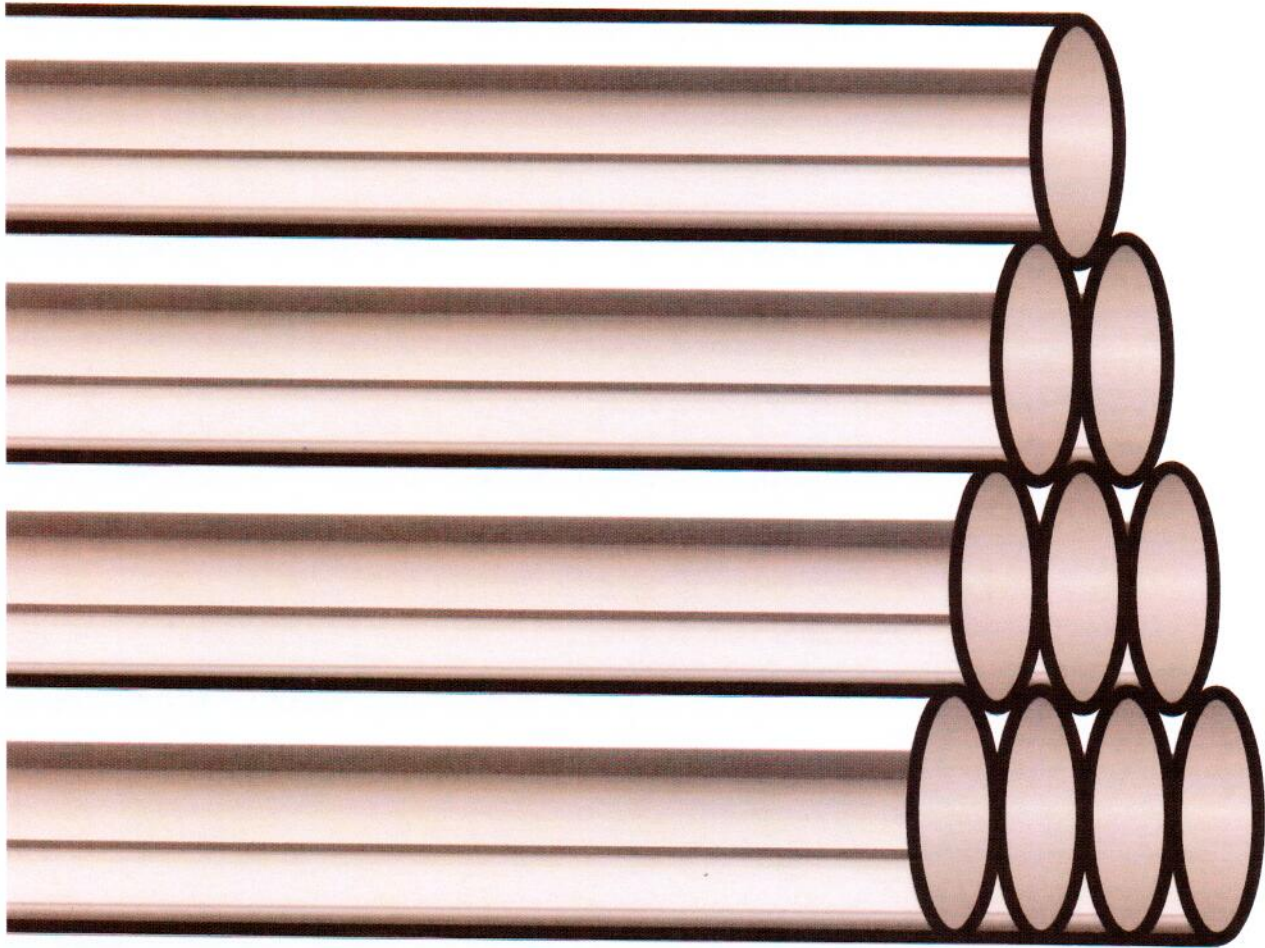




彰源企業股份有限公司
FROCH ENTERPRISE CO., LTD.



彰源不銹鋼管

FROCH TUBE & PIPE

- P3 簡 介 Profile
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全球不銹鋼管最大知名品牌
A Global Leading Brand and Manufacturer of Stainless Steel Tube & Pipe



經營理念：追求卓越 開創未來
Business Philosophy: Pursuing Excellence & Creating Future



董事長 張炳耀
CHAIRMAN P.Y. CHANG

團結 Unity

創新 Creativity

負責 Accountability

服務 Service



本公司專業製造之不銹鋼配管、不銹鋼機械構造用管、不銹鋼角鋼、不銹鋼扁平鋼及其他不銹鋼產品，均榮獲CNS正字標記、國家實驗室、ISO-9001品質管理及ISO-14001環境管理等認證。產品符合ASTM、CNS、EN、JIS等國家規格標準，廣泛使用於世界各地之煉油、石化、電力、造紙、釀酒、汽車，及電子科技、生化科技、環境工程等產業。多年來在董事長張炳耀先生及全體工作夥伴的共同努力下，投下鉅資，擴充設備，注重研究發展，完整品管及完善服務，因此奠定了卓越信譽。

FROCH, an ISO-9001 quality management and ISO-14001 environment management approved company, is in expertise of manufacturing stainless steel welded tube and pipe. Our products include tube, pipe, angle bar, flat bar, sheet, plate, and coil. All of the products are in conformity with ASTM, CNS, EN, or JIS standards. Further, our products are widely used in different industries, such as oil & gas, petrochemical, chemical, power utility, pulp & paper, food & beverage, automotive, furniture, construction, electronic, bio-tech and more. Under the leadership of our Chairman, Mr. P. Y. Chang, and the effort of everyone in FROCH, we constantly improve the quality of both our product and service by investing substantial amount of capital in research and development. We are confident that FROCH is always your reliable business partner.



- 1970 ● 創立。
- 1984 ● 於雲林縣斗六工業區購置工廠建地設立。
- 1985 ● 第一期廠房工程完成。
- 1987 ● 第二期廠房工程及檢驗室工程完成。
- 1988 ● 第三期倉庫廠房工程完成。
 - 榮獲經濟部標準檢驗局核定為甲種品管工廠，取得六種不銹鋼管之正字標記。
- 1989 ● 裝設大型電腦，全公司進入電腦化作業。
- 1990 ● 第四期廠房工程完成，並進行流程改善，增購機械設備。
 - 成立總經理室，全面推動公司制度化管。
 - 購置斗六二廠預定地。
- 1991 ● 交通銀行參與本公司自動化設備改善投資案，擴大產能。
 - 經證期局核准為股票公開發行公司。
- 1993 ● 英國勞氏驗船協會評鑑為ISO-9001品管制度合格廠商。
- 1994 ● 購置員林廠預定地。
- 1996 ● 經濟部標準檢驗局評鑑為ISO-9001品管制度合格廠商。
 - 斗六二廠廠房工程完成，成立鋼板裁剪中心。
- 1998 ● 大口徑不銹鋼管生產設備完成。
 - 經證期局核准為股票上市公司。
- 1999 ● 英國勞氏驗船協會評鑑為ISO-14001環境管理合格廠商。
 - 員林廠廠房工程完成。
- 2001 ● 第五期廠房工程完成，並進行企業流程改造，增購自動化設備。
 - 中國大陸蘇州廠廠房工程完成。
 - 品保實驗室榮獲國家實驗室認證(CNLA)。
 - 於中國大陸設置各處行銷據點。
- 2004 ● 彰源公司英文名稱改為FROCH，進一步擴展國際化行銷。
 - 於台灣購置擴廠預定地，總面積達到289,000平方公尺。
- 2005 ● 斗六三廠廠房工程完成。
 - 取得8大驗船協會認證。
- 2006 ● 產能達到100,000噸。
- 2007 ● 中國大陸無錫廠廠房工程完成。
 - 取得德國TUV/AD2000證書。
- 2009 ● 取得日本工業規格JIS認證。

誠摯感謝所有客戶的支持與勉勵，彰源至今已發展成為佔地32萬平方公尺，年產能20萬噸的專業不銹鋼廠，我們將本著『追求卓越、開創未來』的經營理念，不懈地努力打拼，也請您持續對我們支持與勉勵，再次感謝您。

We sincerely appreciate the patronage that all our customers have been giving to us. Froch is now a professional Stainless Steel mill with the land size of approximately 320,000 square meters and the annual production capacity of 200,000 metric tons. We will keep working hard to meet our business philosophy of "Pursuing Excellence, Creating Future", In the meantime, please continue your patronage to us. Thank you again.



- 1970 ● Starting of business in Chang-Hua, Taiwan.
- 1984 ● The plant land inside Tou-Liu Industrial District Yun-Lin, the location of current headquarters, was purchased.
- 1985 ● Phase 1 building was completed.
- 1987 ● Phase 2 building and Quality Inspection Room was completed.
- 1988 ● Phase 3 building for warehouse was completed.
 - Froch was entitled as Class A Factory for Quality Control and received CNS certification mark® for six kinds of stainless steel products from Bureau of Standards, Metrology, and Inspection, Ministry of Economic Affairs.
- 1989 ● Mainframe computer was installed, and the execution of MIS began.
- 1990 ● Phase 4 building was completed, and Froch began to improve the layout of production process and to renew production facilities.
 - President's Office was set up to execute systematic management.
 - Tou-Liu 2nd Plant's land was purchased for expansion.
- 1991 ● Chiao Tung Bank (formerly known as Bank of Communications) joined and invested in Froch for automation of production equipment to increase production capacity.
 - Froch was approved to be a Qualified Corporation for public listing by Securities and Futures Bureau, Financial Supervisory Commission.
- 1993 ● Froch was accredited with ISO-9001 by Lloyd's Register Quality Assurance.
- 1994 ● Yuan-Lin Plant's land was purchased for expansion.
- 1996 ● Froch was accredited with ISO-9001 by Bureau of Standards, Metrology, and Inspection, Ministry of Economic Affairs.
 - Tou-Liu 2nd Plant building for coil center was completed.
- 1998 ● Large diameter pipe production facility was completed.
 - Froch was approved by Securities and Futures Bureau to be listed on Taiwan Stock Exchange (1st Class Listed Company).
- 1999 ● Froch was accredited with ISO-14001 by Lloyd's Register Quality Assurance.
 - Yuan-Lin Plant building was completed.
- 2001 ● Phase 5 building was completed, and corporate reengineering together with the procurement of automatic equipment was completed.
 - Plant Suzhou building in China was completed.
 - Quality Assurance Laboratory was approved by International Laboratory Accreditation Cooperation (ILAC).
 - Several sales branches in China were set up.
- 2004 ● Land for future expansion was purchased, and the total plant area in Taiwan reached 289,000m².
- 2005 ● Tou-Liu 3rd Plant building was completed.
 - Froch was accredited with top eight international ship building approvals.
- 2006 ● The capacity of Taiwan mill has reached 100,000 tpy.
- 2007 ● Plant Wuxi building in China was completed.
 - Froch was accredited with AD2000 by TUV.
- 2009 ● Froch was accredited with JIS by Japan Quality Assurance Organization.



