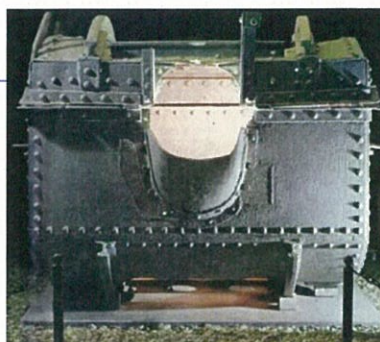


DAIDO's Strip Material



Daido Steel Co., Ltd
Stainless & High Alloy Material Div.

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Corporate Profile

▪ Founded	19 th August, 1916
▪ Head office	Urbannet Nagoya Building, 1-10, Higashisakura 1-chome, Higashi-ku, Nagoya, Aichi 461-8581, Japan
▪ President	Tadashi Shimao
▪ Common Stock	US\$ 453 millon
▪ Sales (2012)	Consolidated : US\$ 5,965 million
▪ No. of employees	Daido group :10,447 Daido Steel : 3,139
▪ Capacity	Approx. 1,700 thousand MT/Year
▪ Main plant	①Chita ②Hoshizaki ③Kawasaki ④Shibukawa ⑤Tsukiji

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Daido Facility Locations

Daido Confidential

- ① Chita Plant(Steel Plant, Die Forging Plant)
- ② Hoshizaki Plant, R&D Center.
- ③ Tsukiji Techno Center, Powder Metal Plant
- ④ Shibukawa Plant
- ⑤ Kawasaki Plant
- ⑥ Kimitsu Plant
- ⑦ Takiharu Techno Center
- ⑧ Ohji Plant
- ⑨ Nakatsugawa Techno Center



[3]

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DAIDO Group Company

Daido Confidential

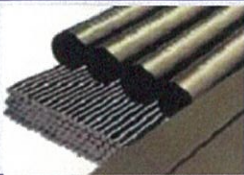
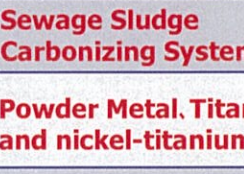
Segments	Affiliated Company
Specialty Steel	Daido Amistar Co., Ltd. Shimomura Tokushu Seiko Co., Ltd. Daido Matex Co., Ltd.
	Daido Shizai Service Co., Ltd. Daido EcoMet Co., Ltd. Daido Technica Co., Ltd.
	Nippon Seisen Co., Ltd. Tohoku Steel Co., Ltd. Riken Seiko Co., Ltd.
	Maruta Transport Co., Ltd. Sakurai Kosan Co., Ltd. Izumi Denki Kogyo Co., Ltd.
	Kawaichi Sangyo Co., Ltd.
	DAIDO PDM (THAILAND) CO., LTD. Daido TIEN WEN Steel Co., Ltd.
	Daido TIEN WEN (Guangzhou) Steel Co., Ltd. Daido Amistar (M) SDN. BHD.
Parts for Automobile & Industrial Equipment	Daido Amistar (S) PTE LTD. Daido Amistar (Viet.) Co., Ltd.
	Daido Castings Co., Ltd. Fuji OOZX Inc. Japan Drop Forge Co., Ltd. Toyo Sangyo Co., Ltd.
	Daido Star Techno CO., Ltd. Nissei Seiko Co., Ltd. Daido Precision Industries Ltd.
Electronics	OHIO STAR FORGE CO.
	Daido Electronics Co., Ltd. Daido-Special Metals Ltd. Daido Electronics (Thailand) Co., Ltd.
Engineering	Daido Machinery Co., Ltd. Daido Environment Engineering Co., Ltd.
	Daido Plant Industries Co., Ltd.
Trading & Service	Daido Kogyo Co., Ltd. Daido Life Service Co., Ltd. Kisokoma Heights Co., Ltd.
	Daido Bunseki Research Inc. Star InfoTech Co., Ltd. Life Support Co., Ltd.
	Daido Steel (America) Inc.

[OTHER]Daido Hospital* Daido Educational Institutions*

* Non-consolidated subsidiaries

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Business Segment

Specialty Steel			Exhaust Valves for Maritime Diesel Engines
Parts for Automobile & Industrial Equipment			Hot, High-speed Precision Forgings Titanium Aluminide Alloy Turbine Wheel Photovoltaic Power Generation
Electronics			Thin-film Deposition Electronic Materials NEOQUENCH-P (NdFeB Polymer-bonded Magnets)
Engineering			Sewage Sludge Carbonizing System Roller Hearth STC Furnace
New Materials			Powder Metal, Titanium products and nickel-titanium alloys Electric Arc Furnace
Trading & Service			

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《Strip Material》

Characteristic of DAIDO's Strip Material

◆ Lineup for Products → Small quantity & Many kinds

◀ Application ▶

Electronics
Automotive parts
Others



◀ Material ▶

High Nickel Alloy
Special Stainless Steel
Others

◆ Equipments

Melting ... Various Melting Equipment

1st melting [AF, VIM] & 2nd melting [VAR, ESR] etc.

