

July 2020

Stainless Steel

What's Inside

The prospect of the Indonesian stainless steel industry is bright and the government's efforts and policies are to encourage the growth of this industry and increase the export value of Indonesian stainless steel to the world.

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2. Krakatau Steel, PT
3. Gunung Raja Paksi (GRP), PT

EDITOR DESK

Dear Valued Readers,

Stainless steel is the most well-known material of all industries in the world. All industrial sectors need stainless steel either as a support, raw material or auxiliary material. Furthermore, the increasing population, urbanization, and expenditure of middle class families in developing countries have also contributed to the demand for stainless steel.

Stainless steel is a corrosion-resistant alloy of iron, chromium and in some cases, nickel and other metals. What will be discussed in this edition is flat-rolled stainless steel. Stainless steel are widely chosen because of their superior quality. Compared to other materials, stainless steel has strong mechanical properties at ambient temperatures, fire resistance with a critical temperature above 800oC, corrosion resistance, easy to clean. It is also considered to be the "green material" par excellence and is infinitely recyclable. Flat-rolled stainless steel are widely used in an almost endless number of applications and industries: water heaters, steam boilers, automotive spare parts, medical equipment, buildings, food processing equipment and many more.

Depending on the form, the steel then undergoes further rolling steps (both hot and cold rolling), heat treatment (annealing), descaling to remove build up), and polishing to produce the finished stainless steel. Hot flat-rolled stainless steel is chosen for the manufacture of large structures components or other applications where precise shape and tolerance are not essential. Meanwhile, cold flat-rolled stainless steel is used by the electrical equipment industry and motorized vehicles or other industries that require a precise shape, durability and attractive appearance.

The global demand for flat-rolled stainless-steel is driven by big industries. The expand of construction industry activities is expected to drive the growth of the global flat-rolled stainless-steel demand. It widely use in various construction applications such as handrails, external banisters, roofing, siding, and bridges. The expand of automotive industry is expected to drive the demand for flat stainless steel. It is used in the manufacturing of windshields, muffler, frames, wheels, and molded products. Additionally, the increase of industries in the developing countries is likely to result in an increase in the use of processing equipment, which is likely to fuel the demand for flat-rolled stainless steel. Indonesia's export value for stainless steel in 2019 reached USD 3.25 billion with an average growth rate of 188.14% per year from 2015-2019.

Thank You

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HOT ISSUE

Indonesia's stainless steel industry continues to grow to become a world-class player



The intense competition, the decrease domestic demand and the control of steel production by the Chinese government are just few reasons for many Chinese stainless steel companies to move their factories and production facilities to Indonesia,

For example, PT Indonesia Guang Ching Nickel and Stainless Steel Industry, PT Tsingshan Steel Indonesia, PT Indonesia Tsingshan Stainless Steel, and PT Indonesia Ruipu Nickel and Chrome Alloy, all of which came from China in 2019. All of it became the largest contributor to the division through stainless steel exports. It is certainly encouraging and illustrates the bright future for

Indonesian stainless steel industry. Of course, this foreign investment has been followed by the role of the government, which since 2014 has banned the export of raw mineral materials (ore) and obliged to make products with added value. It can be seen from the increasing value of Indonesia's stainless steel exports. At the end of 2019, the total exports of Indonesian stainless steel products were USD 3.25 billion, which had increase about USD 962.2 million compared to 2018, which was USD 2.3 billion.

At the same time, it raises concern from the local players. The Indonesia Iron and Steel Industry Association (IISIA) invites the

government to have discussion to maintain national steel industry and not to let massive foreign investment in the steel sector kill local companies that were present before. The government must be a fair to create equal and healthy business environment to all business players through a series of laws and regulations. On the other hand, business players must also continue to improve their production capacity and efficiency in order to be able to compete fairly with other foreign investments. The national steel investment, both foreign and domestic, is very promising. It is time for the national steel industry to rise and to become the beating heart of Indonesia manufacture industry.

The termination of the Anti-Subsidy Investigation for Hot Rolled Stainless Steel Products (HRSS) from Indonesia by the European Commission



The export performance showed a significant jump in 2018 and 2019 for that Indonesia is ranked as the third largest exporter of stainless steel. Competing with China and Belgium, Indonesia is the only country in Southeast Asia to be the top 10 exporters of stainless steel.

