
FCH1

Fe-Chrome Type 1

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Alloys : FCH1 (Fe-Chrome Type 1)

[JIS C 2520]

Good heat resistance and oxidation resistance, suitable for high temperature use. High temperature strength is small and ferromagnetic.

Workability is hard and cold workability is not good.

Workability can be improved by warm working (100-300°C).

JIS	JIS Code	Electrical Resistivity [$\mu\Omega\text{m}$]	Average TCR [$\times 10^{-6}/^{\circ}\text{C}$]
FCH1	C 2520	1.42 \pm 0.06	* -20
GNC142	C 2532		

Cuprous Electromotive Force Mv/K (0~100°C)	Thermal Expansion Coefficient $\times 10^{-6}/$	Specific Heat J/g·K (20°C)	Thermal Conductivity w/m·K	Density g/cm ³ (20°C)	Melting Point °C	Max Operating Temperature °C
-0.4	13.0	0.46	13	7.20	1520	1250

Chemical Composition	C	Si	Mn	Cr	Al	Fe
(%)	≤ 0.11	≤ 1.5	≤ 1.0	23~26	4~6	BAL

Resistance increase by temperature

°C	20	100	200	300	400	500	600	700	800	900	1000	1100	1200
Coefficient	1.000	1.005	1.009	1.013	1.018	1.021	1.027	1.037	1.043	1.047	1.048	1.049	1.049

Alloys	Type	Diameter (mm)	
FCHW1	Wire	$\phi 6.00 \sim 0.16$	
FCHR1	Ribbon	$t = 2.90 \sim 0.08$	$w = 40 \sim 0.4$ (Depends on thickness)

FCH1 (Fe-Chrome Type 1)

Resistance·Length·Weight

Wire

Electrical Resistivity (23°CμΩm) 1.42±0.06

Diameter (mm)	Tolerance (mm)	Cross section (mm ²)	Resistance Tolerance (%)	DC Resistance (Ω/m)	Length (m/Kg)	Weight (g/m)
6.00	±0.080	28.27	±5	0.0502	4.91	204
5.50	±0.063	23.76	±5	0.0598	5.85	171
5.00	±0.063	19.64	±5	0.0723	7.07	141
4.50	±0.063	15.90	±5	0.0893	8.73	115
4.00	±0.063	12.57	±5	0.113	11.1	90.5
3.50	±0.050	9.621	±5	0.148	14.4	69.3
3.20	±0.050	8.042	±5	0.177	17.3	57.9
2.90	±0.050	6.605	±5	0.215	21.0	47.6
2.60	±0.040	5.309	±5	0.267	26.2	38.2
2.30	±0.040	4.155	±5	0.342	33.4	29.9
2.00	±0.040	3.142	±5	0.452	44.2	22.6
1.80	±0.040	2.545	±5	0.558	54.6	18.3
1.60	±0.032	2.011	±5	0.706	69.1	14.5
1.50	±0.032	1.767	±5	0.804	78.6	12.7
1.40	±0.032	1.539	±5	0.922	90.2	11.1
1.30	±0.032	1.327	±5	1.07	105	9.56
1.20	±0.025	1.131	±5	1.26	123	8.14
1.10	±0.025	0.9503	±6	1.49	146	6.84
1.00	±0.025	0.7854	±6	1.81	177	5.65
0.90	±0.025	0.6362	±6	2.23	218	4.58
0.85	±0.025	0.5675	±6	2.50	245	4.09
0.80	±0.020	0.5027	±6	2.82	276	3.62
0.75	±0.020	0.4418	±6	3.21	314	3.18
0.70	±0.020	0.3848	±6	3.69	361	2.77
0.65	±0.020	0.3318	±6	4.28	419	2.39
0.60	±0.020	0.2827	±6	5.02	491	2.04
0.55	±0.016	0.2376	±7	5.98	585	1.71
0.50	±0.016	0.1964	±7	7.23	707	1.41
0.45	±0.016	0.1590	±7	8.93	873	1.15
0.40	±0.016	0.1257	±7	11.3	1105	0.905
0.35	±0.013	0.09621	±7	14.8	1444	0.693
0.32	±0.013	0.08042	±7	17.7	1727	0.579
0.29	±0.013	0.06605	±7	21.5	2103	0.476
0.26	±0.010	0.05309	±8	26.7	2616	0.382
0.23	±0.010	0.04155	±8	34.2	3343	0.299
0.20	±0.010	0.03142	±8	45.2	4421	0.226
0.18	±0.008	0.02545	±8	55.8	5458	0.183
0.16	±0.008	0.02011	±8	70.6	6908	0.145

