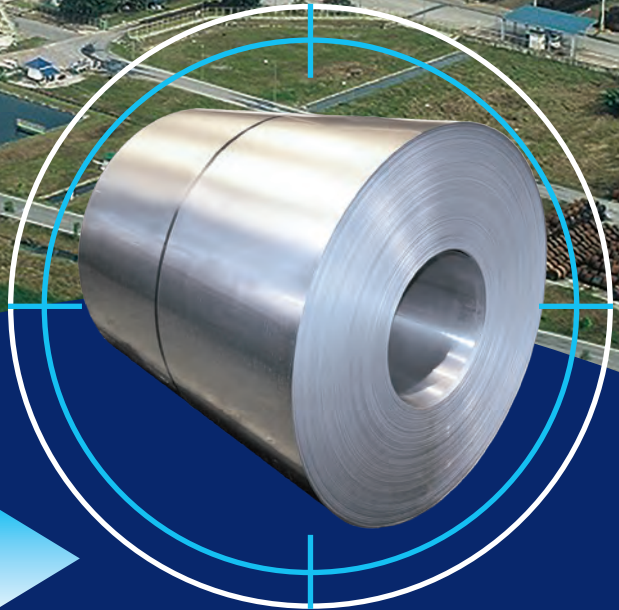




บริษัท เหล็กแผ่นรีดเย็นไทย จำกัด (มหาชน)

THAI COLD ROLLED STEEL SHEET PUBLIC COMPANY LIMITED



DETERMINATION **SUCCESS**
TOGETHER

EXCELLENT QUALITY

PROVIDE CUSTOMERS HIGH QUALITY PRODUCTS
WITH PUNCTUAL DELIVERY AND BEST SERVICE

THE FIRST MANUFACTURER OF HIGH-CLASS QUALITY COLD ROLLED STEEL SHEET IN THAILAND

INTRODUCTION



AN EXCELLENT COLD ROLLED STEEL MILL FOR CUSTOMERS AND SOCIETIES

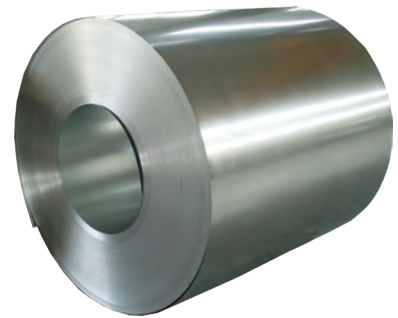
Thai Cold Rolled Steel Sheet Public Company Limited (TCRSS) is the first manufacturer in Thailand to produce high quality cold rolled steel sheet. Our products perfectly reflect TCRSS's total commitment to be excellent in quality using world-leading technologies and the innovative equipment from JFE Steel Corporation, Japan's leading steel maker.

TCRSS was established through the joint venture of three major companies of JFE Steel Corporation, Marubeni-Itochu Steel Inc. in Japan and Sahaviriya Steel Industries Public Company Limited in Thailand. TCRSS was established as limited company in March 1990 with capital investment of 1,500 Million Baht. Later, it was converted into public company in November 1995, which capital is 4,816 Million Baht.

TCRSS has set its sight on creative value, sustainable growth and responsible organization. We have set our goal by employing Total Quality Management (TQM) and striving for the achievement of best practice, good corporate governance, transparency, contributing to the societies and community responsibilities.

VISION

To be the excellent cold rolled steel mill with excellent teamwork to contribute excellent benefits to all Stakeholders and Society.



MISSION

- ▶ Provide customers high quality products with punctual delivery and good service
- ▶ Develop high competency and create excellent teamwork with good working condition
- ▶ Conserve natural environment for community
- ▶ Seek always for company - wide cost improvement
- ▶ Develop products to meet customers' requirements





AWARD & CERTIFICATE

TCRSS has a policy and cooperation in various fields with the public and private sectors to participate and evolve the industry including supporting organizations to be maximum efficiency and to achieve the goal as our vision to be a leading cold rolled steel sheet manufacturer with a great team.

We continuously develop the quality of cold rolled steel sheet to be the highest quality products as well as production processes that meet international standards which can be guaranteed by various awards.

TCRSS continues to focus on all aspects of development and sustainable growth to create more value and return of investment to the company and all stakeholders in a sustainable way.

AWARDS:

- The Prime Minister's Industry Award
- Best Factory Award by Ministry of Labour
- Best Factory Award by Ministry of Energy
- Outstanding Performance and Contributions to the JFE Group
- Outstanding Business Award on Safety
- Outstanding Award on Labour Relations and Welfare Organized
- Thailand Quality Prize
- Zero Accident Campaign
- EIA Monitoring Award
- CSR-DIW Continuous Award
- QCC Excellent Award