There is an encouraging news about Indonesia stainless industry in Europe. The Anti-Subsidy Hot Rolled Stainless Steel (HRSS) investigation from Indonesia by the European Commission has been drop off.

"The European Commission has published the Commission Implementing Decision (EU) 2020/1653 dated November 6, 2020 which officially ends the anti-subsidy investigation on the import of

Hot Rolled Stainless Steel (HRSS) for sheet and coils products originating from Indonesia and China", said Pradnyawati, Director of Trade Security, Ministry of Trade of the Republic of Indonesia, on November 9, 2020. Stainless steel products from Indonesia are exempt from import duty to Europe market.

The European Commission's anti-subsidy investigation for HRSS originating from China and

Indonesia began on October 10, 2019 for flat-rolled stainless steel, whether or not in coils (including products cut-to-length and narrow strip), not further worked than hot-rolled and excluding products, not in coils, of a width of 600 mm or more and of a thickness exceeding 10 mm.

The basis for this investigation is a complaint made by The European Steel Association (Eurofer) which represents stainless steel producers in Europe. However, Eurofer later withdrew the complaint filed on 18 September 2020. In addition, the European Commission also does not see that further investigations will benefit the EU.

The decision to terminate the investigation by the European Commission was good news among the recent

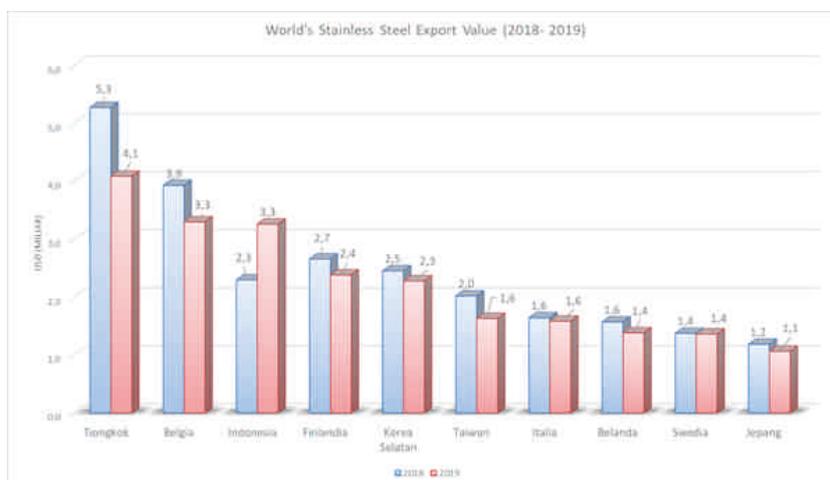


accusations of unfair trade practices for exports of Indonesian steel products, alike several other countries such as India and China.

For this decision, Pradnyawati appreciates the good cooperation between government agencies, steel producers, and the Indonesian Iron and Steel Industry Association (IISIA) in the process of preparing the response and the verification stage of the

investigation. Pradnyawati also hopes that this cooperation can continue to be developed in the face of various other allegations of unfair trade practices.

Despite the import value for world stainless steel products decreased to USD 29.8 billion in 2019 when in 2018 was only USD 33.4 billion, the 5 years trend (2015-2019) showed a positive value 5.72%. So, it is predicted that the demand for stainless steel will continue to grow.