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Temperature Current Characteristics · Diameter · Temperature · Current

Wire Electrical Resistivity (23°CμΩm) 1.42±0.06 [Unit: Ampere]

Diameter (mm)	200 (°C)	300 (°C)	400 (°C)	500 (°C)	600 (°C)	700 (°C)	800 (°C)	900 (°C)	1000 (°C)	1100 (°C)
6.00	42.6	59.3	74.5	90.4	112	133	160	190	220	247
5.50	37.2	52.4	73.7	79.8	98.8	118	144	167	194	220
5.00	32.7	44.8	57.0	68.4	85.1	103	125	144	167	190
4.50	27.4	38.0	48.6	58.5	71.4	87.4	106	122	144	163
4.00	23.6	31.9	41.0	49.4	60.8	71.4	85.9	101	121	137
3.50	19.0	25.8	33.4	40.3	50.2	59.3	73.0	85.9	98.8	114
3.20	16.7	22.8	29.6	35.0	43.3	51.7	63.1	74.5	86.6	98.8
2.90	14.3	19.8	25.8	30.4	37.2	44.8	54.7	63.8	74.5	84.4
2.60	11.8	16.7	21.3	25.8	31.9	38.0	47.1	54.7	63.1	70.7
2.30	10.0	13.8	18.2	22.0	26.6	31.9	39.5	45.6	52.4	60.0
2.00	8.36	11.4	15.2	18.2	22.0	26.6	31.2	37.2	42.6	48.6
1.80	7.37	10.0	13.1	16.0	19.0	22.8	25.1	31.9	36.5	41.8
1.60	6.23	8.59	11.4	13.3	16.0	19.8	23.6	26.6	31.2	35.0
1.50	5.78	7.90	10.3	12.2	14.8	17.5	21.3	24.3	28.1	31.9
1.40	5.32	7.22	9.50	11.1	13.7	16.0	19.8	22.0	25.8	29.6
1.30	4.86	6.61	8.59	10.1	12.3	14.4	17.5	19.8	22.8	26.6
1.20	4.48	5.93	7.98	8.97	10.6	12.2	15.2	17.5	20.5	23.6
1.10	3.95	5.32	6.84	8.21	9.88	11.7	13.8	16.0	18.2	20.5
1.00	3.57	4.64	6.08	7.14	8.74	10.3	11.8	13.3	15.2	17.5
0.90	3.12	4.18	5.40	6.23	7.60	8.97	10.6	12.2	13.8	16.0
0.85	2.96	3.88	5.02	5.85	7.07	8.21	9.73	11.2	12.9	14.7
0.80	2.66	3.57	4.64	5.32	6.46	7.60	8.97	10.3	11.8	13.3
0.75	2.51	3.27	4.26	4.94	5.93	6.84	8.13	9.42	10.6	12.2
0.70	2.28	2.96	3.88	4.48	5.40	6.31	7.37	8.36	9.80	11.2
0.65	2.13	2.74	3.57	4.10	4.94	5.70	6.61	7.60	8.82	10.0
0.60	1.90	2.43	3.19	3.65	4.41	5.17	5.93	6.84	7.83	9.12
0.55	1.75	2.20	2.89	3.27	3.95	4.56	5.32	6.08	6.99	7.98
0.50	1.52	1.98	2.58	2.89	3.50	4.03	4.79	5.40	6.23	6.99
0.45	1.37	1.75	2.20	2.51	3.04	3.50	3.95	4.48	5.09	5.78
0.40	1.14	1.44	1.90	2.20	2.58	2.96	3.42	3.95	4.48	5.09
0.35	0.958	1.22	1.60	1.90	2.20	2.51	2.81	3.27	3.65	4.18
0.32	0.859	1.10	1.41	1.67	1.98	2.20	2.58	2.96	3.34	3.72
0.29	0.760	0.988	1.25	1.44	1.75	1.98	2.28	2.58	2.89	3.27
0.26	0.669	0.859	1.10	1.29	1.52	1.75	1.98	2.20	2.51	2.81
0.23	0.578	0.760	0.950	1.10	1.29	1.44	1.67	1.90	2.13	2.43
0.20	0.486	0.638	0.798	0.920	1.08	1.24	1.41	1.60	1.82	1.98
0.18	0.426	0.562	0.699	0.806	0.950	1.08	1.23	1.41	1.52	1.75
0.16	0.372	0.486	0.600	0.692	0.806	0.935	1.06	1.22	1.36	1.50