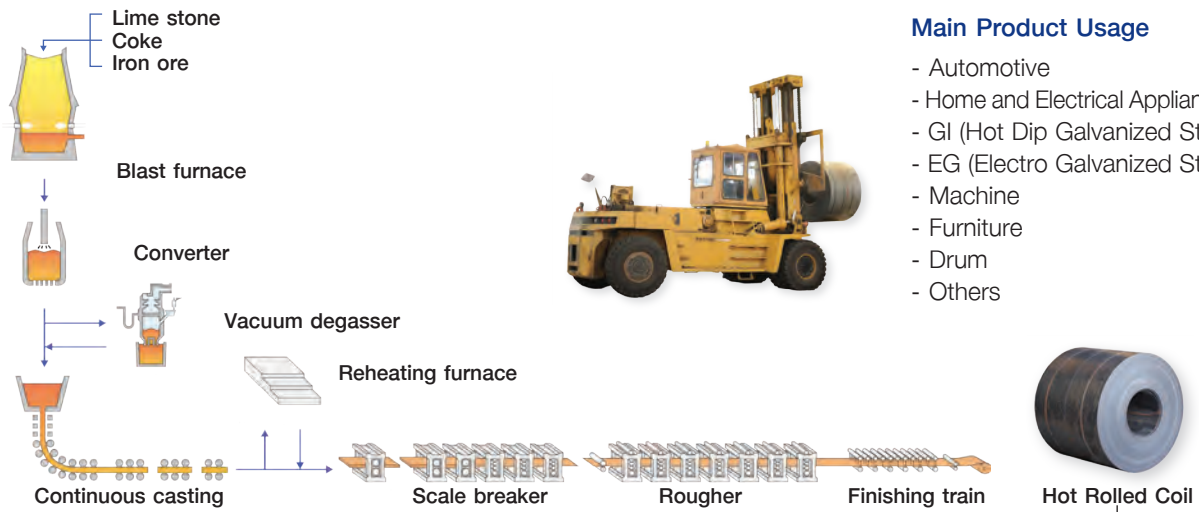
CERTIFICATE



MANUFACTURING PROCESS

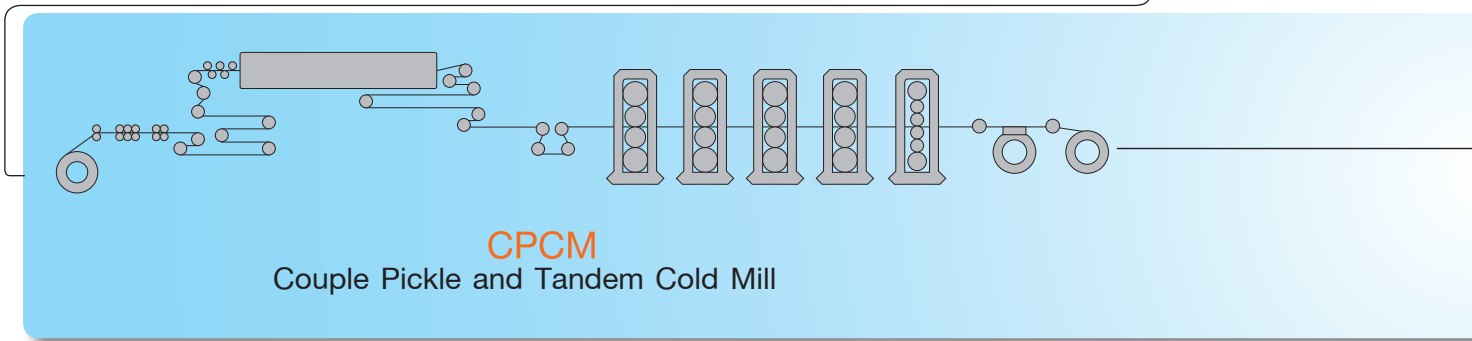
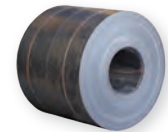
กรรมวิธีการผลิตเหล็ก

Process Flow of Steel Making



Main Product Usage

- Automotive
- Home and Electrical Appliances
- GI (Hot Dip Galvanized Steel)
- EG (Electro Galvanized Steel)
- Machine
- Furniture
- Drum
- Others



PRODUCTION STEP

CPCM

1) Pickling

Hot rolled coils are processed in a continuous pickling line where scale is removed. A clean surface is essential to cold rolling and subsequent processes to achieve the desired qualities in surface.

ทำความสะอาดแผ่นเหล็กรีดร้อน โดยการกำจัดสเกล เช่น สนิม หรือสิ่งสกปรกต่างๆ ก่อนส่งเข้ากระบวนการรีดลดขนาดในแท่นรีด (Tandem Cold Mill)

2) Cold Rolling

Pickled coils are rolled in a cold reduction mill where they are reduced to a specific thickness. Cold reduction mills are controlled by process computers and, since TCRSS's mill is one of the most advanced design, coils are rolled to the closest dimensional tolerance. Individual coils may extend to over several kilometers in length.

รีดลดขนาดแผ่นเหล็ก (Strip) ที่ผ่านการล้าง ทำความสะอาดด้วยกรดมาแล้วใน Pickling line เพื่อให้ได้ความหนาตามที่ต้องการ ณ อุณหภูมิปกติ ซึ่งเป็นส่วนสำคัญสำหรับการผลิต และควบคุมคุณภาพของเหล็กแผ่นรีดเย็น



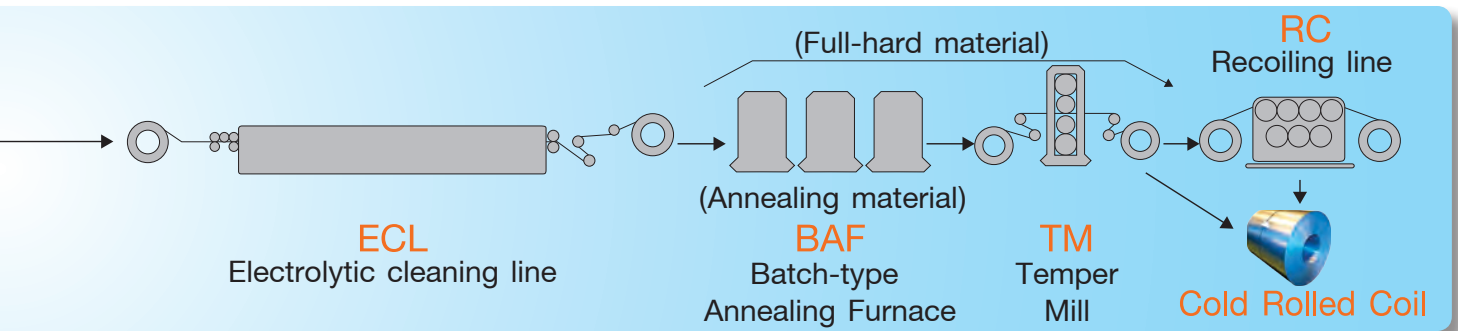
ECL

3) Electrolytic Cleaning

TCRSS employs a highly efficient electrolytic cleaning system for removing the cold rolling lubricant from the strip. This vital operation is carefully controlled to ensure that no lubricant is left on the steel. As oily substances decompose during annealing and remain on the steel surface as residues which both impair the surface and effect subsequent surface-treating processes, decreasing is therefore essential for producing cold strip which a good surface.

ทำความสะอาดแผ่นเหล็กรีดร้อน (Strip) ด้วยกรรมวิธีทางไฟฟ้า เพื่อชะล้างขจัดคราบไขมัน น้ำมัน ออกจากผิวหน้าแผ่นเหล็กที่ติดมากับผิวเหล็ก หลังจากผ่านกระบวนการรีดลดขนาดจากแท่นรีด (Tandem Cold Mill)

PRODUCTION STEP



BAF

4) Batch-type Annealing Furnace

Cold rolling causes steel to become hard and brittle. To obtain the desired microstructure and improve its mechanical properties, the cold rolled strip is annealed at a suitable temperature.

TCRSS employs 100% Hydrogen atmosphere annealing facility. Coils can achieve homogeneous qualities and a higher production rate due to the higher heat transfer.

กระบวนการอบอ่อน เป็นการปลดปล่อยความเครียดของโครงสร้างผลึก ให้กลับสู่สภาพไร้ความเครียดหลังการรีดเย็น โดยใช้ความร้อนและให้เหล็กเย็นตัวลงอย่างช้า ๆ ภายในเตา เพื่อสร้างการเติบโตของเกรน (Grain Growth) และการตกผลึกใหม่ (Recrystallization) เพื่อให้ได้คุณสมบัติเชิงกลของเหล็กที่ดีขึ้นหลังจากกระบวนการอบอ่อน

TM

5) Temper Mill

The annealed coils are processed in the temper mill. This process applies light pressure to the strip to improve its flatness and to prevent the occurrence of stretcher-strain during forming and deep drawing.