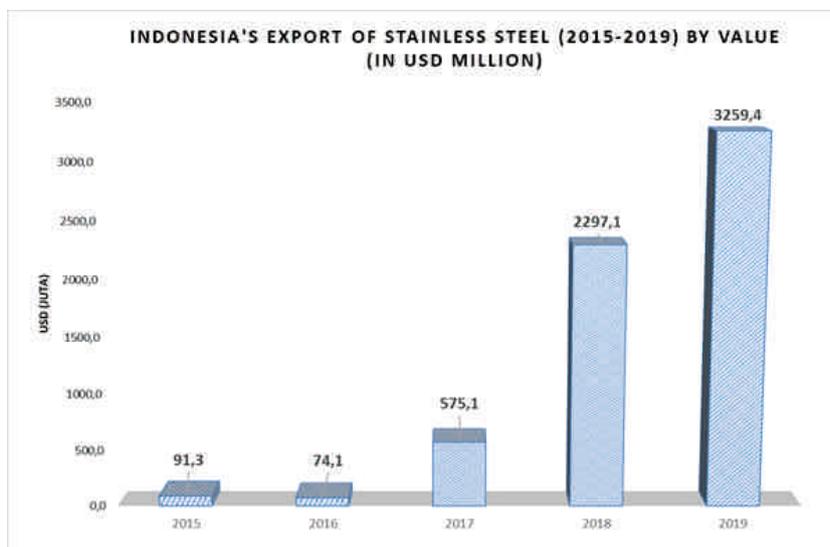


The export performance showed a significant jump in 2018 and 2019 for that Indonesia is ranked as the third largest exporter of stainless steel. Competing with China and Belgium, Indonesia is the only country in Southeast Asia to be the top 10 exporters of stainless steel.

MARKET REVIEW

Export Performance of Indonesian Stainless Steel Products

In 2019, total exports of Indonesian stainless steel contributed 2% of Indonesia's total non-oil and gas exports. Indonesia total export of stainless steel grew by 41.9% to US \$ 3.26 billion in 2019 whereas in 2018 was only US \$ 2.3 billion. The five years trend from 2015 to 2019 has positive growth 188.14% per year where the export value reached US \$ 91.3 million in 2015 then significantly increased to US \$ 3.26 billion in 2019.

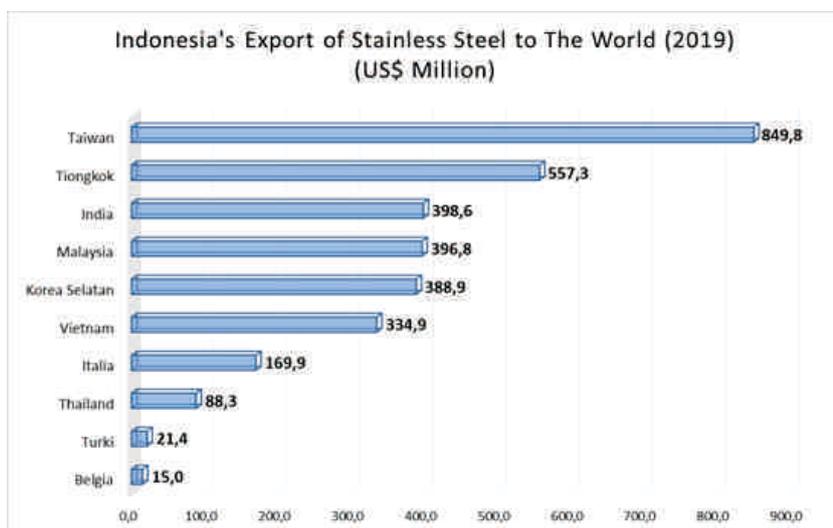


Source: Statistics Indonesia (processed by Dit. P2IE)

The largest Indonesia export transaction for stainless steel based on 6 Digit HS Code group in 2019 as follow, (1) HS 721913, Flat-rolled products of stainless steel, of a width of ≥ 600 mm, not further

worked than hot-rolled, Of a thickness of 3 mm or more but less than 4.75 mm amounted USD 1,5 billion (46,2%); (2) HS 721912 Flat-rolled products of stainless steel, of a width of ≥ 600 mm, not further

worked than hot-rolled, Of a thickness of 4.75 mm or more but not exceeding 10 mm, amounted USD 549,4 million (16,9%); (3) HS 721914 Flat-rolled products of stainless steel, of a width of ≥ 600 mm, not further worked than hot-rolled, Of a thickness of less than 3 mm, amounted USD 520 million (16%); (4) HS 721933 Flat-rolled products of stainless steel, of a width of ≥ 600 mm, not further worked than cold-rolled, Of a thickness exceeding 1 mm but less than 3 mm, amounted USD 410 million (12,6%); dan (5) HS 721934 Flat-rolled products of stainless steel, of a width of ≥ 600 mm, not further worked than cold-rolled, of a



Source: Statistics Indonesia (processed by Dit. P2IE)



Source: Statistics Indonesia (processed by Dit. P2IE)

export transaction of USD 3.15 billion in 2019. This number represents 97% of total export value of stainless steel from Indonesia to the world.

West Java was in second place with USD 99,9 million which represents 3% of national's export value to the world.