(*)Reference value

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Conductor resistance

Ribbon

Electrical Resistivity (23°CμΩm) 1.42±0.06

[Unit: Ω/m]

Thickness (mm)	Width mm)														
	40.0	32.0	25.0	20.0	16.0	13.0	10.0	6.5	5.0	3.2	2.4	1.6	0.8	0.4	
2.90	0.0128	0.0159	0.0204	0.0255	0.0319	0.0392	0.0510	0.0785							
2.60	0.0142	0.0178	0.0228	0.0284	0.0356	0.0438	0.0569	0.0875							
2.30	0.0161	0.0201	0.0257	0.0322	0.0402	0.0495	0.0643	0.0989	0.129						
2.00	0.0185	0.0231	0.0296	0.0370	0.0462	0.0569	0.0740	0.114	0.148						
1.80	0.0205	0.0257	0.0329	0.0411	0.0514	0.0632	0.0822	0.126	0.164						
1.60	0.0231	0.0289	0.0370	0.0462	0.0578	0.0711	0.0924	0.142	0.185						
1.40	0.0264	0.0330	0.0423	0.0528	0.0660	0.0813	0.106	0.163	0.211						
1.20	0.0308	0.0385	0.0493	0.0616	0.0770	0.0948	0.123	0.190	0.247						
1.00	0.0370	0.0462	0.0592	0.0740	0.0924	0.114	0.148	0.228	0.296						
0.90		0.0514	0.0657	0.0822	0.103	0.126	0.164	0.253	0.329	0.514	0.685				
0.80		0.0578	0.0740	0.0924	0.116	0.142	0.185	0.284	0.370	0.578	0.770				
0.70			0.0845	0.106	0.132	0.163	0.211	0.325	0.423	0.660	0.880				
0.60			0.0986	0.123	0.154	0.190	0.247	0.379	0.493	0.770	1.03				
0.50			0.118	0.148	0.185	0.228	0.269	0.455	0.592	0.924	1.23				
0.45			0.131	0.164	0.205	0.253	0.329	0.506	0.657	1.03	1.37	2.05			
0.40					0.231	0.284	0.370	0.569	0.740	1.16	1.54	2.31			
0.35						0.352	0.423	0.650	0.854	1.32	1.76	2.64			
0.32						0.356	0.462	0.711	0.924	1.44	1.93	2.89			
0.29							0.510	0.785	1.02	1.59	2.13	3.19	6.38		
0.26							0.569	0.875	1.14	1.78	2.37	3.56	7.11	14.2	
0.23								0.989	1.29	2.01	2.68	4.02	8.04	16.1	
0.20								1.14	1.48	2.31	3.08	4.62	9.24	18.5	
0.18								1.26	1.64	2.57	3.42	5.14	10.3	20.5	
0.16										2.89	3.85	5.78	11.6	23.1	
0.14										3.30	4.40	6.60	13.2	26.4	
0.12											5.14	7.70	15.4	30.8	
0.10												9.24	18.5	37.0	
0.08													11.6	23.1	46.2

*Allowable tolerance of conductor resistance : Width 10mm or more ±7% , Width 10mm or less ±8%

Conductor Resistance Tolerance of Ribbon

Thickness [mm]	Width [mm]	Resistance Tolerance [%]
0.08above 3.15below	10below	±8
	10above	±7

*We can manufacture products other than the standard (size and tolerance), so please contact us.