玉山 海拔：3,952公尺

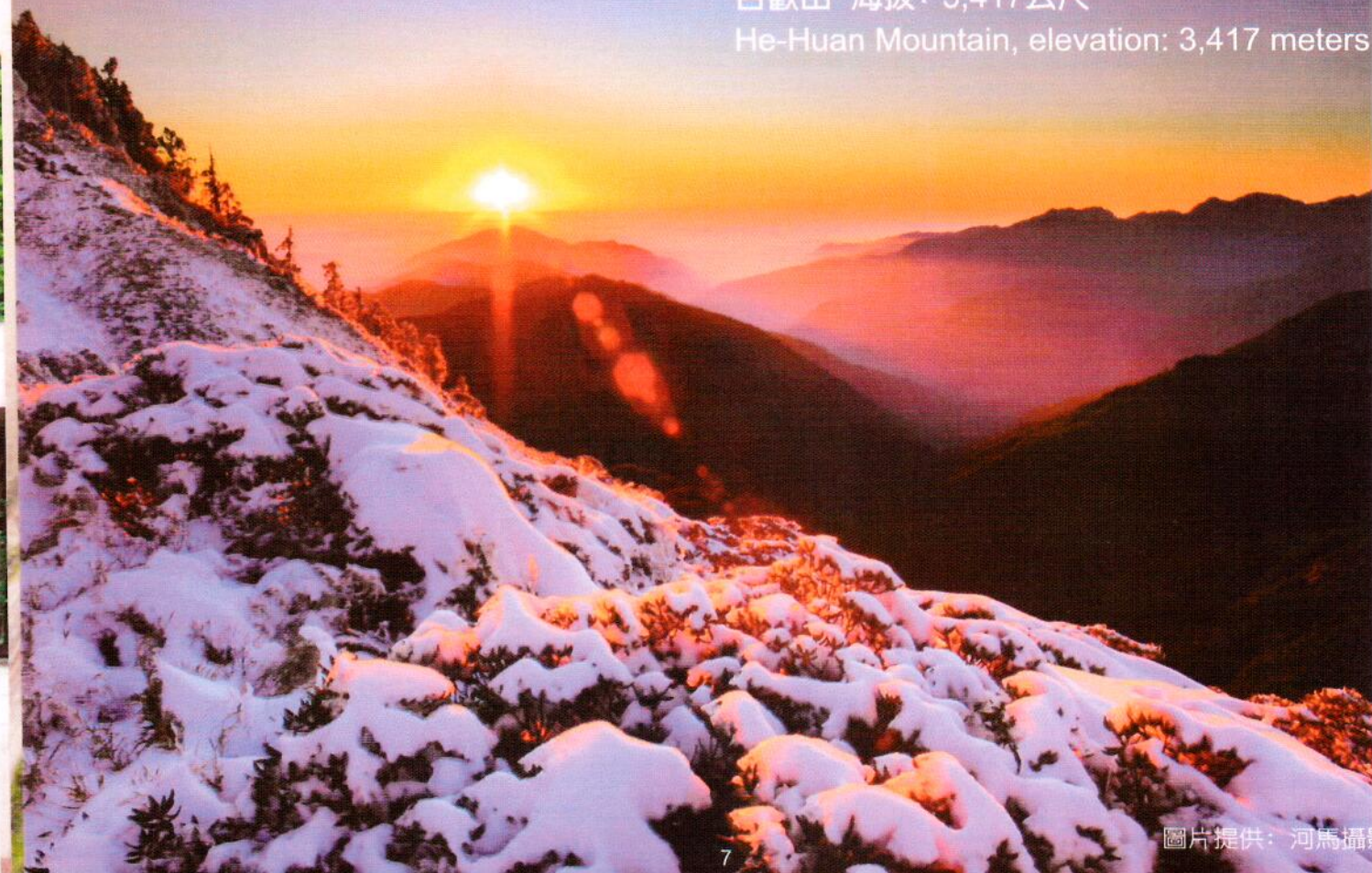
Jade Mountain, elevation: 3,952 meters



圖片提供：河馬攝影

合歡山 海拔：3,417公尺

He-Huan Mountain, elevation: 3,417 meters



圖片提供：河馬攝影



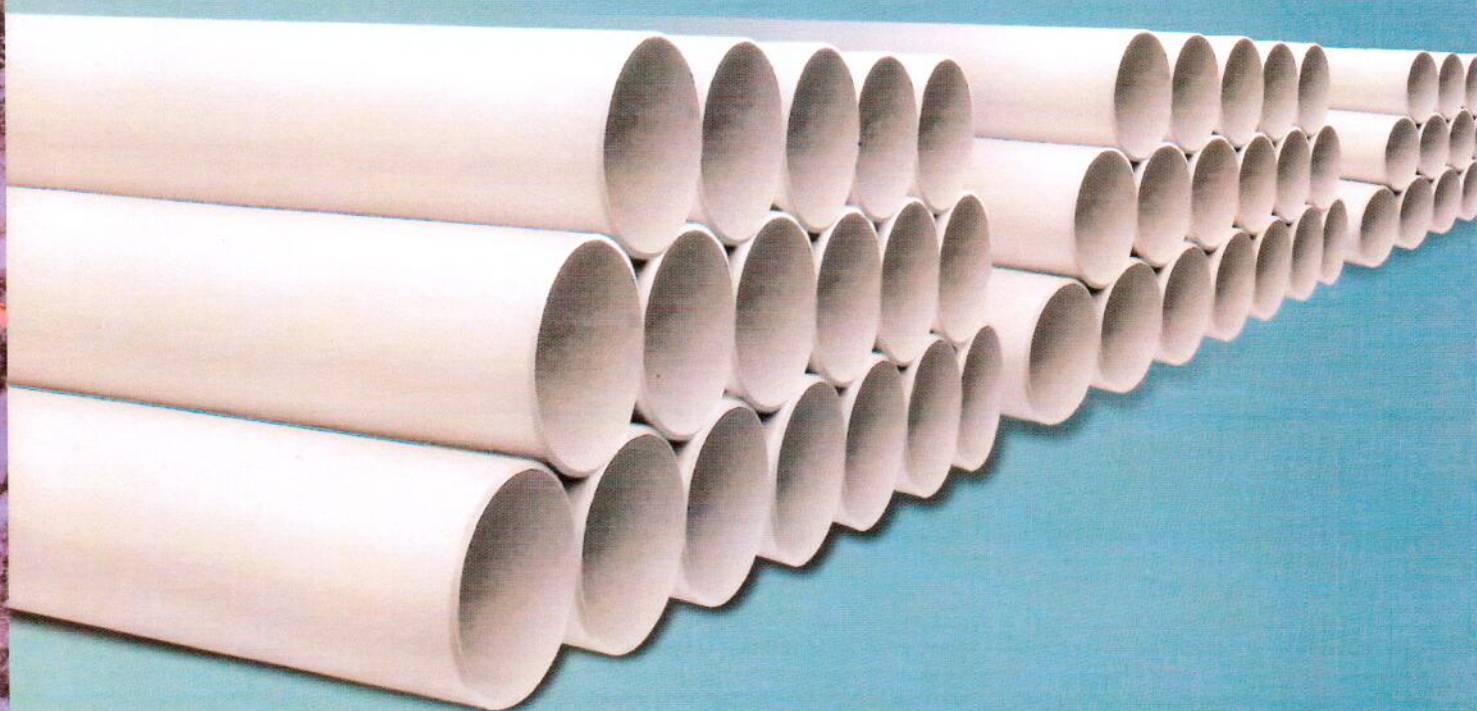
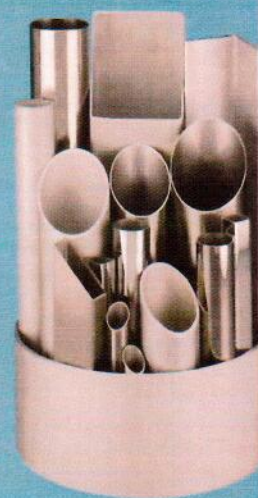
太魯閣
Taroko