Central Java was recorded to have the highest export transaction USD 197.7 million in 2019, represent 39.2% of the overall Indonesia total export of stainless steel products, followed by West Java with USD 156.4 million which represents 31.02%.

One of the Indonesia center productions for stainless steel is located in Morowali Industrial Park area, Morowali Regency in Central Sulawesi.

thickness of 0.5 mm or more but not exceeding 1 mm, amounted USD 198,8 million (6.1%).

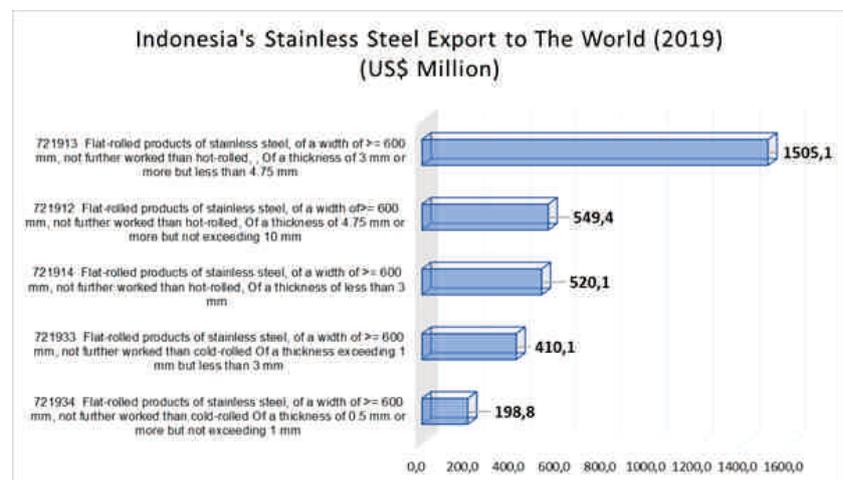
The Indonesian government through its policy is encouraging stainless steel exporters to penetrate and expand the export market.

The Indonesia largest trading partner for these products in 2019 are Taiwan amounted USD 849.8 million (26%) then followed by China amounted USD 557.3 million (17.1%); (3) India amounted USD 398.6 million (12.2%); (4) Malaysia amounted USD 396.6 million (12.1%); and (5) South Korea amounted USD 388.8 million (11.9%).

For the last five years (2015-2019), All Indonesia trade destination for these

products have positive trend and China, among other countries, has the biggest trend by 616.29% then followed by (2) South Korea by 295.8%; (3) Vietnam by 278.6%; (4) Malaysia by 233.4%; and (5) Italy by 139.2%.

Central Sulawesi was recorded as the province which have the highest



Source: Statistics Indonesia (processed by Dit. P2IE)

List of Exporters Indonesia Stainless Steel

1. BINA NIAGA MULTIUSAHA, PT

Kawasan Industri Jababeka Tahap 2, Jl. Industri Selatan 4 Blok PP-4/4 - Lemahabang, Bekasi - Jawa Barat (17530)

Tel : (62-21) 89830472, 89830535, 89832020

Fax : (62-21) 8937635

Email : info.pt.binaniaga@gmail.com, marketing@bnmstainless.co.id

Website : <http://www.binaniaga.co.id>, www.bnmstainless.co.id

2. JINDAL STAINLESS INDONESIA, PT

Kawasan Industri Maspion, Maspion Unit V - Desa Sukomulyo Manyar Gresik - Jawa Timur (61151)

Tel : (62-31) 3959588, 3959565

Fax : (62-31) 3959566

Email : info.indonesia@jindalsteel.com

Website : <https://www.jindalstainless.com/>

3. KRAKATAU STEEL, PT

Jl. Industri No. 5 P.O BOX 14 Cilegon Banten (42435) - Indonesia

Tel : (+62) 254 392159, 392003

Fax : (+62) 254 392178

Email : corsec@krakatausteel.com

Website : <https://www.krakatausteel.com/>

4. The Master Steel Mfg, PT

Jl. Raya Bekasi km. 21 Pulogadung, Jakarta Timur - Indonesia

Tel : (+62-21) 460 6188

Fax : (+62-21) 460 6185

Website : <https://www.themastersteel.com/>

5. PT Gunung Raja Paksi Tbk

Jl. Perjuangan No. 8, Kp.Tangsi RT. 004/006 Sukadanau, Cikarang Barat, Bekasi (17530) West Java - Indonesia

Tel : +62 21 890-0111 (Hunting) / 890-0222

Fax : +62 21 890-0555 / 890-1588

Email : gsg@gunungsteel.com

Website : <http://www.gunungrajpaksi.com/>

Bina Niaga Multiusaha (BNM), PT



We combines two (2) key elements in our business process:
PRECISION & FLEXIBILITY

Precision symbolizes operational excellence and flexibility brings intangible added value to our customers.