เป็นการรีดซ้ำหลังอบอ่อนเพื่อขจัดจุด Yield - Point Elongation ออกไป เพื่อปรับปรุงความเรียบ (Flatness) และกำหนดค่าความหยาบของผิวบนแผ่นเหล็ก เช่น ผิว Dull ผิว Bright เป็นต้น

RC

6) Recoiling Line

After temper rolling, the coil are recoiled to a specified weight. Rust-preventive oil may be applied upon customer request. For a full-hard coil, the tension leveler applies light pressure to the strip to improve the flatness.

กระบวนการผลิตในขั้นตอนสุดท้ายของ Cold Mill เพื่อทำการตรวจสอบคุณภาพของผลิตภัณฑ์ เช่น ผิวเหล็ก ความเรียบ ความกว้าง ความหนา การตัดแปงนำหนัก การเคลือบน้ำมันป้องกันสนิม และการตัดตัวอย่างแผ่นเหล็กเพื่อทดสอบคุณสมบัติเชิงกลที่ห้องทดสอบ (Test & Inspections)

Test & Inspection

7) Test and Inspection

The quality of each TCRSS cold rolled coil is ensured by a series of tests and inspections. Dimensions and surface conditions are thoroughly inspected and various mechanical tests are conducted on specimens taken from the coils.

เพื่อให้มั่นใจในคุณสมบัติเชิงกลต่าง ๆ (Mechanical properties) ของผลิตภัณฑ์เหล็กแผ่นรีดเย็นที่ได้นั้น มีคุณภาพ ถูกต้อง ได้มาตรฐาน และตรงตามความต้องการของลูกค้าแต่ละราย เช่น Tensile test, Hardness test และความหยาบของผิว (Surface roughness test) เป็นต้น

PRODUCT AVAILABILITY AND APPLICATION

TCRSS produces cold rolled steel products based on following public standards.

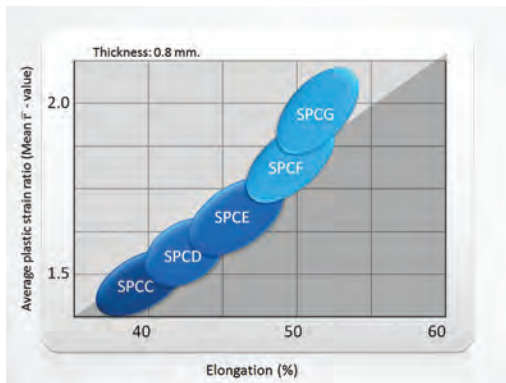
• For general use

Classification	Symbol of Grade	Application	Corresponding Specification			Characteristics and Application
			TIS	ISO	SNI	
			2012 ²⁵⁵⁸	3574 ²⁰⁰⁸	07-3567-2006	
JIS G 3141 Cold-reduced carbon steel sheets and strip	SPCC	Commercial quality	CR1	CR1	Bj DC	Automotive parts, household electrical appliances, furniture, drums, oil filters, base metal for galvanized sheets and other coated products from commercial to deep drawing qualities.
	SPCD	Drawing quality	CR2	CR2	Bj DD1	
	SPCE	Deep drawing quality	CR3	CR3	Bj DD2	
	SPCF	Non-aging deep drawing quality	CR4	CR4	Bj DD3	
	SPCG	Non-aging extra deep drawing quality	CR5	CR5	-	

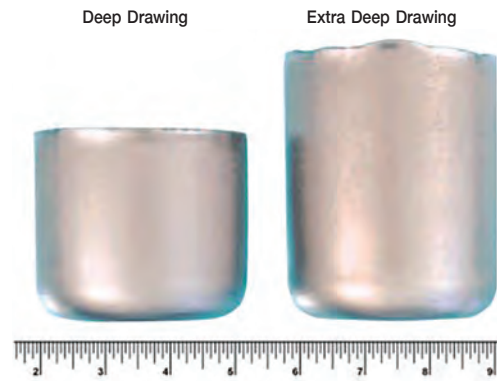
Note : For TCR-UFD grade is processed by a special manufacturing method considering workability. The press working process such as multiple drawing can be reduced.
Main applications : Automotive bodies and parts (front fender, quarter panel, oil pan).

• Application

Relation between elongation and average plastic strain ratio (mean \bar{r} -value) of cold rolled steel.



Comparison of height of cups cylinder between deep drawing and extra deep drawing quality.



• High strength and improved formability

Classification	Symbol of Grade	Application	Corresponding Specification			Characteristics and Application
			TIS	ISO	SNI	
			2140 ²⁵⁴⁸	-	-	
JIS G 3135 Cold-reduced high strength steel sheet and strip with improved formability for automotive structure use	SPFC340	These steel sheets are strengthened to provide a guaranteed tensile strength while maintaining comparatively good formability	CRA340	-	-	Mainly used for automotive due to high strength and improved formability.
	SPFC370		CRA370			
	SPFC390		CRA390			
	SPFC440		CRA440			
	SPFC590		CRA590			
	SPFC590Y		CRA590L			

• For special use

Classification	Symbol of Grade	Application	Corresponding Specification			Characteristics and Application
			TIS	ISO	SNI	
			2012 ²⁵⁵⁸	5954 ²⁰⁰⁷	07-3567-2006	
JIS G 3141 Cold rolled steel sheets for hardness requirement	SPCC-1	Flatness of products is strictly controlled	CR1-1	CRH-NN	Bj DC-1	Base metal for galvanized sheets (GI use)
	SPCC-4	Specially hard steel sheets	CR1-4	CRH-60	Bj DC-4	Pipes, Tubes and Chains
	SPCC-8		CR1-8	CRH-50	Bj DC-8	
JIS G 4051 Carbon steels for machine structure use	S10C, S12C, S15C, S17C, S20C	-	-	-	-	Carbon steel for machine structural use, chain part, clutch parts, washer, toe-cap of safety shoes
JIS G 3311 Cold rolled special steel strip	S30C, S35C, S45C, S50C, S55C, S60C	-	-	-	-	-
- Decarburized steel sheet and strip for porcelain enamelling	TCR-P1D	1 Coat, Deep drawing quality	-	-	-	For porcelain enamelling use. General use or deep drawing, 1-coat or 2-coat usages are available
	TCR-P2C	2 Coat, Commercial quality				
	TCR-P2E	2 Coat, Deep drawing quality				

PRODUCT AVAILABILITY AND APPLICATION

TCRSS produces cold rolled steel products based on following public standards.