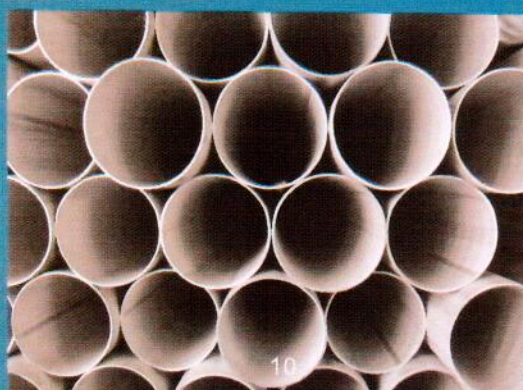
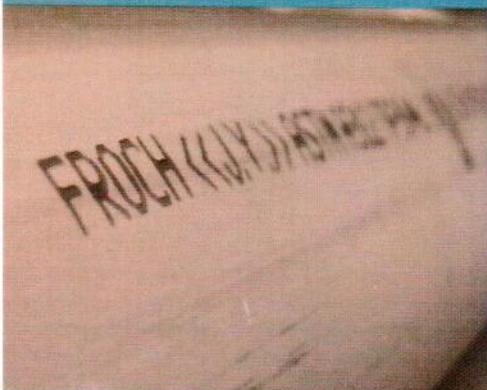
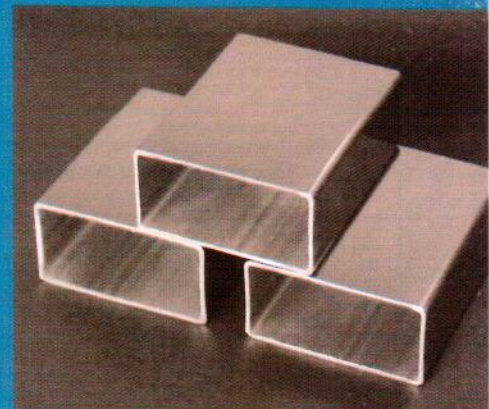
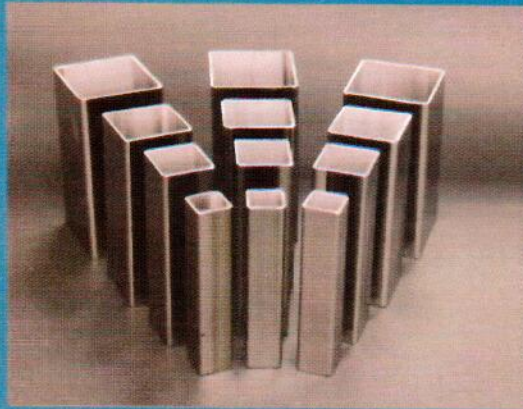
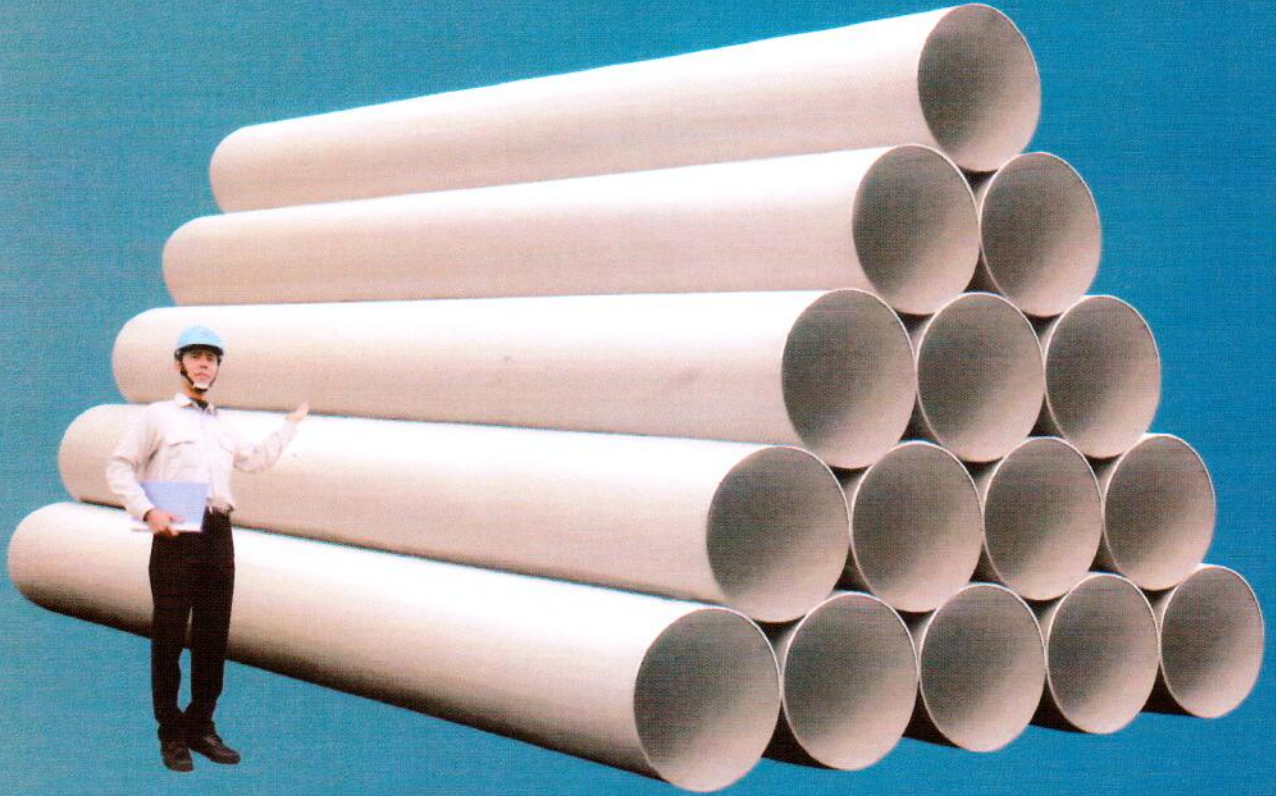
圖片提供: 手札圖庫

本公司提供鋼種最齊全、尺寸最完整之高品質不銹鋼管、鋼板、鋼捲等產品，滿足客戶「一次購足」的需求。

To satisfy customers' need for "one-stop-shop", we provide the most complete range of grades and sizes for high quality tube, pipe, sheet, plate, and coil.

- 工業配管用不銹鋼管
- 大口徑配管用不銹鋼管
- 機械結構用不銹鋼管
- 不銹鋼方管、長方管
- 鍋爐用及熱交換器用不銹鋼管
- 一般配管用不銹鋼管 (壓接管)
- 不銹鋼衛生鋼管
- 內部拋光配管用不銹鋼管
- 被覆不銹鋼管
- 等邊不銹鋼角鋼
- 不銹鋼板、捲
- Stainless steel pipe
- Stainless steel large diameter pipe
- Stainless steel mechanical tube
- Stainless steel square and rectangular tube
- Stainless steel tube for boiler and heat-exchanger
- Stainless steel light gauge tube for general service
- Stainless steel sanitary tube
- Stainless steel inside polished pipe
- Stainless steel coated pipe
- Stainless steel equal leg angle bar
- Stainless steel sheet, plate, and coil





不銹鋼管在現代的社會中早已是和人類生活息息相關，不可或缺的民生用品。舉凡所有的建築、水電、瓦斯、運輸工具與遍佈於各地的輸油管路和各項工業的儲槽管路，都與不銹鋼管緊密相連。本公司生產最優良的產品，來服務各行各業。

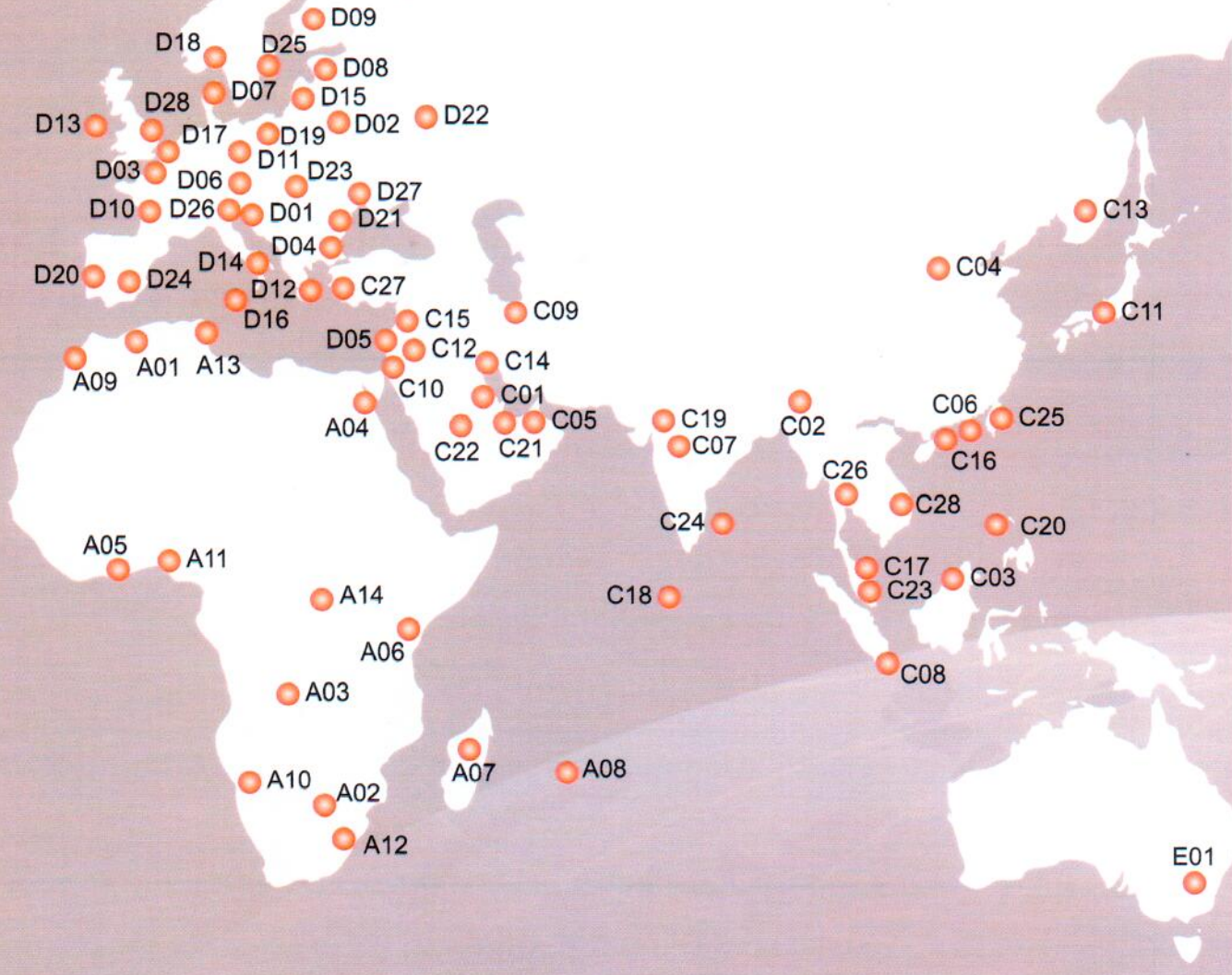
Stainless steel pipe is necessary to be used in everywhere in our modern life. In applications for construction, plumbing, household hydro & gas, oil pipeline, process pipe line, storage tank pipeline, and automotive industry, stainless steel pipe is the best choice. We produce the highest quality products to satisfy the needs of all industries.



我們為工業與環境
We Provide Industry and



提供更美好的未來
Environment a Better Future



非洲 Africa

- A01 阿爾及利亞 Algeria
- A02 波札那 Botswana
- A03 剛果 Congo
- A04 埃及 Egypt
- A05 迦納 Ghana
- A06 肯亞 Kenya
- A07 馬達加斯加 Madagascar
- A08 模里西斯 Mauritius
- A09 摩洛哥 Morocco
- A10 納米比亞 Namibia
- A11 奈及利亞 Nigeria
- A12 南非 South Africa
- A13 突尼西亞 Tunisia
- A14 烏干達 Uganda

美洲 North & South America

- B01 阿根廷 Argentina
- B02 貝里斯 Belize
- B03 玻利維亞 Bolivia
- B04 巴西 Brazil
- B05 加拿大 Canada
- B06 智利 Chile
- B07 哥倫比亞 Colombia
- B08 哥斯大黎加 Costa Rica
- B09 古巴 Cuba
- B10 多明尼加 Dominican Rep.
- B11 厄瓜多 Ecuador
- B12 薩爾瓦多 El Salvador
- B13 瓜地馬拉 Guatemala
- B14 蓋亞那 Guyana
- B15 宏都拉斯 Honduras
- B16 牙買加 Jamaica
- B17 墨西哥 Mexico
- B18 尼加拉瓜 Nicaragua
- B19 巴拿馬 Panama
- B20 巴拉圭 Paraguay
- B21 秘魯 Peru
- B22 波多黎各 Puerto Rico
- B23 蘇利南 Suriname
- B24 美國 United States
- B25 烏拉圭 Uruguay
- B26 委內瑞拉 Venezuela