These are the uniqueness & distinction that positively differentiate BNM from others mills. The combination of precision in production and flexibility in service is BNM's philosophy.

PRECISION & FLEXIBILITY

PRECISION is more than accuracy and attention to detail. It is beyond that, it is about care, passion, and appreciation of each customer's need of product specifications. Each product specification is rigorously studied & confidently produced through state of the art equipments and machineries. Such state of philosophy enables us to consistently deliver high quality products to each customer.

FLEXIBILITY is all about listening, understanding and delivering each customer's unique needs. We realize that every customer has her own product standards that are distinct to others, and we are committed to satisfy each of those unique requirements. Our ability to deliver flexible services, ranging from customized product specifications to customized order quantity, reflects our commitment and passion to excel in customer satisfaction.

Customer Satisfaction Through Precise Products & Flexible Services

Product Application



- We can produce from soft up to super extra hard tempered product
- Our thickness range is down to 0.05 mm and a width range down to 5 mm
- Our product is a precision cold-rolled stainless steel with stringent accuracy in size dimension, mechanical properties and surface finish. It is highly customizable depending on each customer's requirement.



HANDPHONE PARTS

- SIM CARD HOLDER
- OUTER CASING
- INNER CASING
- KEYPAD



MEDICAL INSTRUMENTS

- NEEDLE SYRINGE
- LABORATORY DEVICE



AUTOMOTIVE/VEHICLE PARTS

- ENGINE GASKET
- BRAKE SYSTEM
- WINDOW CAR RIMMING
- COVER MAGNET
- PISTON RING
- TRANSMISSION SPRING



ELECTRICAL/ELECTRONIC PARTS

- LITHIUM MERCURY CELLS
- COMPUTER HARD DISC DRIVE
- DVD & VCD PLAYER PART
- TELEVISION PART
- PAPER CUTTER
- BATTERY HOLDER
- BLENDER KNIFE



INDUSTRIAL PARTS

- GAS PIPE BANDING
- TOWER PACKING
- CABLE TIE
- FLEXIBLE HOSE
- CORRUGATED FLEXIBLE
- SPIRALLY WOUND TUBE
- COIL SPRING

Product Application



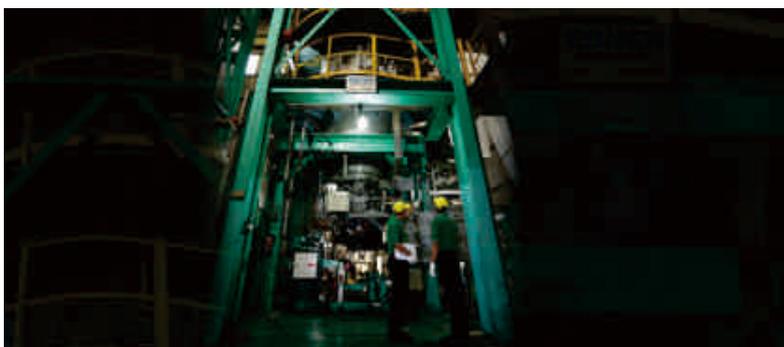
SENDZIMIR MILL

A state-of-the-art stainless steel 20 high cold rolling mill manufactured by I²S - USA is able to roll cold-rolled stainless steel coil from 2.5 mm thickness down to the final thickness of 0.05 mm while still consistently maintaining surface quality, excellent strip flatness and thickness variation within a maximum range of 3 microns



DEGREASER

It perfectly removes the oil residue carried by the strip from cold rolling mill by the action of alkaline and hot rinsing, before the coils are send to bright annealing or slitting.