• For automotive use and general use

Classification	Symbol of Grade	Application	Corresponding Specification			Characteristics and Application	
			TIS	ISO	SNI		
			2012 ²⁵⁵⁸	3574 ²⁰⁰⁸	07-3567-2006		
JFS A 2001	Cold rolled steel sheets for automotive use	JSC270C	Commercial quality	CR1	CR1	Bj DC	General use for automotive parts
		JSC270D	Drawing quality	CR2	CR2	Bj DD1	
		JSC270E	Deep drawing quality	CR3	CR3	Bj DD2	
		JSC270F	Non-ageing deep drawing quality	CR4	CR4	Bj DD3	
		JSC260G	Non-ageing Extra deep drawing quality	CR5	CR5	-	
				2140 ²⁵⁴⁶			
	Cold rolled steel sheets for automotive use (General use to high strength steel)	JSC340W	These steel sheets are strengthened to provide a guaranteed tensile strength while maintaining comparatively good formability	CRA340	-	-	Commercial type steel sheet
		JSC370W		CRA370	-	-	
		JSC390W		CRA390	-	-	
		JSC440W		CRA440	-	-	
		JSC590R		CRA590	-	-	High deep-drawing type steel sheet
		JSC340P		CRA340D	-	-	
		JSC370P		CRA370D	-	-	
		JSC390P		CRA390D	-	-	
		JSC440P		CRA440D	-	-	
JSC590Y		CRA590L		-	-		



Automotive part (Body in white)



Automotive part (Front fender)



Automotive part (Side panel outer)

PRODUCT SPECIFICATIONS

JIS G 3141 : 2017

Cold-reduced carbon steel sheet and strip.

Mechanical Properties

Symbol of Grade	Tensile Strength N/mm ²	Elongation (%)										Mean Plastic Strain Ratio ($\bar{\epsilon}$ -value)	
		Thickness (mm.)										Thickness (mm.)	
		Under 0.20	0.20 or over to and excl. 0.25	0.25 or over to and excl. 0.30	0.30 or over to and excl. 0.40	0.40 or over to and excl. 0.60	0.60 or over to and excl. 1.0	1.0 or over to and excl. 1.6	1.6 or over to and excl. 2.5	2.5 or over	0.5 or over up to and incl.1.0	Over 1.0 up to and incl.1.6	
SPCC	Not specified	Not specified											
SPCD	270 min.	25 min.	27 min.	30 min.	33 min.	36 min.	38 min.	39 min.	40 min.	41 min.			
SPCE	270 min.	27 min.	29 min.	32 min.	35 min.	38 min.	40 min.	41 min.	42 min.	43 min.			
SPCF	270 min.	-	-	-	-	40 min.	42 min.	43 min.	44 min.	45 min.			
SPCG	270 min.	-	-	-	-	42 min.	44 min.	45 min.	46 min.	-	1.5 min.	1.4 min.	

Chemical composition

Unit : %

Symbol of Grade	C	Mn	P	S
SPCC	0.15 max.	1.00 max.	0.100 max.	0.035 max.
SPCD	0.10 max.	0.50 max.	0.040 max.	0.035 max.
SPCE	0.08 max.	0.45 max.	0.030 max.	0.030 max.
SPCF	0.06 max.	0.45 max.	0.030 max.	0.030 max.
SPCG	0.02 max.	0.25 max.	0.020 max.	0.020 max.

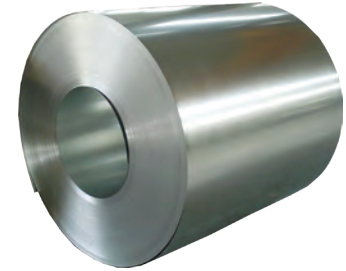
PRODUCT SPECIFICATIONS

JIS G 3141 : 2017

Cold-reduced carbon steel sheet and strip.

Rockwell hardness (HRB) and Vicker hardness of hard material (HV)

Symbol of Grade	Symbol of temper grade	Temper grade	Hardness		Bendability	
			HRB	HV	Bend Angle	Internal Spacing ^(a) Number of sheets
-	A	As - annealed	Not specified		180°	0 (Flat on it self)
-	S	Standard temper	Not specified			
SPCC-8	8	1/8 hard	50 to 71	95 to 130		1
SPCC-4	4	1/4 hard	65 to 80	115 to 150		
SPCC-1	1	Full hard	85 min.	170 min.		-



Note : (a) Maximum number of sheets of nominal thickness

JFS A 2001 : 2014

Cold-rolled steel sheet and strip for automotive use.

Chemical composition

The chemical composition shall be agreed upon between the parties concerned as required.

Mechanical Properties

Symbol of Grade	Tensile Strength N/mm ²	Yield Point or Proof Stress N/mm ²				Elongation (%)										Mean Plastic Strain Ratio (r-value)	
		Thickness (mm.)				Thickness (mm.)										Thickness (mm.)	
		0.3 or over to and excl.0.4	0.4 or over to and excl.0.8	0.8 or over to and excl.1.0	1.0 or over to and incl.3.2	0.3 or over to and excl.0.4	0.4 or over to and excl.0.6	0.6 or over to and excl.0.8	0.8 or over to and excl.1.0	1.0 or over to and excl.1.2	1.2 or over to and excl.1.6	1.6 or over to and excl.2.0	2.0 or over to and excl.2.5	2.5 or over to and incl.3.2	0.5 or over to and incl.1.0	1.0 or over to and incl.1.6	
JSC270C	270 min.	155-275	145-265	135-255	125-245	36-45	37-46	38-47	39-48	40-49	41-50	42-53	43-55	44-57	-	-	
JSC270D		-	135-225	125-215	115-205	-	40-49	41-50	42-51	43-52	44-53	45-55	46-57	47-59	1.2 min.	1.1 min.	
JSC270E		-	130-205	120-195	110-185	-	42-50	43-51	44-52	45-53	46-54	47-56	48-58	49-60	1.4 min.	1.3 min.	
JSC270F		-	120-185	110-175	100-165	-	44-52	45-53	46-54	47-55	48-56	49-58	50-60	-	1.6 min.	1.5 min.	
JSC260G	260 min.	-	110-175	100-165	90-155	-	46-54	47-55	48-56	49-57	50-58	51-60	52-62	-	1.8 min.	1.7 min.	
JSC340W	340 min.	-	205-305	195-295	185-285	-	33-43	34-44	35-45	36-46	37-47	38 min.		-	-	-	
JSC370W	370 min.	-	205-305	195-295	185-285	-	30-40	31-41	32-42	33-43	34-44	35 min.		-	-	-	
JSC390W	390 min.	-	245-355	235-345	225-335	-	29-40	30-41	31-42	32-43	33-44	34 min.		-	-	-	
JSC440W	440 min.	-	285-390	275-380	265-370	-	26-38	27-39	28-40	29-41	30-42	31 min.		-	-	-	
JSC590R	590 min.	-	430-580	420-570	410-560	-	-	17-32	17-32	18-33	18-33	18 min.		-	-	-	
JSC340P	340 min.	-	165-255	155-245	145-235	-	35-45	36-46	37-47	38-48	39-49	40 min.		-	1.4 min.	1.3 min.	
JSC370P	370 min.	-	175-265	165-255	155-245	-	33-43	34-44	35-45	36-46	37-47	38 min.		-	1.4 min.	1.3 min.	
JSC390P	390 min.	-	205-305	195-295	185-285	-	31-42	32-43	33-44	34-45	35-46	36 min.		-	1.4 min.	1.3 min.	
JSC440P	440 min.	-	245-355	235-345	225-335	-	28-39	29-40	30-41	31-42	32-43	33 min.		-	1.3 min.	1.2 min.	
JSC590Y	590 min.	-	340-460	330-450	320-440	-	-	17-32	18-33	19-34	20-35	21 min.		-	-	-	

PRODUCT SPECIFICATIONS

Cold rolled steel sheets for porcelain enameling

TCR's cold rolled steel sheets for porcelain enameling are for general use, deep drawing quality and for 1- coat, 2-coat depending on application.