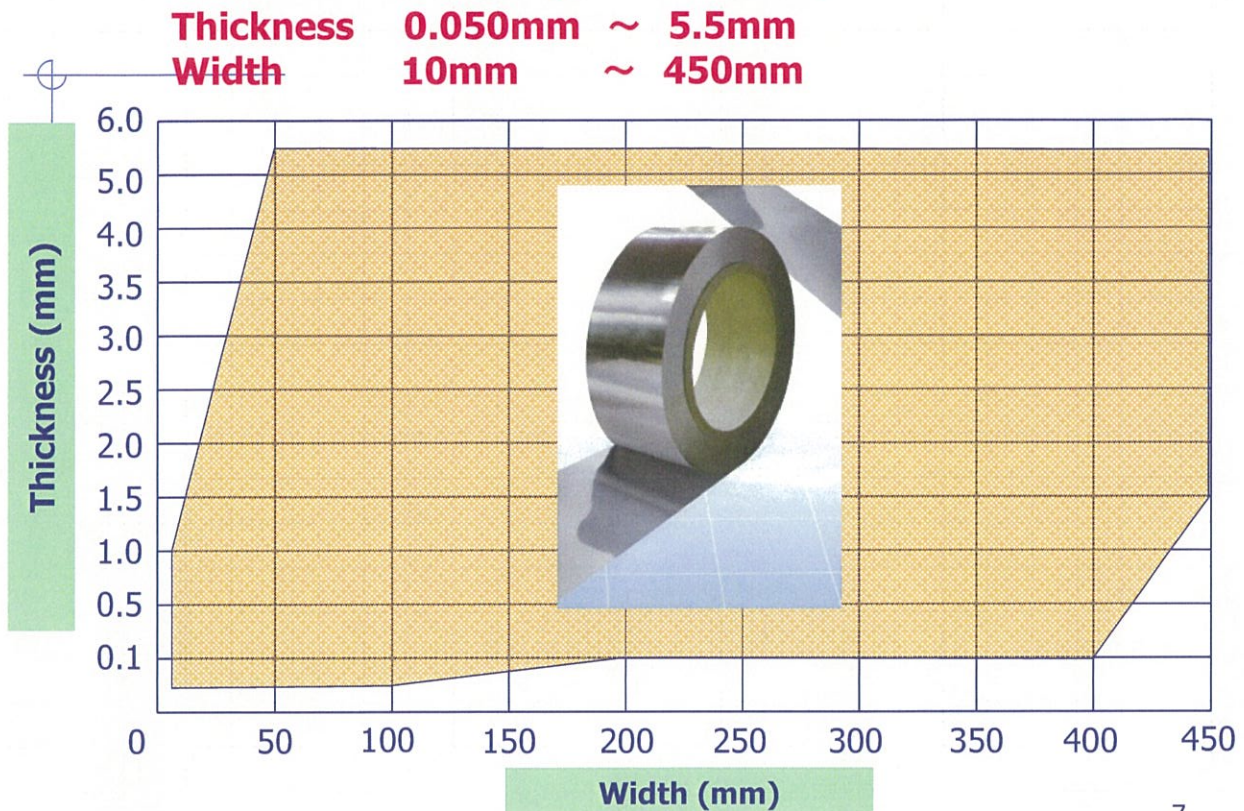
Hot Rolling, Cold Rolling and the others

◆ Technology

★ Integrated Manufacturing System (Melting → Hot Rolling → Cold Rolling)

★ Producing based on Customer Requirements

Available size range of strip



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Products Lineup (1)

Item	Alloy System	Alloy Name	Application
Sealing Alloy	Fe-Ni	Alloy42 (DF42N) Alloy52 (DF52N)	Quartz resonator
	Fe-Ni-Cr	42-6Alloy (DF42NR)	Fluorescent display
	Fe-Ni-Co	KOVAR (DF16CN)	Hermetic seal, DMD seal
Low thermal expansion Alloy	Fe-Ni	Alloy36 (MENPD)	Bimetal
Electrical Resistance Alloy	Ni-Cr	NCH-1 NCH-2	Electric furnace heating element, Resistance object
	Cu-Ni	CN49	Resistance object
Magnetic Alloy	Fe	SUYP	Relay, Motor core, Yoke
	Fe-Si	MES1	Trans, Motor core
	Electromagnetic SUS	MER1F	Electromagnetic valve core
	Fe-Ni (Permalloy)	MENPD MENPB MENPC1 MENPC2	Anti-magnetic sealed case, Anti-magnetic sealed room, Trans core, Watch parts
Corrosion Resistant Alloy	Ni-Cu	MONEL400	Chemical Plant
	Ni-Cr-Mo	DSALLOY C-276	Chemical Plant
		DSALLOY C-22	Bellows