VERTICAL BRIGHT ANNEALING LINE

A vertical bright annealing line manufactured by Ebner-Austria is designed with the proven muffle concept to make use of the pure hydrogen atmosphere with lowest dewpoint (-60 °C) to maintain an oxidation-free process. The result is a clean, damage-free surface as well as perfect mechanical properties in the annealed strips. Ebner technology can process strip with a very high width to thickness ratio. The strip dimensions to be processed at this facility are between 1 mm and 0.1 mm thickness and up to 500 mm wide with temperatures ranging up to 1150 °C

Product Application



SKIN PASS MILL

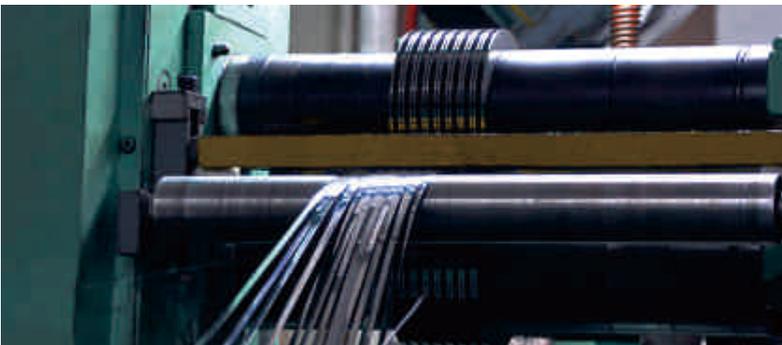
The skin pass mill improves mechanical properties, flatness and brightness of the stainless steel strip. The maximum width is 500 mm with thickness range of 1.00 mm to 0.10 mm, and maximum brightness of soft products is up to 600 GU.



QUALITY CONTROL

In order to deliver the assured quality, all material from raw material until finished goods are inspected & tested before being delivered to customer. To ensure the compliance with customer's requirement. BNM has a modern quality control laboratory, which include.

- Hardness testing machine
- Yield and tensile strength machine
- Brightness and roughness testing machine



SLITTING LINE

It precisely controls the strip width & burr level by meticulously setting the precision circular slitting knives & spacers on the arbor. The minimum slit width can be as narrow as 5 mm.

Product Application



**COLD-ROLLED
STAINLESS STEEL
NARROW WIDTH**

Our slitting lines have width range down to 5 mm with tolerance according to JIS or ASTM Standards. Available for all stainless steel grades: 301, 304, 304L, 316L, 430, 904L, etc.



**COLD-ROLLED
STAINLESS STEEL IN COIL**

we can produce from soft up to super extra hard products with thickness range down to 0.05 mm (50 Micron)



Technical Information

Tempered Product

Grade	Temper	Hardness (HV) MIN	Yield Strength (MPA)	Tensile Strength (MPA)	Elongation (%) MIN	Width Range (MM)	Thickness	
SS 301	¼ H	266	515	860	25	400	0.70	0.10
	½ H	310	500	912	10	400	0.70	0.08
	¾ H	370	736	1108	5	400	0.70	0.08
	H	430	1010	1294	2	400	0.70	0.06
	EH	490	1255	1540	1.5	150	0.50	0.06
	S EH	530	1599	1697	1	150	0.50	0.05
SS 304	¼ H	266	515	860	10	400	0.70	0.10
	½ H	250	598	834	25	400	0.70	0.08
	¾ H	330	745	971	12	400	0.70	0.08
	H	375	951	1196	3	400	0.70	0.06
SS 201	H	450	965	1276	8	400	0.70	0.10
Other	Can be defined upon request							

Soft Product

Grade	Temper	Hardness (HV) MIN	Yield Strength (MPA) MIN	Tensile Strength (MPA) MIN	Elongation (%) MIN	Width Range (MM) MAX	Thickness	
							MAX	MIN
SS 304	Annealed	200	201	501	40	500	1.00	0.10
	Annealed	200	172	471	40			
	Annealed	200	172	402	20			
	Annealed	200	201	441	22			
Other	Can be defined upon request							