Manufacturing Standard

Classification		Designation
1-Coat	Drawing	TCR-P1D
2-Coat	Commercial use	TCR-P2C
	Deep drawing	TCR-P2E

Typical Chemical Composition (wt.%)

Designation	C	Si	Mn	P	S
TCR-P1D	0.001	0.01	0.29	0.007	0.017
TCR-P2C	0.040	0.01	0.21	0.014	0.009
TCR-P2E	0.002	0.01	0.17	0.013	0.028

Example of Mechanical Properties

Designation	Thickness (mm.)	Yield point (N/mm ²)	Tensile strength (N/mm ²)	Elongation (%)	r-value
TCR-P1D	0.60	170	285	46	1.59
TCR-P2C	0.60	210	325	42	1.22
TCR-P2E	0.80	149	291	49	1.91

JIS G 3135 : 2006

Cold-reduced high strength steel sheet and strip with improved formability for automobile structural uses.

Chemical composition

The chemical composition shall be agreed upon between the parties concerned as required.

Mechanical Properties

Symbol of Grade	Yield Point or Proof Stress N/mm ²	Tensile Strength N/mm ²	Elongation (%)		Bend Ability			
			Thickness (mm.)		Tensile Test Piece	Bending Angle	Inside radius of bending	Bending Test Piece
			0.6 or over to and excl.1.0	1.0 or over up to and incl.2.3				
SPFC340	175 min.	340 min.	34 min.	35 min.	No.5 test piece taken in transverse rolling direction	180°	Flat on itself	No.3 test piece taken in transverse rolling direction
SPFC370	205 min.	370 min.	32 min.	33 min.				
SPFC390	235 min.	390 min.	30 min.	31 min.				
SPFC440	265 min.	440 min.	26 min.	27 min.				
SPFC590	355 min.	590 min.	17 min.	18 min.				
SPFC590Y	265 min.	590 min.	18 min.	19 min.			Thickness x 1.0	

PRODUCT SPECIFICATIONS

JIS G 3311 : 2016

Cold-rolled special steel strip.

Chemical composition

Unit : %

Symbol of Grade	C	Si	Mn	P	S	Cu	Ni	Cr	Ni+Cr	Mo	W	V
S 30 CM	0.27-0.33	0.15-0.35	0.60-0.90	0.030 max.	0.035 max.	0.30 max.	0.20 max.	0.20 max.	0.35 max.	-	-	-
S 35 CM	0.32-0.38	0.15-0.35	0.60-0.90	0.030 max.	0.035 max.	0.30 max.	0.20 max.	0.20 max.	0.35 max.	-	-	-
S 45 CM	0.42-0.48	0.15-0.35	0.60-0.90	0.030 max.	0.035 max.	0.30 max.	0.20 max.	0.20 max.	0.35 max.	-	-	-
S 50 CM	0.47-0.53	0.15-0.35	0.60-0.90	0.030 max.	0.035 max.	0.30 max.	0.20 max.	0.20 max.	0.35 max.	-	-	-
S 55 CM	0.52-0.58	0.15-0.35	0.60-0.90	0.030 max.	0.035 max.	0.30 max.	0.20 max.	0.20 max.	0.35 max.	-	-	-
S 60 CM	0.55-0.65	0.15-0.35	0.60-0.90	0.030 max.	0.035 max.	0.30 max.	0.20 max.	0.20 max.	0.35 max.	-	-	-

Hardness

Symbol of Grade	Vickers hardness (HV)
S 30 CM	160 max
S 35 CM	170 max
S 45 CM	170 max
S 50 CM	180 max
S 55 CM	180 max
S 60 CM	190 max

JIS G 3141 : 2017, Tolerance A on thickness

Unit : mm.

Thickness (mm.) \ Width (mm.)	600 or over to and excl. 1000	1000 or over to and excl. 1250	1250 or over to and excl. 1600	1600 or over
Under 0.25	±0.03	±0.03	-	-
0.25 or over to and excl. 0.40	±0.04	±0.04	-	-
0.40 or over to and excl. 0.60	±0.05	±0.05	±0.06	-
0.60 or over to and excl. 0.80	±0.06	±0.06	±0.06	±0.07
0.80 or over to and excl. 1.00	±0.06	±0.07	±0.08	±0.09
1.00 or over to and excl. 1.25	±0.07	±0.08	±0.09	±0.11
1.25 or over to and excl. 1.60	±0.09	±0.10	±0.11	±0.13
1.60 or over to and excl. 2.00	±0.11	±0.12	±0.13	±0.15
2.00 or over to and excl. 2.50	±0.13	±0.14	±0.15	±0.17
2.50 or over to and excl. 3.15	±0.15	±0.16	±0.17	±0.20
3.15 or over	±0.17	±0.19	±0.20	-

JIS G 3135 : 2006, Tolerance on thickness

Unit : mm.

Thickness (mm.) \ Width (mm.)	Under 630	630 or over to and excl. 1000	1000 or over to and excl. 1250	1250 or over to and excl. 1600	1600 or over
0.60 or over to and excl. 0.80	±0.06	±0.06	±0.06	±0.07	±0.08
0.80 or over to and excl. 1.00	±0.07	±0.07	±0.08	±0.09	±0.10
1.00 or over to and excl. 1.25	±0.08	±0.08	±0.09	±0.10	±0.12
1.25 or over to and excl. 1.60	±0.09	±0.10	±0.11	±0.12	±0.14
1.60 or over to and excl. 2.00	±0.10	±0.11	±0.12	±0.14	±0.16
2.00 or over to and incl. 2.30	±0.12	±0.13	±0.14	±0.16	±0.18

PRODUCT SPECIFICATIONS

Width tolerance

Tolerance on width A : Mill edge

Unit : mm.

Width	
Under 1250	1250 or over
+7	+10
0	0

Tolerance on width B : Shear edge

Unit : mm.

Width	
Under 1250	1250 or over
+3	+4
0	0

Edge application

Edge Specification	Code	Definition
Shear edge	S	Trim in finishing process
Mill edge	M	Trim in pickling process No trim in finishing process
No specification	B	Strip edge trim either pickling or finishing process

Available edge application

Symbol of Grade	Product thickness	Edge application code
SPCC-1	0.120-0.350	S
	0.351-1.200	B ,M, S
	1.201-3.340	B, M
Others	0.200-0.299	S
	0.300-2.300	B ,M, S
	2.301-3.340	B, M

Maximum value of Flatness A

Unit : mm.