亞洲 Asia

- C01 巴林 Bahrain
- C02 孟加拉 Bangladesh
- C03 汶萊 Brunei
- C04 中國大陸 China
- C05 阿聯 Emirates
- C06 香港 Hong Kor
- C07 印度 India
- C08 印尼 Indonesia
- C09 伊朗 Iran
- C10 以色列 Israel
- C11 日本 Japan
- C12 約旦 Jordan
- C13 韓國 Korea
- C14 科威特 Kuwait



C15	黎巴嫩	Lebanon
C16	澳門	Macao
C17	馬來西亞	Malaysia
C18	馬爾地夫	Maldives
C19	巴基斯坦	Pakistan
C20	菲律賓	Philippines
C21	卡達	Qatar
C22	沙烏地阿拉伯	Saudi
C23	新加坡	Singapore
C24	斯里蘭卡	Sri Lanka
C25	台灣	Taiwan
C26	泰國	Thailand
C27	土耳其	Turkey
C28	越南	Vietnam

歐洲 Europe

D01	奧地利	Austria
D02	白俄羅斯	Belarus
D03	比利時	Belgium
D04	保加利亞	Bulgaria
D05	賽普勒斯	Cyprus
D06	捷克	Czech
D07	丹麥	Denmark
D08	愛沙尼亞	Estonia
D09	芬蘭	Finland
D10	法國	France
D11	德國	Germany
D12	希臘	Greece
D13	愛爾蘭	Ireland
D14	義大利	Italy

D15	立陶宛	Lithuania
D16	馬爾他	Malta
D17	荷蘭	Netherlands
D18	挪威	Norway
D19	波蘭	Poland
D20	葡萄牙	Portugal
D21	羅馬尼亞	Romania
D22	俄羅斯	Russia
D23	斯洛伐克	Slovakia
D24	西班牙	Spain
D25	瑞典	Sweden
D26	瑞士	Switzerland
D27	烏克蘭	Ukraine
D28	英國	United Kingdom

大洋洲 Oceania

E01	澳大利亞	Australia
E02	斐濟	Fiji
E03	紐西蘭	New Zealand

帝雉

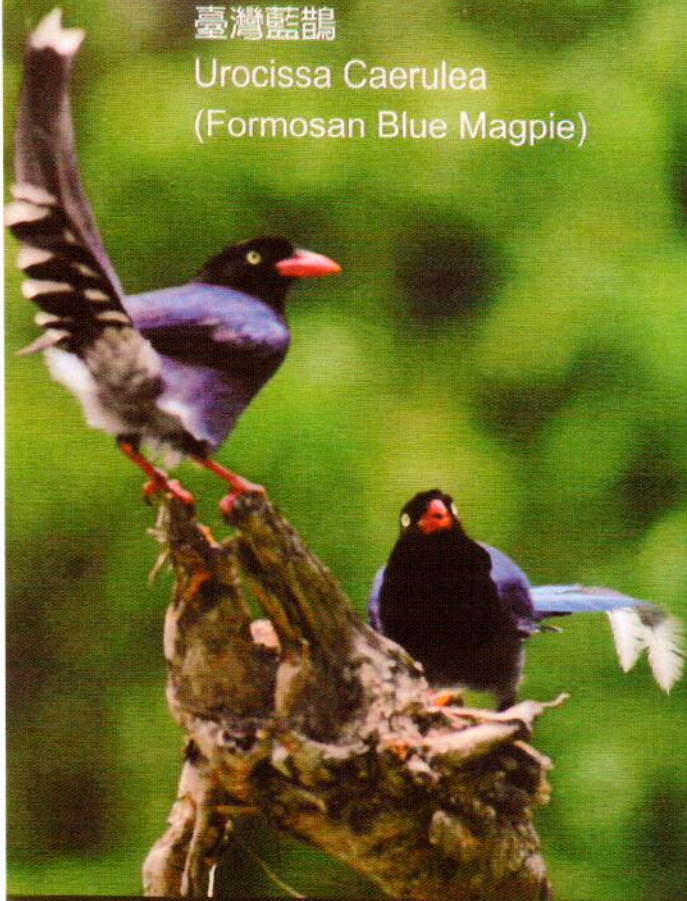
Syrmaticus Mikado
(Mikado Pheasant)



圖片提供：上河文化股份有限公司

臺灣藍鵲

Urocissa Caerulea
(Formosan Blue Magpie)



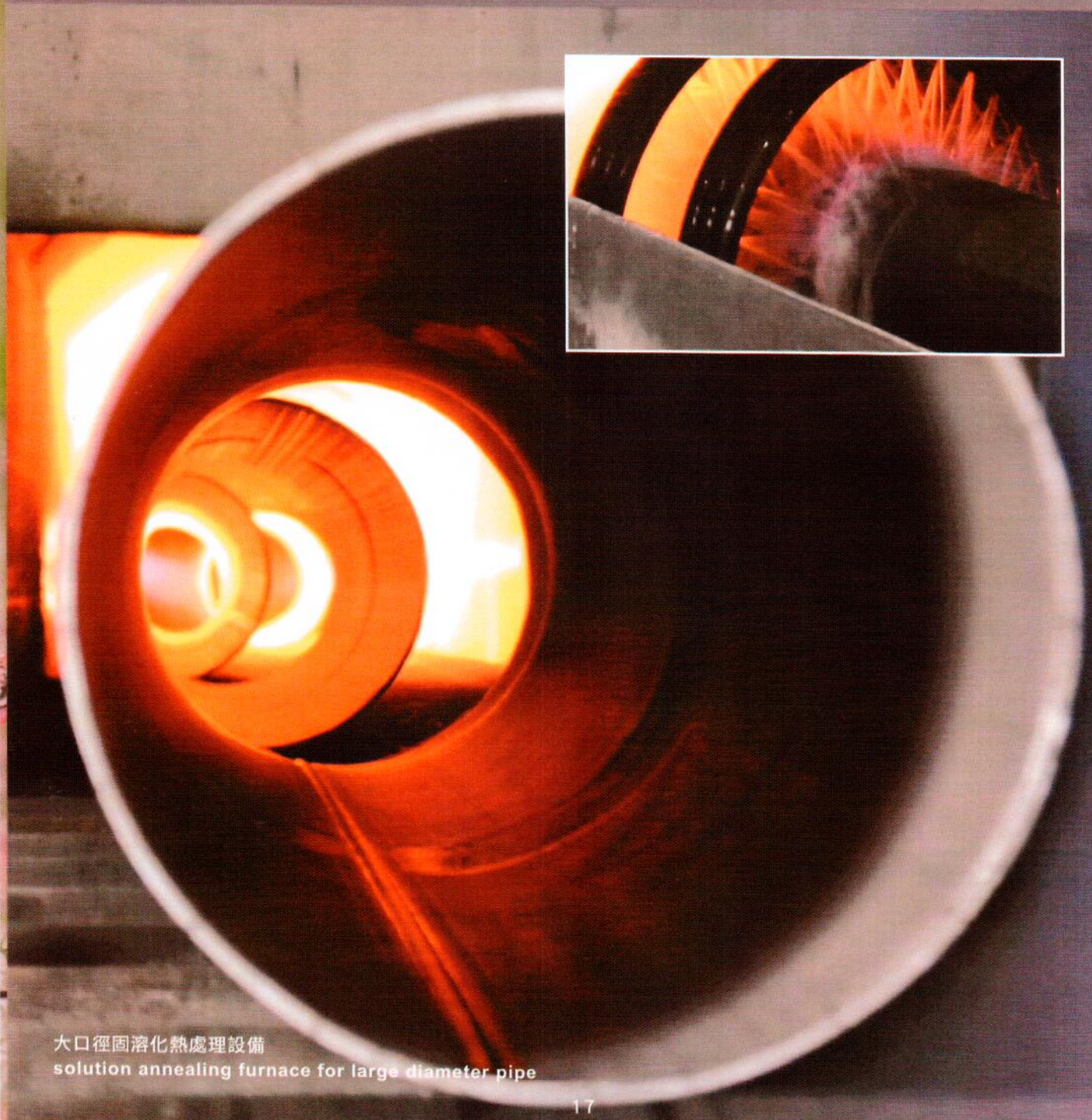
圖片提供: 許鴻彬



圖片提供: 手札圖庫

為呈現最優良的產品，本公司採用最先進的機械設備、最新穎的製造技術、最齊全的生產線。加上工作人員熟練的技術及豐富的經驗，使「彰源不銹鋼管」成為業界的楷模。

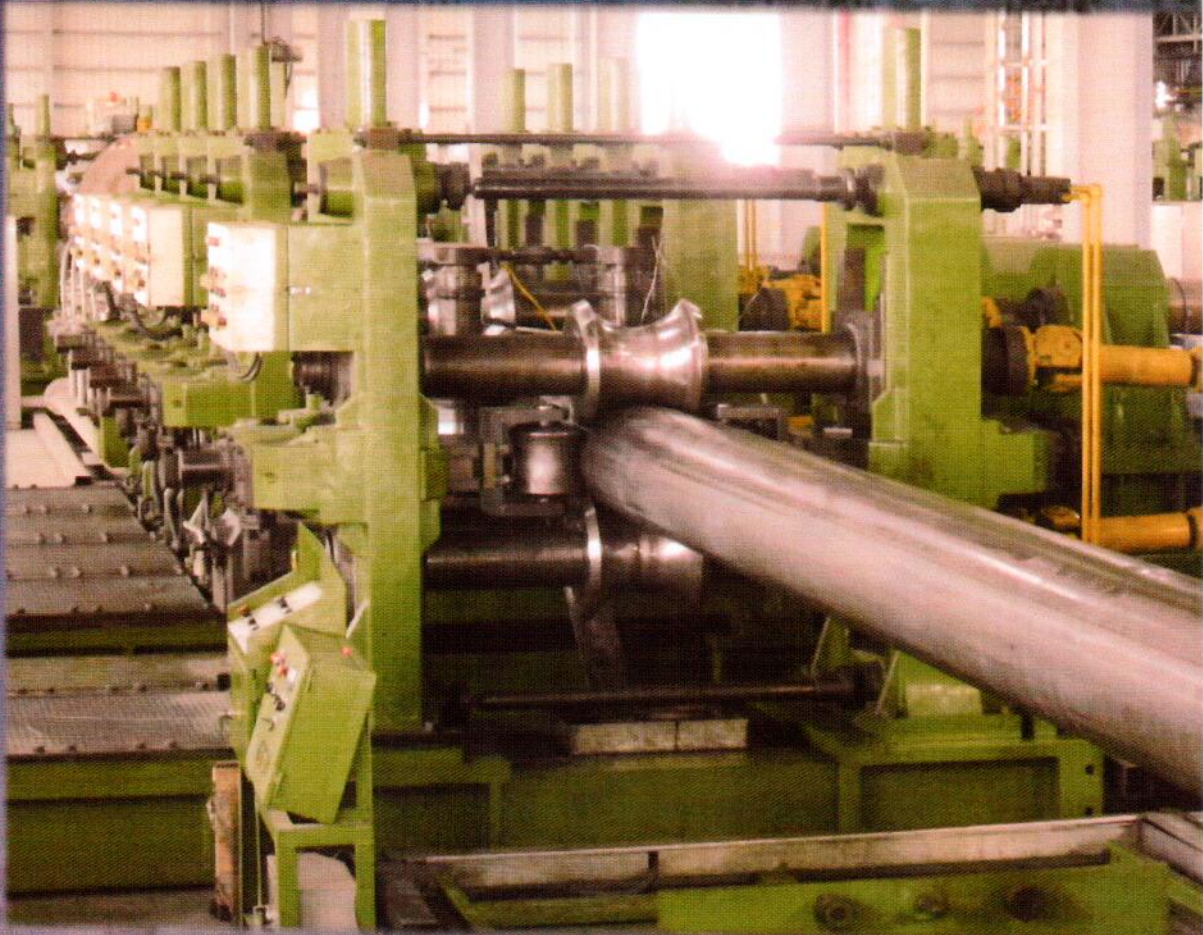
In order to produce the best product, we always use the most advanced equipment, the most up-to-date production technology, and the most complete range of production lines. Furthermore, our technicians and operators are in expertise to assure the reliable performances of both our equipment and product to make "Froch Tube & Pipe" become the leader of the industry.