Stainless Steel Grade

Grade	JIS Japan	AISI	DIN Germany	UNI Italy	Afnor France	BS Britain	IS India	SIS Sweden	UNS
SS 301	SUS 301	301	1.4310	X12 Cr Ni 1707	Z 12 CN 17-08	301 S 21	X 1 0 C r 17Ni 7	142331	S 30100
SS 304	SUS 304	304	1.4301	X5 Cr Ni 1810	Z 6 CN 18-19	304 S 15	X02 Cr 19 Ni 10	142333	S 30400
SS 304L	SUS 304S	304L	1.4306	X2 Cr Ni 1811	Z 2 CN 18-10	304 S 11	-	142352	S 30303
SS 310S	SUS 310S	301S	1.4845	X6 Cr Ni 2520	-	-	-	142361	S 31008
SS 316	SUS 316	316	1.4401	X8 Cr Ni Mo 1713	Z 6 CN D 17-11	316 S 31	X04 Cr 17 Ni 12 Mo 2	142347	S 31600
SS 316L	SUS 316L	316L	1.4404	X2 Cr Ni Mo 1712	Z 2 CND 17-12	316 S 31	X02 Cr Ni 12 Mo 2	142338	S 31603
SS 321	SUS 321	321	1.4878	X6 Cr Ni Ti 1811	Z 6 CND 18-12	321 S 31	X04 Cr 18 Ni 10 Ti 20	142337	S 32100

Krakatau Steel, PT



KRAKATAU STEEL

First established as Trikora Iron Steel project by President Soekarno, PT Krakatau Steel which constructed at 1970 has grown to be the largest steel producer in Indonesia. Krakatau Steel has demonstrated rapid growth, and in less than ten years, the Company has added various production facilities, such as Sponge Iron Plant, Steel Billet Plant, and Wire Rod Plant, as well as infrastructure facilities, such as electricity power and a water treatment plan, the Port of Cigading and a telecommunication system.

These developments led PT Krakatau Steel (Persero) to become an integrated steel company in Indonesia which has complete

infrastructure facilities. As a result of its technical expertise, PT Krakatau Steel (Persero) became the first steel company in Indonesia to be awarded the ISO 9001 and ISO 14001. Previously, the Company had produced spiral pipes for the first time in 1973 with the ASTM A252 and AWWA C200 specifications, and obtained the API 5L certification in 1977 and the BC1 certification since 2009.

In 1993, the Company was awarded the ISO 9001 certification which was also followed by the ISO 9000 certificate because of its solid commitment to maintaining international quality standards. Those certifications have been upgraded to the ISO

9001:2000 in 2003. SGS International also awarded another ISO certifications highlighting the Company's commitment for environmental awareness and work safety, the ISO 14001, in 1997. On November 10, 2010, amidst volatile market conditions, PT Krakatau Steel (Persero) succeeded in becoming public company through its Initial Public Offering (IPO) and listed its stock on the Indonesia Stock Exchange.

Currently, PT Krakatau Steel (Persero) Tbk. has a steel production capacity of 3.15 million tonnes per year (unaudited), producing HRC, CRC and Wire Rods and through subsidiaries, the Company also manufactures steel products such as Spiral Pipes, Electrical Resistance Welding Pipes, Reinforcing Bars, and Section Steel. This rolling capacity will be increased to reach 4.65 million tonnes by 2017 by adding HRC capacity by 1.5 million tonnes. The Company market its products not just domestically, but also internationally.

The Company's expertise to produce such specialized steel, including steel for the defence industry, serves to

further strengthen its position as one of the nation's strategic industries.

Scope of Work:

- Integrated steel industry, which produces Sponge Iron, Slab, Billets, Hot Rolled Coil, Cold Rolled Coild and Wire Rod.
- Trading activities,
- comprising sales, distribution and agency work, both domestic and international markets.
- Services, such as designing, engineering and construction, machine maintenance, technical consultancy and provision of infrastructure to support the activities of the Company.
- Supporting activities such as warehousing, workshop, property, port services, education and training, waste and industrial product, power plant, water treatment and information technology services.



Product



Hot Rolled Coil/ Plate (HRC/ P)

Dimension:

- Thickness: 1.6 - 25.0mm
- Width: 600 - 2000mm
- Coil ID: 760mm
- Coil OD: 2000mm (Max.)
- Coil Weight: 30MT (Max.)

Product Application:

- Oil and Gas Pipes.
- Boiler & Pressure Vessels.
- Gas Cylinders/ LPG Bottle.
- General & Welded Structures.
- Ship Plate & Buildings.
- General Pipe & Tubes.
- Automotive Parts & Frames.
- Weathering Corrosion Resistant Steel.
- Containers.
- Heavy Duty Vehicle.