Width	Type of stain		
	Bow, Wave	Edge Wave	Center Buckle
Under 1000	12	8	6
1000 or over to and excl.1250	15	9	8
1250 or over to and excl.1600	15	11	8
1600 or over	20	13	9

Maximum value of Camber

Width	Type of stain		
	Steel Sheet		Steel strip
	Under 2000 in Length	2000 or over in length	
40 or over to and excl.630	4 max.	4 max. in any 2000 in length	
630 or over	2 max.	2 max. in any 2000 in length	

Inner diameter

Unit : mm.

Product thickness	Inner Diameter
T < 1.60	508, 610
T ≥ 1.60	610

Surface finish

Surface finish	Symbol of Surface finish	Remark
Dull finish	D	A matt finish produced with a roll of which the surface is roughened mechanically or chemically
Bright finish	B	A smooth finish produced with a roll

Surface finish is not applicable to steel sheet and strip of temper grade A



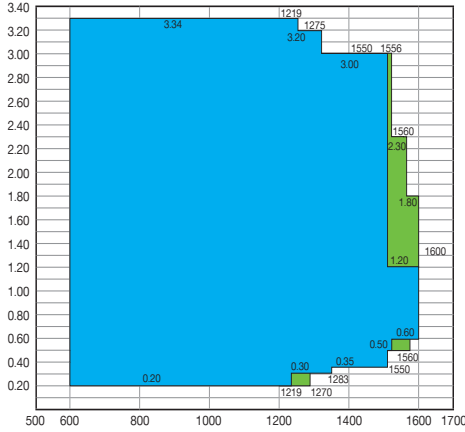
AVAILABLE SIZE

■ AVAILABLE

■ NEGOTIABLE

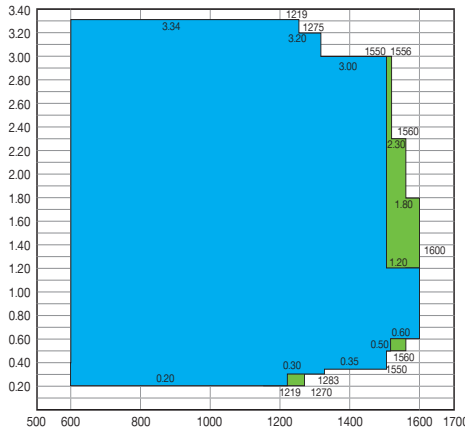
Commercial quality

SPCC



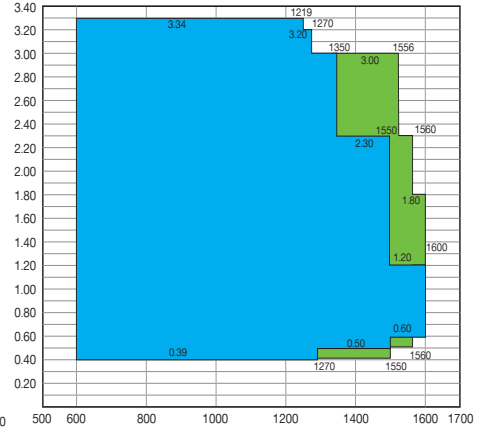
Drawing quality

SPCD, JSC270C



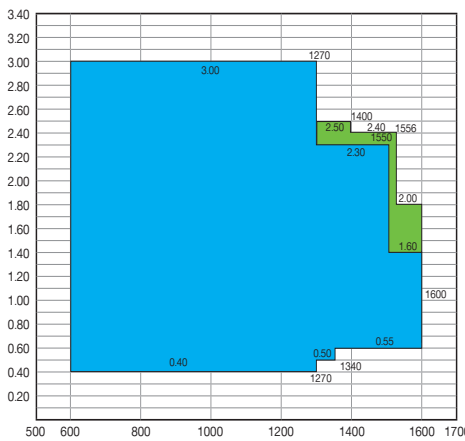
Deep drawing quality