Products Lineup (2)

Item	Alloy System	Alloy Name	Application
Stainless Steel	Ferrite	FCH2	Heater
	Martensite	DSR1K6	Edged tool
	Austenite	DSN6, DSN9	Gasket
	Ferrite-Austenite	DSD5	Welding Strip
	Precipitation hardening	DSP5(AM350) SUH660(A286)	Bellows Ring
Heat Resistant Alloy	Fe-Ni-Cr	INCOLOY800	Heater
	Fe-Ni-Cr-Mo-Ti	SUH660, DHN2661	Turbocharger parts
	Ni-Cr	INCONEL-601	Sensor
	Ni-Cr-Mo	INCONEL-625	Sensor
	Ni-Cr-Mo-Ti	INCONEL-718	Sensor, Turbocharger parts
	Ni-Cr-Ti	INCONEL-X750	Sensor
	Ni-Cr-Mo-Co-Ti	DSALLOY WA	Turbocharger parts
High-Strength Alloy	(Aging)	MAS1C	Spring, Face of golf head
Tool	Low alloy	YK50 SUBN11, SUBN15	Element for CVT Metal band saw
		SCM415, SK85	Bearing
Others	Ni	N-201	Battery terminal, CCFL backlight electrode

Products Lineup > Electrical resistance heating

◆ Chemical Composition :standard value)

Alloy Type (Name)	Alloy Name	Chemical composition (wt%)						
		C	Si	Mn	Ni	Cr	Fe	Other
Ni-Cr (1) NCH1	NCH1	≤0.15	1.0	≤2.5	≥77	20	≤1	-
Ni-Cr (2) NCH2	NCH2	≤0.15	1.0	≤1.5	60	17	Bal.	-
Cu-Ni (49) CN49	CN49	≤0.10	≤0.5	0.5- 2.5	42-48	-	Bal.	Cu+Ni+Mn ≥99.0

◆ Property

Alloy Type (Name)	Volume resistivity ($\mu \Omega \cdot m$)	Temperature coefficient of resistance [20- 200℃]	Life		JIS standard
			Method	Times	
Ni-Cr (1) NCH1	1.02 ~ 1.14	-	1 method 1200℃	≥500	C2520 NCHR1
Ni-Cr (2) NCH2	1.06 ~ 1.18	-	2 method 1200℃	≥300	C2520 NCHR2
Cu-Ni (49) CN49	0.46 ~ 0.52	< ±20 (X10-5/℃)	-	-	C2532 GCN49R

Products Lineup > Sealing Alloy

◆ Chemical Composition

Alloy System	Alloy Name (Name at Daido)	ASTM Standard	Chemical Composition (wt%)					Application
			Ni	Cr	Co	Fe	Ti	
Fe – Ni – Co	29-17Alloy (DF16CN)	ASTM- F-15	29	–	17	Bal.	–	Crystal oscillator
Fe – Ni – Cr	42-6Alloy (DF42NR)	ASTM- F-31	42	6	–	Bal.	–	Fluorescent display
Fe – Ni	52Alloy (DF52N)	ASTM- F-30	50.5	–	–	Bal.	–	Lead-flame
	42Alloy (DF42N)	ASTM- F-30	41	–	–	Bal.	–	Lead-frame Gun parts

◆ Thermal expansion coefficient

Alloy System	Alloy Name (Name at Daido)	ASTM Standard	Thermal expansion coefficient
Fe – Ni – Co	29-17Alloy (DF16CN)	ASTM-F-15	4.6–5.2 $\times 10^{-7}/^{\circ}\text{C}$ (30–400 $^{\circ}\text{C}$) 5.1–5.5 $\times 10^{-7}/^{\circ}\text{C}$ (30–450 $^{\circ}\text{C}$)
Fe – Ni – Cr	42-6Alloy (DF42NR)	ASTM-F-31	8.5–9.2 $\times 10^{-7}/^{\circ}\text{C}$ (30–350 $^{\circ}\text{C}$) 9.7–10.4 $\times 10^{-7}/^{\circ}\text{C}$ (30–425 $^{\circ}\text{C}$)
Fe – Ni	52Alloy (DF52N)	ASTM-F-30	9.7–10.2 $\times 10^{-7}/^{\circ}\text{C}$ (30–450 $^{\circ}\text{C}$) 10.0–10.5 $\times 10^{-7}/^{\circ}\text{C}$ (30–550 $^{\circ}\text{C}$)
	42Alloy (DF42N)	ASTM-F-30	4.0–4.7 $\times 10^{-7}/^{\circ}\text{C}$ (30–300 $^{\circ}\text{C}$) 6.7–7.4 $\times 10^{-7}/^{\circ}\text{C}$ (30–450 $^{\circ}\text{C}$)

Daido Steel Co., Ltd

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Thank you very much for your hearing.



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