length assuring the tight WT uniformity to meet different requirements for various customers.

Furukawa has unique vacuum melting and production lines. The most durable (good fatigue life) alloys available in the market are manufactured through fine control of the disperse of inclusions. Our alloy conforms with ASTM F 2063, the Ni-Ti alloy standard for medical devices.

A truly integrated production brings customized formulations available. You can choose a custom designed super-elasticity.



Comparison of inclusions (after SPEED method (Selective Potentiostatic Etching by Electrolytic Dissolution))



Ni-Ti Tube for Medical Devices

Furukawa Techno Material
2E-GISI-12-23 Rev.3

1. Alloy type & composition

Alloy type	Composition		Ingot Af (°C)
	(at%)	(mass%)	
NT-N	50.95Ni-Ti	56.01Ni-Ti	-10 ~ 12
NT-E4	50.85Ni-Ti	55.91Ni-Ti	5 ~ 28
NT-E9	50.70Ni-Ti	55.76Ni-Ti	20 ~ 35

Minor elements (mass%)	
C	max. 0.040
Co	max. 0.050
Cu	max. 0.010
Cr	max. 0.010
H*	max. 0.005
Fe	max. 0.050
Nb	max. 0.025
O	max. 0.040
N	max. 0.005

Metallurgical properties	
Dimension of inclusions and porosities	Area
< 39 μm	< 2.8 %

Comply with ASTM F 2063-18

Comply with ASTM F 2063-18

* H: final tube

2. Dimension

Available range		Standard tolerance	
Outer diameter	Wall thickness	OD	WT
0.3 ~	0.040 ~ 0.100	± 0.013	± 0.013
0.8 ~	0.060 ~ 0.250	± 0.015	± 0.015
1.6 ~	0.070 ~ 0.300	± 0.020	± 0.015
2.0 ~	0.080 ~ 0.400	± 0.020	± 0.020
2.6 ~	0.160 ~ 0.450	± 0.025	± 0.025
5.0 ~	0.200 ~ 0.500	± 0.030	± 0.030
10.0 ~	0.350 ~ 0.600	± 0.040	± 0.030
11.0 ~ 13.0	0.400 ~ 0.700	± 0.040	± 0.030

Available range		Standard tolerance	
Outer diameter	Wall thickness	OD	WT
0.012 ~	0.0016 ~ 0.0039	± 0.0005	± 0.0005
0.031 ~	0.0024 ~ 0.0098	± 0.0006	± 0.0006
0.063 ~	0.0028 ~ 0.0118	± 0.0008	± 0.0006
0.079 ~	0.0031 ~ 0.0157	± 0.0008	± 0.0008
0.102 ~	0.0063 ~ 0.0177	± 0.0010	± 0.0010
0.197 ~	0.0079 ~ 0.0197	± 0.0012	± 0.0012
0.394 ~	0.0138 ~ 0.0236	± 0.0016	± 0.0012
0.433 ~ 0.512	0.0157 ~ 0.0276	± 0.0016	± 0.0012

3. Transformation temperature and mechanical property

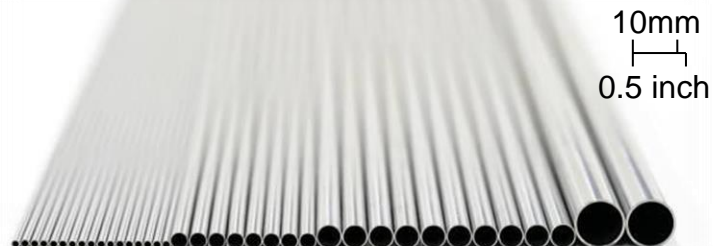
Alloy type	Mechanical Af* (°C)	3% UPS (MPa (ksi))	6% PS (%)	UTS (MPa (ksi))	Elongation (%)
NT-N	-10 ~ 10	> 400 (58)	0.5	> 1050 (152)	> 10
NT-E4	-5 ~ 15	> 350 (50)	0.5	> 1000 (145)	
NT-E9	10 ~ 25	> 320 (46)	—	> 1000 (145)	

* Based on BFR (Bending Free Recovery)

** Tensile test at Room Temperature

4. Surface condition

Outer	No oxide	Centerless grinding
		Pickled
Thin oxide		
Inner	No oxide	Pickled
		Thin - black oxide



***Specifications shall be as agreed upon between the customer and the supplier.