SPCE, SPCEEN, JSC270D



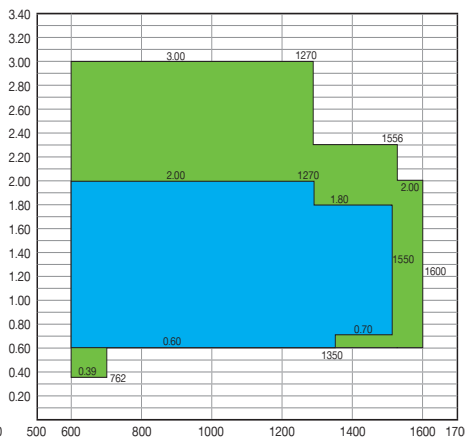
Extra deep drawing quality

SPCF, SPCG, TCR-UFD, JSC270E, JSC270F, JSC270G



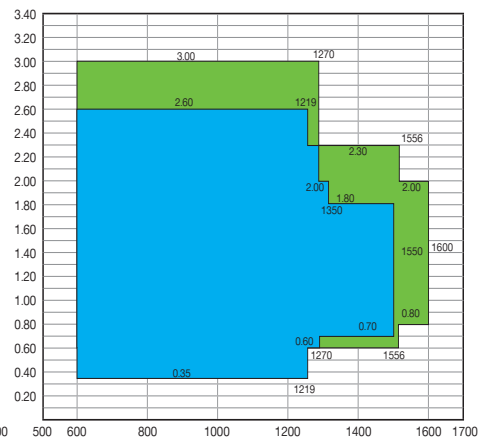
High Strength Steel : 340 Mpa

SPFC340, JSC340



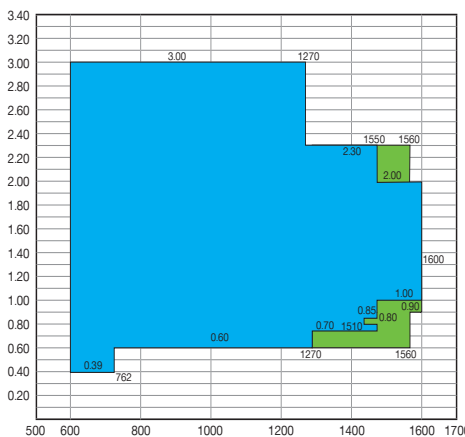
High Strength Steel : 370-390 Mpa

SPFC370, SPFC390, JSC370, JSC390



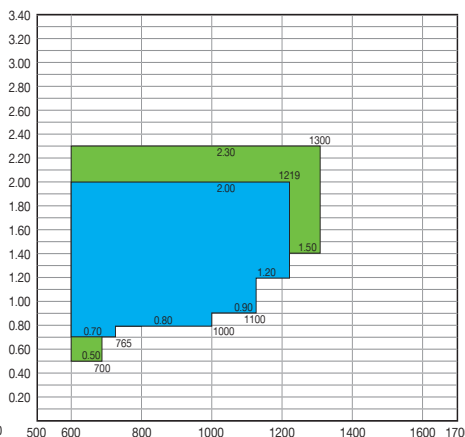
High Strength Steel : 440 Mpa

SPFC440, JSC440



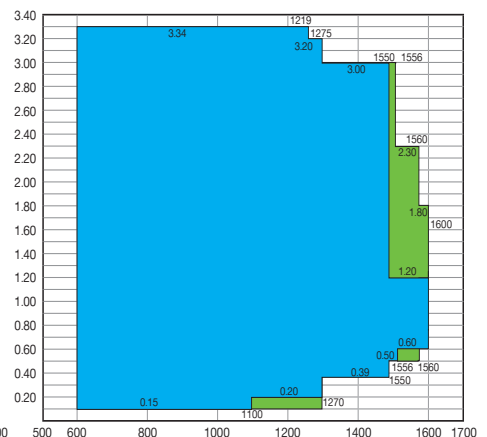
High Strength Steel : 590 Mpa

SPFC590, SPFC590Y, JSC590R, JSC590Y



Cold rolled steel product : Hard material

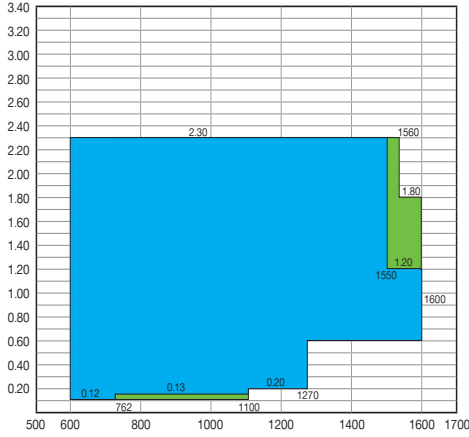
Base metal for galvanized sheet (GI use)
SPCC-1 CPCM SHIP



AVAILABLE SIZE

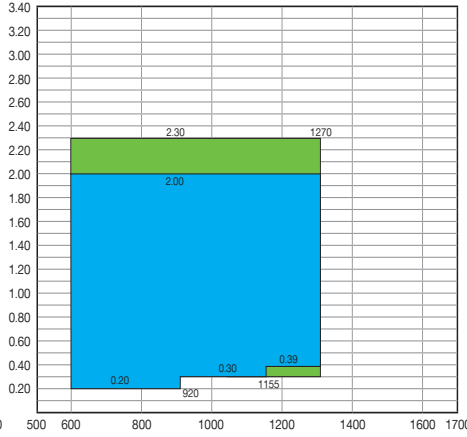
Cold rolled steel product :
Hard material

SPCC-1 RCL SHIP



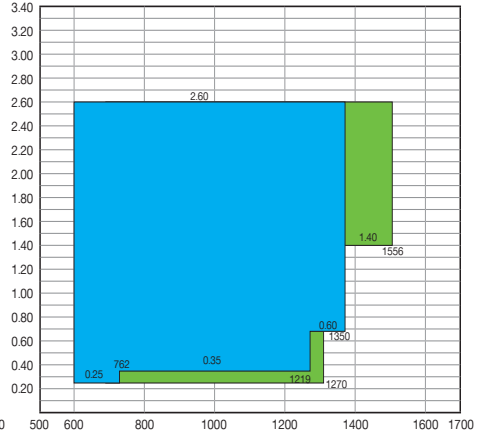
Cold rolled steel product :
Hard material

SPCC-4



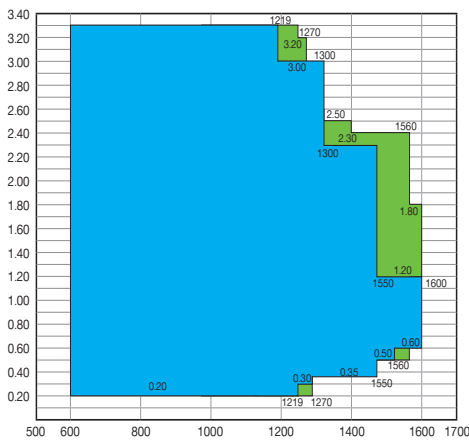
Cold rolled steel product :
Hard material

SPCC-8



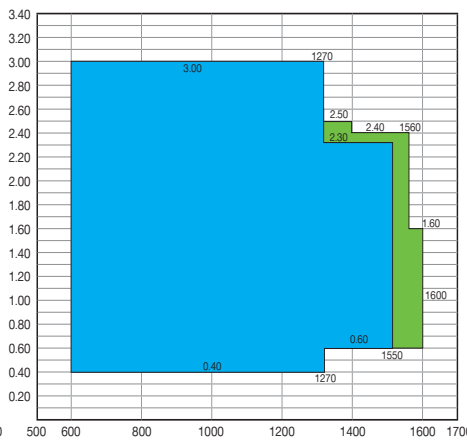
Porcelain enamelling :
Commercial quality