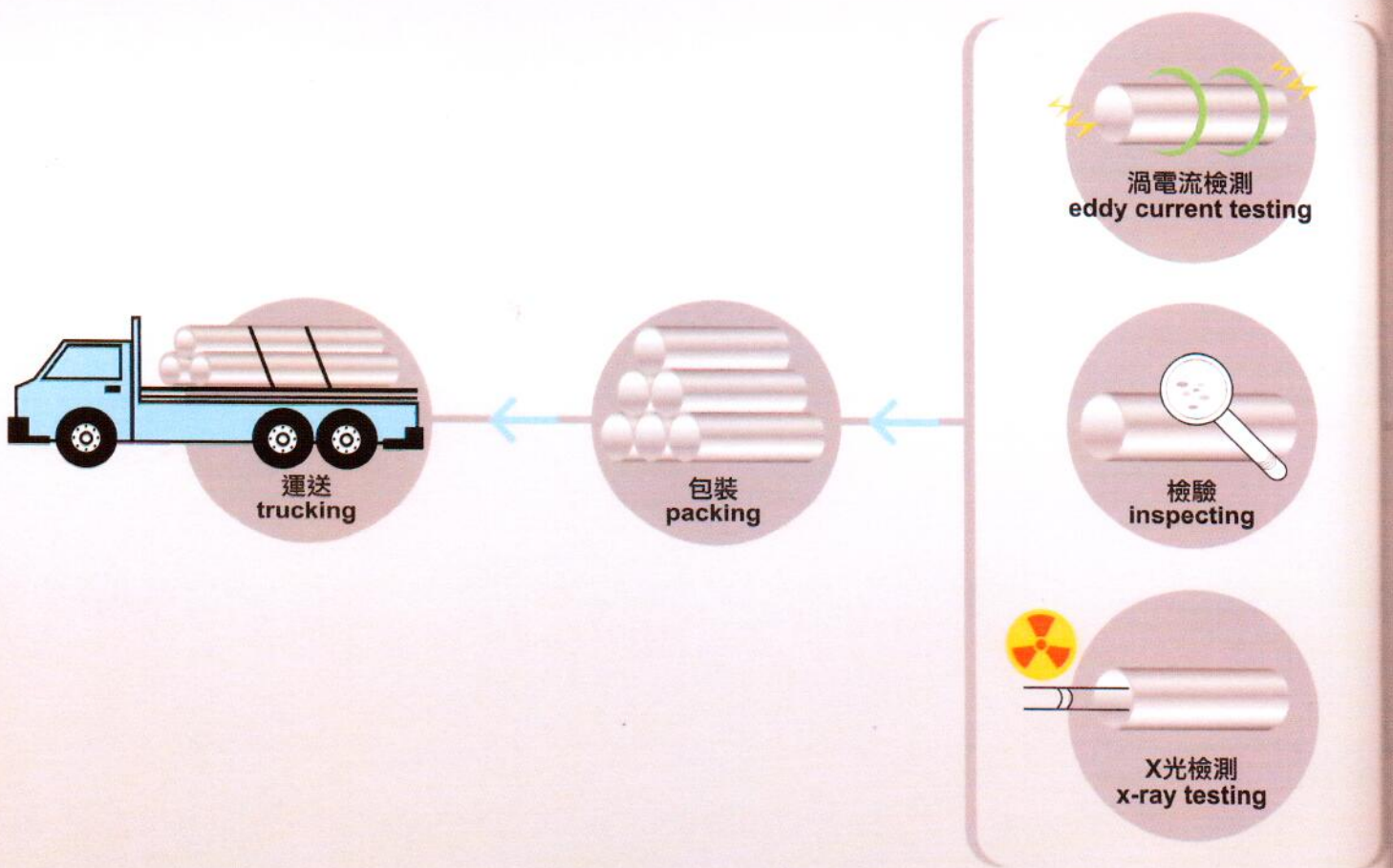
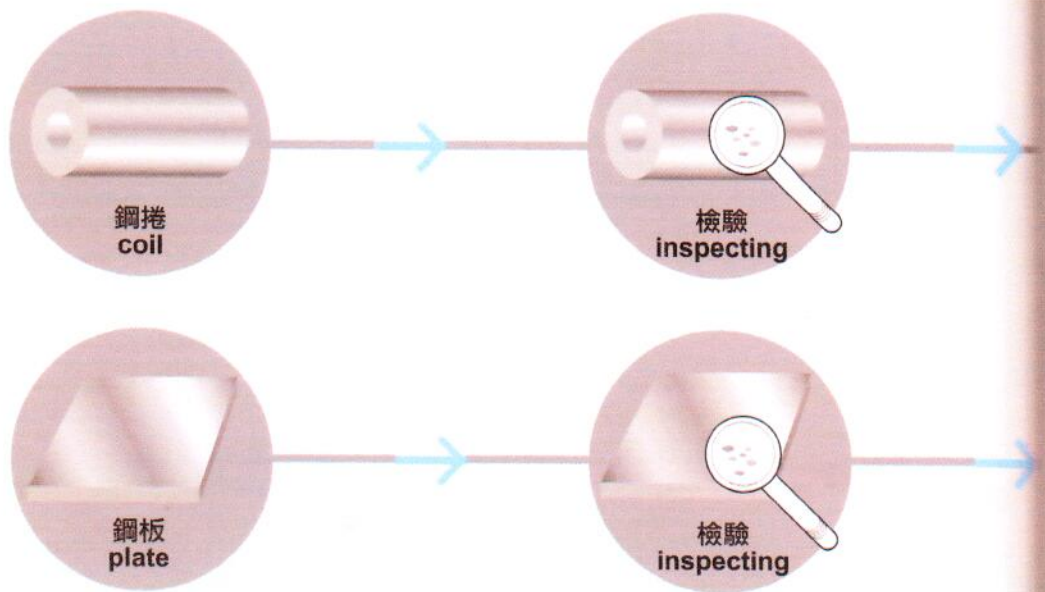
大口徑固溶化熱處理設備
solution annealing furnace for large diameter pipe



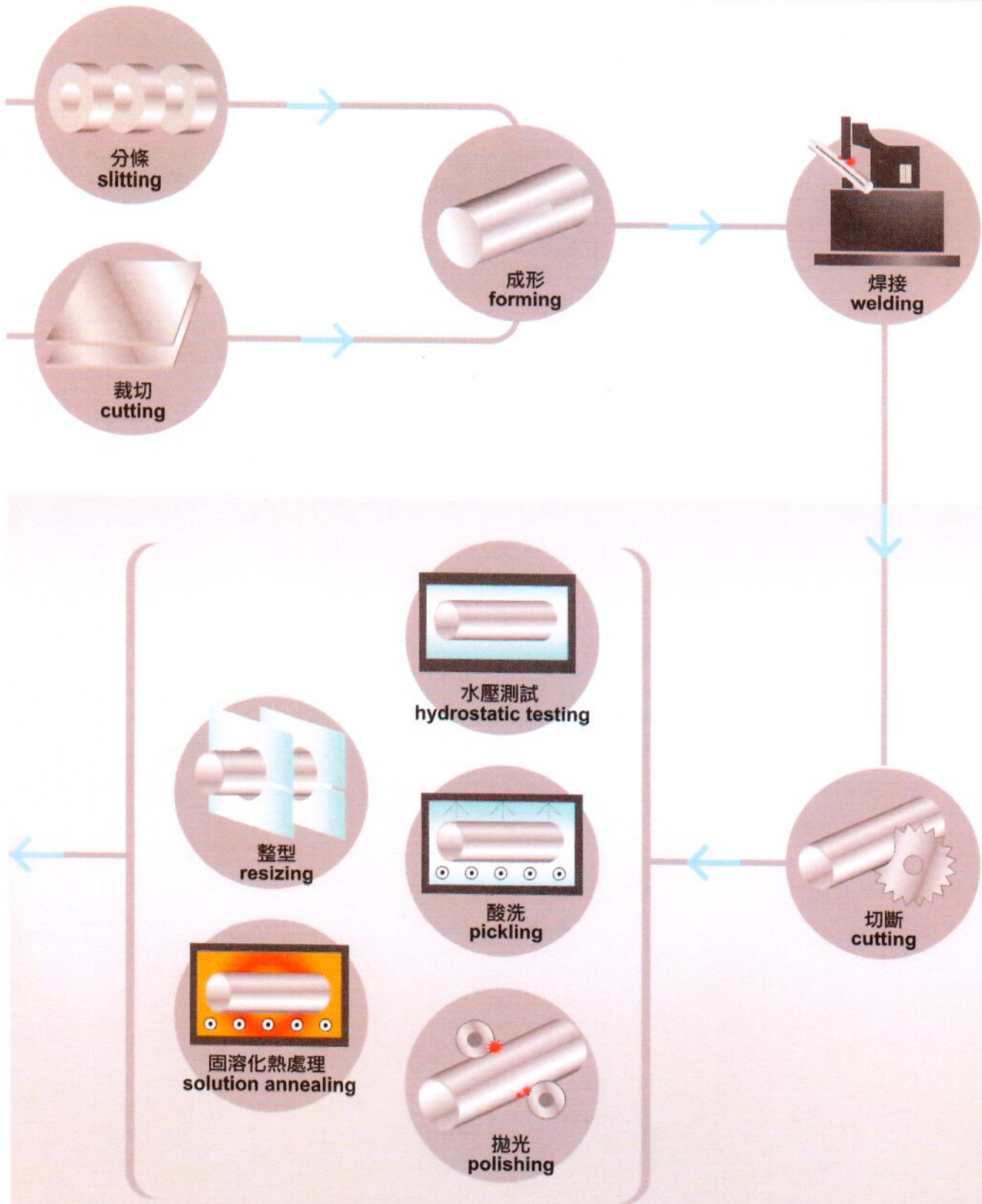
20-inch 製管機
20-inch pipe mill



20-inch 製管機
20-inch pipe mill



依合約執



subject to sales contract

在品質管制方面，本公司有豐富的製管專業，先進的科學檢驗儀器，及榮獲國內外相關檢驗機構的肯定。在嚴格的品管制度下，確保製造出優良的產品，讓使用者安心與信賴。

For quality assurance, we have substantial production experiences, advanced scientific inspection facilities, and honorable accreditations from both domestic and international inspection institutions. Under our solid quality system, we have the ability to check and assure the quality of both raw material and finished product. We always keep ourselves within the direction to produce reliable product for our customer.



