

NbTi wire in channel

NbTi Wire in channel (WIC) is mostly used in magnet of MRI system. In WIC NbTi core wire is inserted into a copper channel and soldered together, for achieving high copper fraction and thermal stability in MRI magnets, and then insulated by polyester braid typically. The Copper to Non-Copper ratio for WIC is available from 5:1 to 20:1. The standard dimensions of regular products are shown below. The customized parameters can be available for clients with effective cost solutions.

Nb Ti SUPERCONDUCTING WIRE (Wire in channel)

Nominal Dimension(mm)			Number of filaments	Filament Diameter	Nominal	Critical Current(Amps @4.2K)			n value	Insulation	RRR (273K/10K)
Bare	Insulated					2T	3T	4T			
1	2.2861.524	2.553×1.765		55	93	7.7	> 2000	> 1550	> 1210	> 30(30T)	>200
2	2.286×1.524	2.553×1.765		55	82	10.5	> 1490	> 1210	> 950		
3	1.978×1.173	2.240×1.425		55	83	6.6	> 1350	> 1080	> 1000	PET	>100
4	1.978×1.173	2.240×1.425		55	79	7.5	> 1230	> 980	> 875		
5	1.978×1.173	2.240×1.425		54	74	7.8	> 1130	> 900	> 780		
6	1.978×1.173	2.240×1.425		54	68	9.7	> 930	> 740	> 600		
7	1.565×1.040	1.815×1.290		55	98	5	> 1200	> 960	> 900		
8	2.700×1.340	2.940×1.590		55	82	11	> 1530	> 1210	> 1000		

NbTi wire (customized)

Nb Ti SUPERCONDUCTING WIRE (Customized)

Type	Number of filaments	Filament Diameter	Nominal Cu/non-Cu	Nominal Dimension(mm)	Critical Current(Amps @4.2K)									RRR (273K/10K)
					Bare	2T	3T	4T	5T	6T	7T	8T	9T	

Nb Ti/Cu (CuNi layer)	564	22	1.35	0.810	/	/	> 602	> 506	> 351	> 322	> 221	> 120	> 100
Nb Ti /Cu	2616	7.8	2.35	0.730	> 590	> 470	> 390	> 340	> 260	> 190	> 120	> 55	
Nb Ti /Cu	3366	7.8	1.55	0.730	/	/	/	> 331	> 280	> 225	> 159	> 95	
Nb Ti /Cu	12240	3.6	1.55	0.700	> 635	> 504	> 423	> 346	> 275	> 221	> 141	/	
		4.2	1.55	0.805	> 895	> 692	> 588	> 490	> 395	> 296	> 196	/	
Nb Ti / Cu5Ni/ Cu	12240	3.6	1.55	0.700	> 578	> 461	> 390	> 322	> 256	> 194	> 128	/	
		4.2	1.55	0.805	> 905	> 700	> 570	> 479	> 364	> 276	> 176	/	
Nb Ti / Cu0.5Mn/ Cu	12240	3.6	1.38	0.700	> 608	> 469	> 380	> 310	> 240	> 181	> 119	/	
		4.2	1.38	0.805	> 914	> 689	> 534	> 441	> 336	> 257	> 172	/	

NbTi wire(monolith, rectangle)

Monolith Nbti wire is normally used for applications of high engineering current density such as NMR, Accelerator magnet, and also MRI, MCZ, SMES, Magnet separator for mining industry etc. WST can supply the monolith wire in both round and rectangular cross sections, and the Copper to Non-copper ratio ranges from 1: 1 to 10: 1. The Formvar enamel is typical insulation material, and Ni coating is available if needed. The standard dimensions of regular products are shown below. The customized parameters can be available for clients with effective cost solutions

NbTi SUPERCONDUCTING WIRE(Monolith, Rectangle)

Number of filaments	Filament Diameter (μm)	Nominal Cu/n on- Cu	Nominal Dimension(mm)		Critical Current(Amps @4.2K)						Insulation	RR R (27 3K/ 10K)	
			Bare	Insulated	4T	5T	6T	7T	8T	9T			
1	18	83.5	10	1.47x0.77	1.55x0.85	> 280	> 245	> 180	> 135	> 82	/	Formva	> 100