TCR-P2C



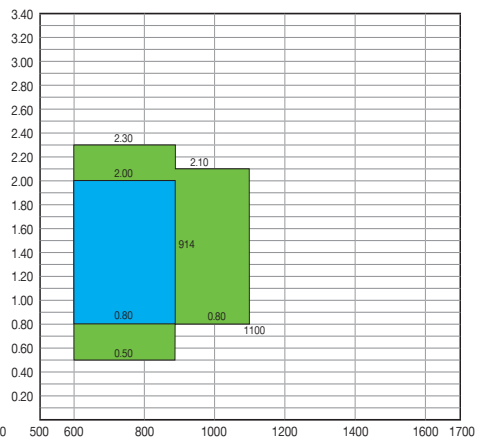
Porcelain enamelling :
Drawing quality

TCR-P2E, TCR-P1D



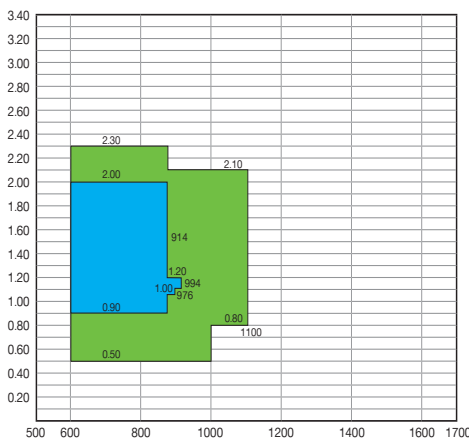
High carbon steel

S35C



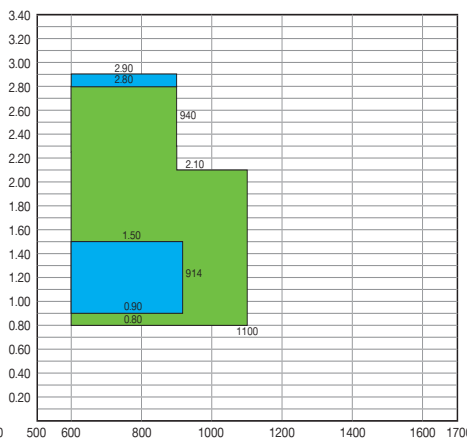
High carbon steel

S50C



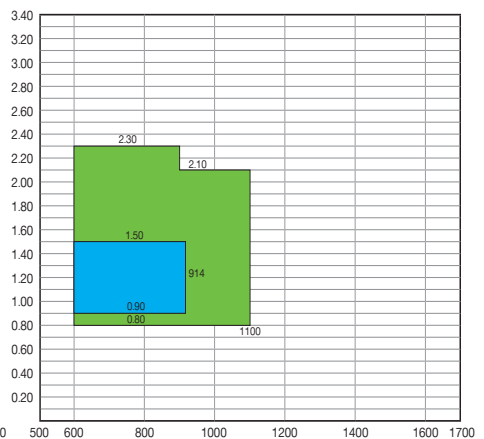
High carbon steel

S55C



High carbon steel

S60C





MARKING AND PACKAGING

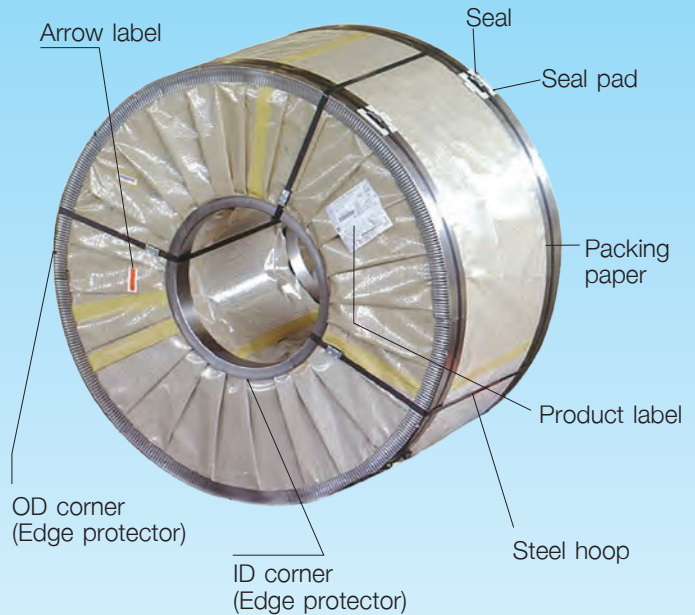
TCRSS use high quality packaging materials for domestic and export product. We ensure you to deliver our excellent quality to your hand.



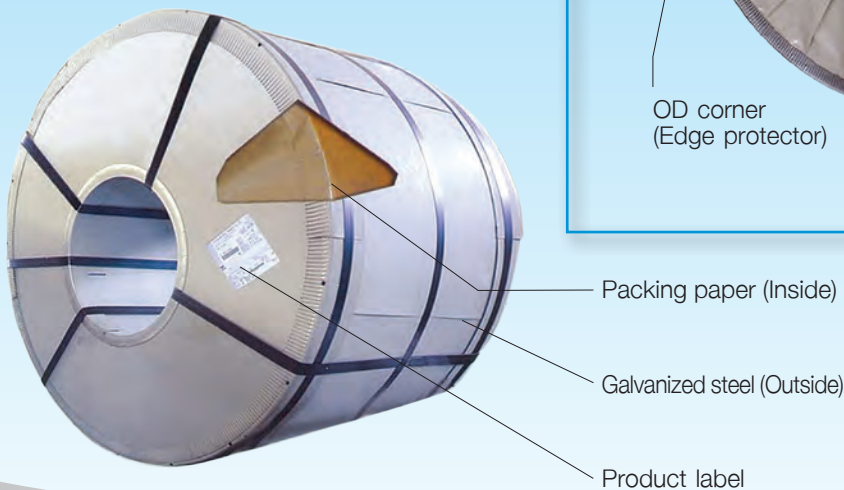
A label is attached to each package of products as given below

CUSTOMER ชื่อลูกค้า				
COMMODITY ผลิตภัณฑ์				
STANDARD มาตรฐาน			EDGE การตัดขอบ	
EXPORT PACKAGE NO.	SIZE ขนาด			
PRODUCT NO. หมายเลขผลิตภัณฑ์	NET WEIGHT น้ำหนักสุทธิ	GROSS WEIGHT น้ำหนักรวม		
PRODUCT NO. (BAR CODE) แถบรหัส	PRODUCT DATE วันที่ผลิต			
 Thai Cold Rolled Steel Sheet Public Co.,Ltd. Tel. (662) 630 0300 Fax. (662) 630 0320-2 PRODUCT OF THAILAND 	ORDER NO. หมายเลขคำสั่งซื้อ			
	REMARK หมายเหตุ			

DOMESTIC PRODUCT



EXPORT PRODUCT



TRANSPORTATION

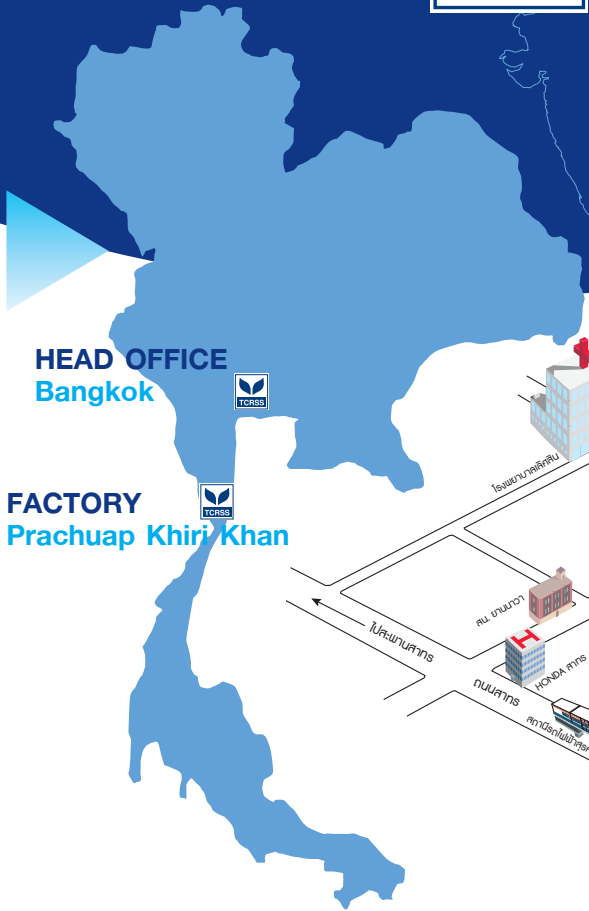
Transportation

We, TCRSS, take utmost care of our customers' satisfaction. We punctually deliver our excellent quality product by expert transportation company with GPS Navigator system to ensure you the best quality of our service.





บริษัท เหล็กแผ่นรีดเย็นไทย จำกัด (มหาชน)
**THAI COLD ROLLED STEEL SHEET
 PUBLIC COMPANY LIMITED**



HEAD OFFICE
Bangkok

FACTORY
Prachuap Khiri Khan



FACTORY
Prachuap Khiri Khan



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