即時放射檢驗儀
real time x-ray tester





移動式分光儀
portable spectrometer (PMI)



渦電流設備
eddy current tester



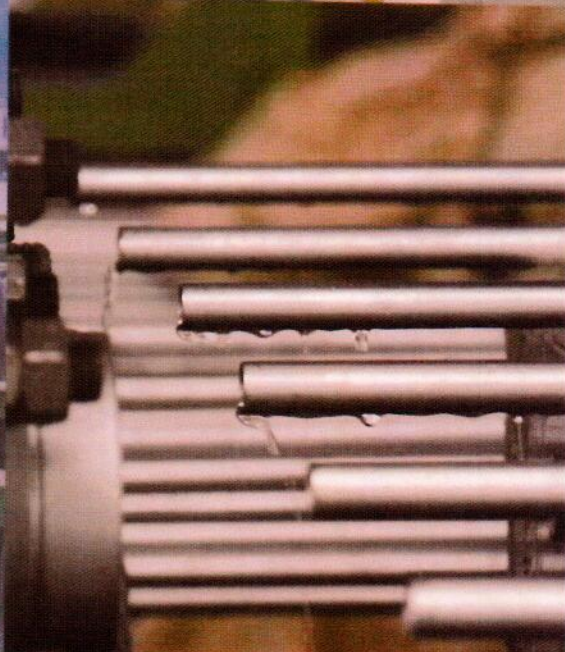
金相組織顯微鏡
metallurgical microscope



萬能實驗機
universal tensile tester

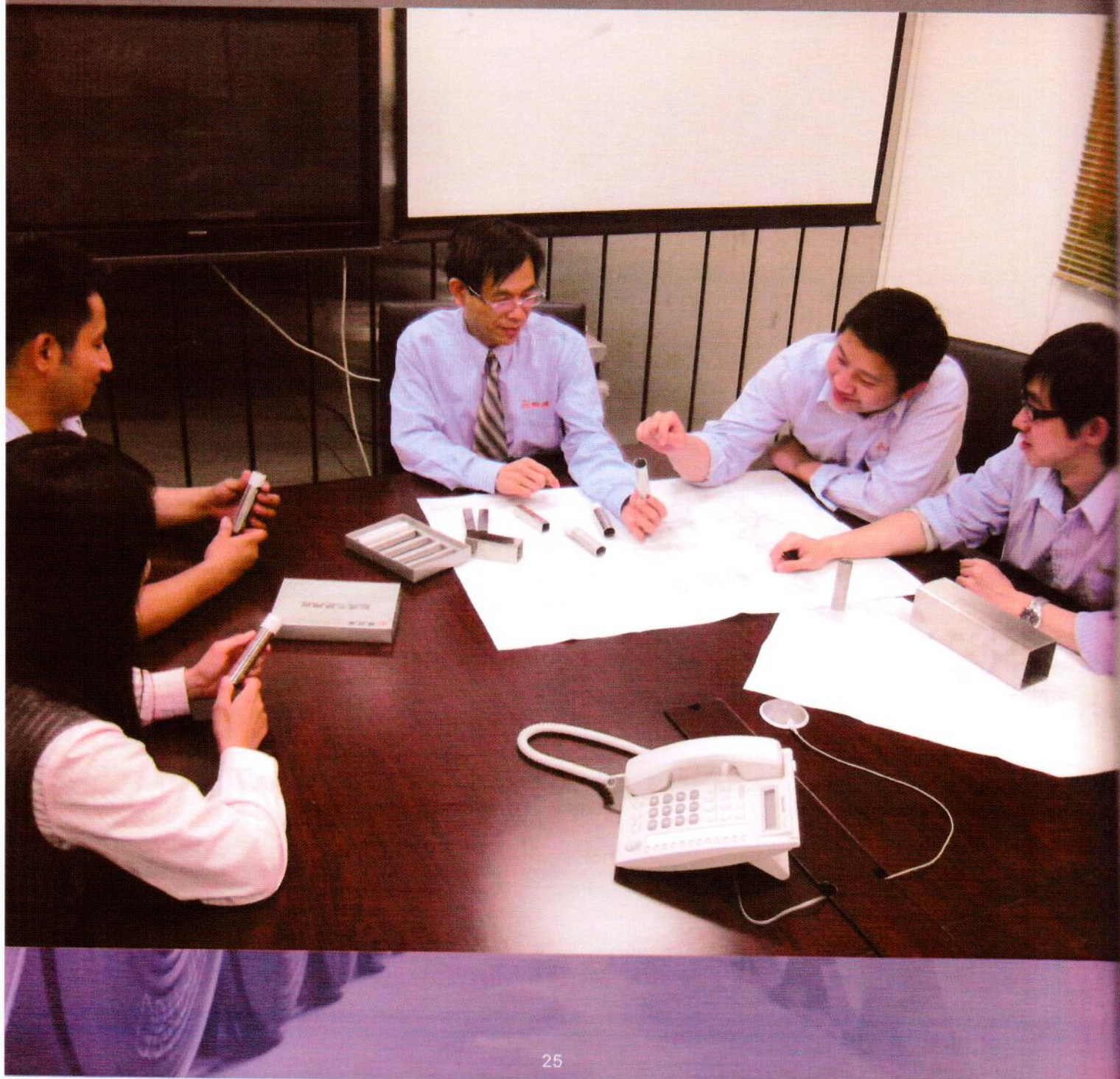


水壓試驗機
hydrostatic tester



本公司與其他不銹鋼管製造商最大的差異，就是對於產品持續追求卓越的精神。持續改善是我們的工作重點，以配合客戶全方位的成長為目標，並促使我們提高整體技術層次。我們一直秉持這個信念，讓本公司產品在同業中創造了領先的地位。

Pursuing excellence constantly is what makes us different from other manufacturers. Continuous improving and production techniques upgrading have always been the main focus for us. We want to learn and grow with the customers. We believe that following the lead of the customers will make our products placed in leading position among others in the world.



為拓展全球化視野，本公司積極參與各個國際性不銹鋼展覽，拓展全球市場。另在各種管理技術不斷革新中，加強內部管理水準，我們投下鉅資進行電腦化、自動化，延聘專業人才，加強員工各項福利措施，以提升管理品質。

For developing global vision, we actively participate in various international stainless steel exhibitions to expand global services. In addition, for improving the quality of internal management, we input substantial capital for both hardware and software. In hardware, office computerization and automation are necessary to increase the efficiency for the process flow; in software, applying cutting-edge management technologies and advices from experts in numerous fields are helping us to find effective and revolutionary methods for the coming competition. Other than the above, we provide pleasant working environment and exceptional welfare for all participants within the family of Froch.



工業配管用不銹鋼管 Stainless Steel Pipe

• ASTM A778 • ASTM A312 • ASTM A358

稱呼外徑 outside diameter		thickness 厚度 外徑 mm	SCH 5S	SCH 10S	SCH 40S	SCH 80S
N B	NPS	mm	mm	mm	mm	mm
8	1/4"	13.72		1.65	2.24	3.02
10	3/8"	17.15		1.65	2.31	3.20
15	1/2"	21.34	1.65	2.11	2.77	3.73
20	3/4"	26.67	1.65	2.11	2.87	3.91
25	1"	33.40	1.65	2.77	3.38	4.55
32	1 1/4"	42.16	1.65	2.77	3.56	4.85
40	1 1/2"	48.26	1.65	2.77	3.68	5.08
50	2"	60.33	1.65	2.77	3.91	5.54
65	2 1/2"	73.03	2.11	3.05	5.16	7.01
80	3"	88.90	2.11	3.05	5.49	7.62
90	3 1/2"	101.60	2.11	3.05	5.74	8.08
100	4"	114.30	2.11	3.05	6.02	8.56
125	5"	141.30	2.77	3.40	6.55	9.52
150	6"	168.28	2.77	3.40	7.11	10.97
200	8"	219.08	2.77	3.76	8.18	12.70
250	10"	273.05	3.40	4.19	9.27	12.70
300	12"	323.85	3.96	4.57	9.52	12.70

• CNS 6331 G3124 • JIS G3459

稱呼外徑 outside diameter		thickness 厚度 外徑 mm	SCH 5S	SCH 10S	SCH 20S	SCH 40S	SCH 80
(A)	(B)	mm	mm	mm	mm	mm	mm
8	1/4"	13.8	1.2	1.65	2.0	2.2	3.0
10	3/8"	17.3	1.2	1.65	2.0	2.3	3.2
15	1/2"	★21.7	1.65	2.1	2.5	2.8	3.7
20	3/4"	★27.2	1.65	2.1	2.5	2.9	3.9
25	1"	★34.0	1.65	2.8	3.0	3.4	4.5
32	1 1/4"	42.7	1.65	2.8	3.0	3.6	4.9
40	1 1/2"	48.6	1.65	2.8	3.0	3.7	5.1
50	2"	60.5	1.65	2.8	3.5	3.9	5.5
65	2 1/2"	76.3	2.1	3.0	3.5	5.2	7.0
80	3"	89.1	2.1	3.0	4.0	5.5	7.6
90	3 1/2"	101.6	2.1	3.0	4.0	5.7	8.1
100	4"	114.3	2.1	3.0	4.0	6.0	8.6
125	5"	139.8	2.8	3.4	5.0	6.6	9.5
150	6"	165.2	2.8	3.4	5.0	7.1	11.0
200	8"	216.3	2.8	4.0	6.5	8.2	12.7
250	10"	267.4	3.4	4.0	6.5	9.3	15.1
300	12"	318.5	4.0	4.5	6.5	10.3	17.4

用途: 石化、造紙、釀酒、瓦斯、蒸汽、自來水、污水處理、下水道工程.....等。

Application: Chemical plant, petro-chemical plant, pulp & paper mill, food & beverage plant, oil & gas refinery, water transport system, power plant, etc.