2	24	110	7	1.70×1.10	1.80×1.20	> 630	> 550	> 420	> 310	> 190	> 90	r	
3	36	78	4	1.20×0.75	1.28×0.38	> 500	> 420	> 325	> 230	> 145	> 66		
4		112	4	1.70×1.10	1.80×1.20	> 1000	> 870	> 650	> 495	> 310	> 145		
5	54	77	1.3	1.00×0.60	1.08×0.68	> 710	> 600	> 468	> 328	> 205	> 98		
6		94	1.3	1.20×0.75	1.28×0.83	> 1045	> 895	> 685	> 535	> 325	> 150		
7	630	22	1.3	1.00×0.60	1.08×0.68	> 710	> 600	> 470	> 330	> 210	> 100		
8		27	1.3	1.20×0.75	1.28×0.83	> 1050	> 900	> 690	> 540	> 330	> 155		
9		34	1.3	1.463×0.768	1.533×1.022	/	> 1400	> 1060	> 800	> 490	> 235		
10		28	1.3	1.248×0.768	1.308×0.828	> 1130	> 960	> 730	> 530	> 330	> 150		

NbTi wire(monolith,round)

Monolith Nbti wire is normally used for applications of high engineering current density such as NMR, Accelerator magnet, and also MRI, MCZ, SMES, Magnet separator for mining industry, etc. Fermi can supply the monolith wire in both round and rectangular cross sections, and the Copper to Non-copper ratio ranges from 1: 1 to 10: 1 The Formvar enamel is typical insulation material, and Ni coating is available if needed. The standard dimensions of regular products are shown below. The customized parameters can be available for clients with effective cost solutions.

NBTI SUPERCONDUCTING WIRE (Monolith, Round)

Number of filaments	Filament Diameter (μm)	Nominal Cu/n on-Cu	Nominal Dimension(mm)		Critical Current(Amps @4.2K)						Insulation	RRR (273 K/10 K)	
			Bare	Insulated	4T	5T	6T	7T	8T	9T			
1	54	74	2.5	1.016	1.067	/	/	>460	>320	>200	>100	Formvar	> 100
2	55	40	1.8	0.50	0.55	>200A (@3.9 T)	>170 (@5.3T)	/	/	/	/		

3		54	0.9	0.55	0.60	>360	>310	>240	>175	/	/		
4		62	1.3	0.70	0.75	/	>420	/	>252	/	/		
5	61	62	2.2	0.97	1.02	>765	>627	>492	>360	>236	>112		
6	73	69	1.2	0.97	1.02	>1050	>870	>696	>517	>339	>165		
7	630	13	1.3	0.50	0.55	>245	>205	>165	>120	>75	>35		
8		16	1.3	0.60	0.65	>360	>300	>235	>170	>105	>50		
9		19	1.3	0.72	0.77	>514	>430	>345	>245	>170	>80		
10		20	1.3	0.75	0.80	>559	>470	>387	>260	>180	>90		
11		22	1.3	0.85	0.90	>750	>610	>470	>340	>215	>100		
12	2616	11	2.3	1.04	1.10	>770	>630	>480	>340	>210	>80		
13		12	2.3	1.14	1.20	>900	>732	>558	>391	>247	>100		
14		13	2.3	1.24	1.30	>1008	>817	>631	>442	>274	>107		
15		14	2.3	1.34	1.40	>1150	>932	>719	>504	>315	>140		
16		15	2.3	1.44	1.50	>1276	>1034	>792	>549	>336	>150		

Nb₃Sn wires (Bronze Route)

Number of filaments	Filament Diameter (μm)	Nominal Cu/non-Cu	Nominal Dimension(mm)		Critical Current(Amps @4.2K)	n value (12T,4.2K)	Hysteresis loss(mJ/cm @4.2K,±3T)	Insulation	RRR (273 K/20 K)
			Bare	Insulated	12T				
1	3.5	1.0	0.818	0.970	>180	>20	<350	S-glass	>150
	(NbTa filament, Nb barrier)								
2	2.8				>190				
	(NbTa filament, Ta barrier)								
3	13579	2.7	>210	<200					

		(Nb filament, Nb + Ta barrier)							
4	13579	2.8 (Nb filament, Nb barrier)				>200		<400	

Nb₃Sn wires (Internal Tin)

Number of filaments	Filament Diameter (μm)	Nominal Cu/non-Cu	Nominal Dimension(mm)		Critical Current(Amps @4.2K)	n value (12T, 4.2K)	Hysteresis loss(mJ/cm ³ @4.2K, ±3T)	Insulation	RRR (273K/20K)	
			Bare	Insulated	12T					
1	2888	6	1.0	1.818	0.970	>210	>20	<350	S-glasses	>150
2	2964	6		1.818	0.970	>240		<350		
3	3040	6		1.818	0.970	>220		<600		
4	3040	8		1.000	1.300	>360		<620		
5	3040	10		1.500	1.800	>810		<620		
6	5920	4		0.818	0.970	>260		<620		