★國內建築、水電用配管: 外徑1/2"為20.0mm, 厚度2.0~2.5mm; 外徑3/4"為26.0mm, 厚度2.0~2.5mm; 外徑1"為33.0mm, 厚度2.0~3.0mm。

• 公差 Tolerance

• ASTM A778 • ASTM A312 • CNS 6331 G3124 • JIS G3459

項目 規格 specification	外徑 outside diameter								厚度 wall thickness		真直度 straightness	長度 length
ASTM	外徑 O.D. (mm)	≤48.26	48.26 ↓	114.3 ↓	219.08 ↓	457.2 ↓	660.4 ↓	863.6 ↓	+22.5%	-12.5%	6.4mm/6M	+50mm -0mm
	公差 tolerance (mm)	+0.4 -0.8	+0.8 -0.8	+1.6 -0.8	+2.4 -0.8	+3.2 -0.8	+4.0 -0.8	+4.8 -0.8				
CNS JIS	外徑 O.D.	<30mm			≥30mm			厚度 W.T.	<2mm	≥2mm	—	不可低於指定長度 ≥ defined length
	公差 tolerance	±0.30mm			±1%			公差 tolerance	±0.2mm	±10%		

大口徑配管用不銹鋼管 Large Diameter Stainless Steel Pipe

• ASTM A778 • ASTM A312 • ASTM A358 • ASTM A409

• CNS 13517 G3259 • JIS G3468

稱呼外徑 outside diameter		thickness 厚度 外徑 mm	SCH 5S	SCH 10S	SCH 40	SCH 5S	SCH 10S	SCH 20S	SCH 40S
(A)	(B)		mm	mm	mm	mm	mm	mm	mm
350	14	355.6	3.96	4.78	11.13	4.0	5.0	8.0	11.1
400	16	406.4	4.19	4.78	12.70	4.5	5.0	8.0	12.7
450	18	457.2	4.19	4.78	14.27	4.5	5.0	8.0	14.3
500	20	508.0	4.78	5.54	15.09	5.0	5.5	9.5	15.1
550	22	558.8	4.78	5.54	-	5.0	5.5	9.5	15.9
600	24	609.6	5.54	6.35	17.48	5.5	6.5	9.5	17.5
650	26	660.4	-	-	-	5.5	8.0	12.7	17.5
700	28	711.2	-	-	-	5.5	8.0	12.7	17.5
750	30	762.0	6.35	7.92	-	6.5	8.0	12.7	17.5
800	32	812.8			17.48		8.0	12.7	17.5
850	34	863.6			17.48		8.0	12.7	17.5
900	36	914.4			19.05		8.0	12.7	19.1
1000	40	1016.0			-		9.5	14.3	26.2

用途: 石化、造紙、釀酒、瓦斯、蒸汽、自來水、污水處理、下水道工程.....等。

Application: Chemical plant, petro-chemical plant, pulp & paper mill, food & beverage plant, oil & gas refinery, water transport system, power plant, etc.

• 本公司可製造規格如下表，其他規格歡迎訂購。(外徑最高可訂製至84")

• We are able to offer the sizes shown in the table below. Other sizes are also available up to request. (up to 84")

外徑 outside diameter	thickness 厚度 mm	6.0	8.0	9.0	10.0	12.0	13.0	14.0	15.0	16.0	17.0 ~ 30.0
		inch									
42											
44											
46											
48											
50											
52											
54											
56											
58											
60											
62 up											

用途: 石化、造紙、釀酒、瓦斯、蒸汽、自來水、污水處理、下水道工程、鑿井、焚化爐.....等。

Application: Chemical plant, petro-chemical plant, pulp & paper mill, food & beverage plant, oil & gas refinery, water transport system, power plant, welling, etc.

鍋爐用及熱交換器用不銹鋼管 Stainless Steel Tube for Boiler and Heat-Exchanger

• ASTM A249 • ASTM A269 • CNS 7383 G3142 • JIS G3463

外徑 outside diameter mm	thickness 厚度 mm	1.6	2.0	2.3	2.6	2.9	3.2	3.5	4.0	4.5	5.0
	15.9										
19.0											
21.7											
25.4											
27.2											
31.8											
34.0											
38.1											
42.7											
48.6											
50.8											
60.3											
63.5											
76.2											
88.9											
101.6											
114.3											
139.8											

• 公差 Tolerance

• ASTM A249 • ASTM A269 • CNS 7383 G3142 • JIS G3463

規格 specification	項目 item	外徑 outside diameter		厚度 wall thickness			長度 length
		範圍 range	公差 tolerance				
ASTM		12.7 ~ 38.1mm	±0.13mm	±10%			+50mm -0mm
		38.1 ~ 88.9mm	±0.25mm				
		88.9 ~ 139.8mm	±0.38mm				
CNS JIS		≤ 60mm	±0.25mm	外徑 O.D.	厚度 W.T.	公差 tolerance	不可低於指定長度 ≥ defined length
		60 ~ 80mm	±0.30mm	<40mm	<2mm	+0.4mm -0mm	
		80 ~ 100mm	±0.40mm	<40mm	≥2mm	+20% -0mm	
		100 ~ 120mm	+0.40mm -0.60mm	≥40mm	—	+22% -0mm	
		120 ~ 160mm	+0.40mm -0.80mm				

機器結構用不銹鋼管 Stainless Steel Mechanical Tube

• ASTM A554 • CNS 5802 G3119 • JIS G3446

外徑 outside diameter mm	thickness 厚度 mm	0.7	0.8	0.9	1.0	1.2	1.5	2.0	3.0	4.5	6.5
	mm										
12.7											
15.9											
19.0											
22.2											
25.4											
28.6											
31.8											
38.1											
41.3											
44.4											
50.8											
63.5											
76.2											
88.9											
101.6											
114.3											

用途: 傢俱、裝潢、汽車、機車、腳踏車、排氣管、欄杆、桌椅、帳棚.....等。

Application: furniture, auto-parts, motorcycle parts, bicycle, exhaust system, rail, chair, desk, tent, etc.

• 公差 Tolerance

• ASTM A554 • CNS 5802 G3119 • JIS G3446

規格 specification	項目 item	外徑 outside diameter		厚度 wall thickness	真直度 straightness	長度 length
		範圍 range	公差 tolerance			
ASTM	< 12.7mm		±0.10mm	±10%	5.07mm/6M	+50mm -0mm
	12.7 ~ 25.4mm		±0.13mm			
	25.4 ~ 38.1mm		±0.20mm			
	38.1 ~ 50.8mm		±0.25mm			
	50.8 ~ 63.5mm		±0.30mm			
	63.5 ~ 88.9mm		±0.36mm			
	88.9 ~ 127.0mm		±0.51mm			
CNS JIS	<50mm		±0.5mm	<4mm +0.6mm -0.5mm	—	不可低於指定長度 ≥ defined length
	≥50mm		±1%	≥4mm +15.0% -12.5%		

方管、長方管 Stainless Steel Square and Rectangular Tube

• ASTM A554 • CNS 5802 G3119

邊長 side length mm	thickness 厚度 mm	0.7	0.8	0.9	1.0	1.2	1.5	2.0	3.0	4.5	6.5
	mm										
12.7 x 12.7											
15.9 x 15.9											
18.0 x 18.0											
19.0 x 19.0											
20.0 x 20.0											
25.4 x 25.4											
30.0 x 30.0											
31.8 x 31.8											
38.1 x 38.1											
40.0 x 40.0											
44.4 x 44.4											
50.8 x 50.8											
60.0 x 60.0											
63.5 x 63.5											
70.0 x 70.0											
76.2 x 76.2											
80.0 x 80.0											
90.0 x 90.0											
100.0 x 100.0											
101.6 x 101.6											

用途: 門窗、裝潢、輸送軌道、置物架、大門.....等。 Application: window, decoration, rail, stand, gate, etc.

• 公差 Tolerance

• ASTM A554 • CNS 5802 G3119

項目 規格 specification	邊長 side length		厚度 wall thickness		圓弧角 radii of corners		真直度 straightness	平坦度 flatness		長度 length
	範圍 range	公差 tolerance	範圍 range	公差 tolerance	厚度 W.T.	公差 tolerance		邊長 side length	公差 tolerance	
ASTM	最長邊之邊長 x 0.006 length of longest side x 0.006		±10%		0.51~1.24mm	2.4 mm	12.6mm/6M	<31.8mm 31.8~63.5mm ≥63.5mm	±0.38mm ±0.51mm ±0.76mm	+50mm -0mm
					1.24~1.65mm	3.2 mm				
					1.65~2.11mm	3.6 mm				
					2.11~2.42mm	4.8 mm				
					2.42~2.77mm	5.2 mm				
					2.77~3.40mm	5.6 mm				
					3.40~3.96mm	6.4 mm				
CNS JIS	<50mm	±0.5mm	<4mm	+0.6mm -0.5mm	-	-	-	-	不可低於指定長度 ≥ defined length	
	≥50mm	±1%	≥4mm	+15.0% -12.5%						

• ASTM A554 • CNS 5802 G3119

邊長 side length mm	厚度 thickness mm	0.9	1.0	1.2	1.5	2.0	3.0	4.5	6.5
13 x 26									
15 x 30									
19.0 x 38.1									
20 x 40									
25 x 50									
25.4 x 38.1									
25.4 x 50.8									
25.4 x 76.2									
30 x 60									
40 x 80									
45 x 75									
45 x 95									
50 x 100									
50.8 x 76.2									
50.8 x 101.6									

用途: 門窗、裝潢、輸送軌道、置物架、大門.....等。 Application: window, decoration, rail, stand, gate, etc.

一般配管用不銹鋼管 (壓接管) Stainless Steel Light Gauge Tube for General Service

• CNS 13392 G3258 • JIS G3448

稱呼外徑 outside diameter	外徑 O.D. (mm)	厚度 wall thickness (mm)	外徑公差 O.D. tolerance (mm)	厚度公差 W.T. tolerance (mm)	長度公差 length tolerance (mm)
10	12.70	0.8	-0.37~+0.00	±0.12	不可低於指定長度 ≥ defined length
13	15.88	0.8	-0.37~+0.00	±0.12	
20	22.22	1.0	-0.37~+0.00	±0.12	
25	28.58	1.0	-0.37~+0.00	±0.12	
30	34.00	1.2	-0.34~+0.34	±0.12	
40	42.70	1.2	-0.43~+0.43	±0.12	
50	48.60	1.2	-0.49~+0.49	±0.12	
60	60.50	1.5	-0.60~+0.60	±0.15	
75	76.30	1.5	±1%	±0.15	
80	89.10	2.0	±1%	±0.30	
100	114.30	2.0	±1%	±0.30	
125	139.80	2.0	±1%	±0.30	
150	165.20	3.0	±1%	±0.40	
200	216.30	3.0	±1%	±0.40	
250	267.40	3.0	±1%	±0.40	
300	318.50	3.0	±1%	±0.40	

用途: 水電明管配裝用。 Application : plumbing.

不銹鋼衛生鋼管 Stainless Steel Sanitary Tube

• ASTM A270

外徑 outside diameter mm	厚度 thickness mm	1.5	2.0	3.0	外徑公差 O.D. tolerance	厚度公差 W.T. tolerance	長度公差 length tolerance
25.4					-0.13mm ~ +0.13mm	±12.5%	+50mm -0mm
38.1					-0.20mm ~ +0.20mm		
50.8					-0.20mm ~ +0.20mm		
63.5					-0.25mm ~ +0.25mm		
76.2					-0.38mm ~ +0.38mm		
101.6					-0.38mm ~ +0.38mm		

用途: 乳酪業、釀酒業、自來水業、食品業之輸送管。 Application: dairy product, brewery, food and beverage.

• CNS 6668 G3131 • JIS G3447

外徑 outside diameter mm	厚度 thickness mm	1.2	1.5	2.0	3.0	外徑公差 O.D. tolerance	厚度公差 W.T. tolerance	長度公差 length tolerance
25.4						-0.15mm ~ +0.15mm	±10%	不可低於指定長度 ≥ defined length
31.8						-0.16mm ~ +0.16mm		
38.1						-0.19mm ~ +0.19mm		
50.8						-0.25mm ~ +0.25mm		
63.5						-0.25mm ~ +0.25mm		
76.3						-0.25mm ~ +0.25mm		
89.1						-0.40mm ~ +0.30mm		
101.6						-0.40mm ~ +0.35mm		
114.3						-0.60mm ~ +0.40mm		
139.8						-0.80mm ~ +0.40mm		
165.2						-1.20mm ~ +0.40mm		

用途: 乳酪業、釀酒業、自來水業、食品業之輸送管。 Application: dairy product, brewery, food and beverage.

等邊不銹鋼角鋼 Stainless Steel Equal Leg Angle Bar

• CNS 10806 G3218

邊長 side length mm	厚度 thickness mm	2.0	2.5	3.0	4.0	5.0	6.0
25 x 25							
30 x 30							
40 x 40							
50 x 50							
65 x 65							
75 x 75							

用途: 機械組合、土木建築用、支架鐵架(基地台)、水塔業。 Application: machinery and construction.

水壓試驗標準 Hydrostatic Test Standard

• ASTM A312 • ASTM A358

稱呼外徑 outside diameter	外徑 diameter (mm)	厚度 wall thickness							
		SCH 5S		SCH 10S		SCH 40S		SCH 80S	
		(mm)	Mpa	(mm)	Mpa	(mm)	Mpa	(mm)	Mpa
1/4"	13.72			1.65	18.0	2.24	18.0	3.02	18.0
3/8"	17.15			1.65	18.0	2.31	18.0	3.20	18.0
1/2"	21.34	1.65	18.0	2.11	18.0	2.77	18.0	3.73	18.0
3/4"	26.67	1.65	16.0	2.11	18.0	2.87	18.0	3.91	18.0
1"	33.40	1.65	13.0	2.77	18.0	3.38	18.0	4.55	18.0
1 1/4"	42.16	1.65	10.0	2.77	17.0	3.56	18.0	4.85	18.0
1 1/2"	48.26	1.65	9.0	2.77	15.0	3.68	18.0	5.08	18.0
2"	60.33	1.65	7.0	2.77	12.0	3.91	16.0	5.54	18.0
2 1/2"	73.03	2.11	8.0	3.05	11.0	5.16	18.0	7.01	18.0
3"	88.90	2.11	6.0	3.05	9.0	5.49	16.0	7.62	18.0
3 1/2"	101.60	2.11	5.5	3.05	8.0	5.74	14.0	8.08	18.0
4"	114.30	2.11	5.0	3.05	7.0	6.02	13.0	8.56	18.0
5"	141.30	2.77	5.0	3.40	6.0	6.55	12.0	9.52	17.0
6"	168.28	2.77	4.5	3.40	5.0	7.11	11.0	10.97	17.0
8"	219.08	2.77	3.5	3.76	4.5	8.18	10.0	12.70	15.0
10"	273.05	3.40	3.5	4.19	4.0	9.27	9.0	12.70	12.0
12"	323.85	3.96	3.5	4.57	3.5	9.52	8.0	12.70	10.0

• CNS 6331 G3124 • JIS G3459

<表一 Table 1>

單位：Mpa (kgf/cm²)

標稱厚度號數 schedule	5S	10S	20S	40	80	120	160
水壓試驗壓力 testing pressure	1.5 (15)	2.0 (20)	3.5 (35)	6.0 (60)	12 (120)	18 (180)	20 (200)

規格表使用 listed in specification.

<表二 Table 2>

單位：Mpa (kgf/cm²)

厚度/外徑 thickness/diameter	超過 0.80	超過 1.60	超過 2.40	超過 3.20	超過 4.00	超過 4.80	超過 5.60	超過 6.30	超過 7.10	超過 7.90
	1.60	2.40	3.20	4.00	4.80	5.60	6.30	7.10	7.90	
	以下	以下	以下	以下	以下	以下	以下	以下	以下	
水壓試驗壓力 testing pressure	2.0 (20)	4.0 (40)	6.0 (60)	8.0 (80)	10 (100)	12 (120)	14 (140)	16 (160)	18 (180)	20 (200)

非規格表使用 not listed in specification.

不銹鋼機械性質及物理性質

Stainless Steel Mechanical and Physical Properties

鋼種 type			機械性質及物理性質 mechanical and physical properties						
			抗拉強度 tensile strength	伸長率 elongation	降伏強度 yield strength	硬度 hardness	彈性係數 young's modulus	熱傳導率 thermal conductivity	平均熱膨脹係數 mean coefficient of thermal expansion
ASTM	CNS	JIS	Mpa	%	Mpa	HRB	Gpa	W /m.K	20°C ~ 400°C
304	304 TP	SUS 304 TP	≥520	≥35		≤90			
			≥515	≥40	≥205	≤92	200	15	17.5 ⁻¹ x10 ⁻⁶
304L	★A 304L TP	SUS 304L TP	≥480	≥35	≥175	≤90			
			≥485	≥40	≥170	≤92	200	15	18.0 ⁻¹ x10 ⁻⁶
316	316 TP	SUS 316 TP	≥520	≥35		≤90			
			≥515	≥40	≥205	≤95	200	15	17.5 ⁻¹ x10 ⁻⁶
316L	★A 316L TP	SUS 316L TP	≥480	≥35	≥175	≤90			
			≥485	≥40	≥170	≤95	200	15	17.5 ⁻¹ x10 ⁻⁶
316 Ti	316Ti TP	SUS 316Ti TP	≥520	≥35		≤90			
			≥515	≥40	≥205	≤95	200	15	18.5 ⁻¹ x10 ⁻⁶
317	317 TP	SUS 317 TP	≥520	≥35	≥205	≤90			
			≥515	≥40	≥205	≤95	200	15	17.5 ⁻¹ x10 ⁻⁶
430	430 TP	SUS 430 TP	≥410	≥20	≥245	≤88			
			≥450	≥22	≥205	≤89	220	25	10.5 ⁻¹ x10 ⁻⁶

★A304L TP與A316L TP 為CNS所增列之鋼種。

不銹鋼化學成份

Stainless Steel Chemical Composition

鋼種 type			化學成份 chemical composition (%)								
			C	Si	Mn	P	S	Ni	Cr	Mo	Ti
ASTM	CNS	JIS									
304	304 TP	SUS 304 TP	≤0.08	≤1.00				8.0~11.0	18.0~20.0		
			≤0.07	≤0.75	≤2.00	≤0.045	≤0.03	8.0~10.5	17.5~19.5		
304L	★A 304L TP	SUS 304L TP	≤0.03	≤1.00				9.0~13.0	18.0~20.0		
			≤0.03	≤0.75	≤2.00	≤0.045	≤0.03	8.0~12.0	17.5~19.5		
316	316 TP	SUS 316 TP	≤0.08	≤1.00				10.0~14.0	16.0~18.0	2.0~3.0	
			≤0.03	≤0.75	≤2.00	≤0.045	≤0.03	12.0~15.0	16.0~18.0	2.0~3.0	
316L	★A 316L TP	SUS 316L TP	≤0.03	≤1.00				10.0~14.0	16.0~18.0	2.0~3.0	
			≤0.03	≤0.75	≤2.00	≤0.045	≤0.03	10.0~14.0	16.0~18.0	2.0~3.0	
316 Ti	316Ti TP	SUS 316Ti TP	≤0.08	≤1.00				10.0~14.0	16.0~18.0	2.0~3.0	≥Ti 5xC%
			≤0.03	≤0.75	≤2.00	≤0.045	≤0.03	10.0~14.0	16.0~18.0	2.0~3.0	Ti 5x(C+N) min., 0.7 max.
317	317 TP	SUS 317 TP	≤0.08	≤1.00				11.0~15.0	18.0~20.0	3.0~4.0	
			≤0.03	≤0.75	≤2.00	≤0.045	≤0.03	11.0~15.0	18.0~20.0	3.0~4.0	
430	430 TP	SUS 430 TP	≤0.12	≤1.00					16.0~18.0		
			≤0.03	≤0.75	≤1.00	≤0.040	≤0.03		16.0~18.0		

★A304L TP與A316L TP 為CNS所增列之鋼種。

不銹鋼固溶化熱處理標準 Stainless Steel Solution Annealing Standard

ASTM 規範		CNS 規範		JIS 規範	
鋼種 type	固溶化熱處理 annealing process	鋼種 type	固溶化熱處理 annealing process	鋼種 type	固溶化熱處理 annealing process
304	1040°C以上水急冷 min.1040°C with water quenching	304 TP	1010°C以上水急冷 min.1010°C with water quenching	SUS 304 TP	1010°C以上水急冷 min.1010°C with water quenching
304L		★A304L TP		SUS 304L TP	
316		316 TP		SUS 316 TP	
316L		★A316L TP		SUS 316L TP	

★A304L TP與A316L TP 為CNS所增列之鋼種。

不銹鋼管重量計算公式表 Weight Calculation Table

鋼種 type			密度 density (g/cm ³)	計算方式 formula
ASTM	CNS	JIS		
304 304L	304 TP ★A304L TP	SUS 304 TP SUS 304L TP	7.93	W=0.02491T (D-T)
316 316L	316 TP ★A316L TP	SUS 316 TP SUS 316L TP	7.98	W=0.02507T (D-T)

W: 鋼管重量 weight (kg/m) T: 鋼管厚度 wall thickness (mm) D: 鋼管外徑 outside diameter (mm)。

★A304L TP與A316L TP 為CNS所增列之鋼種。

外銷包裝方式 Export Packing







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