Product



Cold Rolled Coil/ Sheet (CRC/ S)

Dimension:

- Thickness: 0.2 - 3.0mm
- Width: 762 - 1250mm
- Coil ID: 508mm
- Coil OD: 2000mm (Max.)
- Coil Weight: 20MT (Max.)

Product Application:

- General Purposes.
- Galvanized & Galvalum Sheet.
- Pipe & Tubes.
- Automotive Body & Parts.
- Tin Mill Black Plates.
- Enamel Wares.
- Steel Frame Housing
- Home and Office Appliances.
- Drum

Product



COLD ROLLED COIL FOR GALVANIZED SHEET

PT Krakatau Steel (Persero) Tbk. produce cold rolled steel for applications using galvanized or galvanum coating on the next process. The steel have some properties such as Low-medium-High strength, excellent in weldability and formability, good coating and paintability, good flatness and stiffness, and accurate and precise dimensions.

The general applications of the steel are frame housing, flex-tek, general structure, galvanized or galvanum structures.

The available standard Specifications of CRC for Galvanized Sheet are:

- JIS : G 3141, SPCC-1D, SPCC-2D, SPCC-4D
- Others* : SPCG 250, 300, 350 A, 550B

*Specifications are created based on the agreement between Krakatau Steel and Customers.

Specification	Chemical Composition (%)				Mechanical Properties			
	C	Mn	P	S	YS (MPa)	TS (MPa)	Elongation (%)	Hardness (HRB)
SPCC-1D	0,02 ~ 0,06	0,15 ~ 0,40	0,020 max	0,020 max	-	-	-	85 min.
SPCC-2D	0,02 ~ 0,06	0,15 ~ 0,40	0,020 max	0,020 max	-	-	-	85 ~ 90
SPCC-4D	0,02 ~ 0,06	0,15 ~ 0,40	0,020 max	0,020 max	-	-	-	74 ~ 83
SPCG 250	0,02 ~ 0,06	0,15 ~ 0,40	0,020 max	0,020 max	250 min.	320 min.	25 min.	-
SPCG 300	0,02 ~ 0,06	0,15 ~ 0,40	0,020 max	0,020 max	300 min.	340 min.	20 min.	-
SPCG 350	0,02 ~ 0,06	0,15 ~ 0,40	0,020 max	0,020 max	350 min.	420 min.	15 min.	-
SPCG 450	0,02 ~ 0,06	0,15 ~ 0,40	0,020 max	0,020 max	450 min.	480 min.	10 min.	-
SPCG 500	0,02 ~ 0,06	0,15 ~ 0,40	0,020 max	0,020 max	500 min.	520 min.	8 min.	-
SPCG 550	0,02 ~ 0,09	0,20 ~ 0,60	0,020 max.	0,020 max.	550 min.	550 min.	2 min.	-

CRC COIL FOR GALVANIZED SHEET

PRODUCT SPECIFICATION
PT KRAKATAU STEEL (PERSERO) Tbk.

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Jl. Krakatau I No. 112220001
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Plant
Cikampek, Krakatau Plant 01a
Rantau Krakatau, Krakatau



COLD ROLLED COIL FOR PIPE & TUBE

PT Krakatau Steel (Persero) Tbk. produce cold rolled steel for pipe and tube applications. The steel have some properties such as Low-medium strength, good weldability and good formability.

The available standard specifications of CRC for Pipe and Tube are:

- ASTM : A1008 -01 CS Type B, ASTM A366 -97 CS Type B
- DNV : 16.2 St 17.03 g, St 17.03 m
- JIS : G 3141, SPCC-5D, SPCC-5D
- Others : K55TA 290, MP1A, MP1C, SPCK-3, SPCK-4, KSA J7, KSI J7, KSS J7, MP-3B, K55TA 390, SPCK-5

Typical Chemical Composition & Mechanical Properties

Specification	Chemical Composition (%)				Mechanical Properties		
	C	Mn	P	S	YS (MPa)	TS (MPa)	Elongation (%)
SPCC-5D	0,02 ~ 0,06	0,15 ~ 0,40	0,020 max	0,020 max	-	-	-
SPCC-5D	0,02 ~ 0,06	0,15 ~ 0,40	0,020 max	0,020 max	-	270 min.	0,25 sp=0,30 : 28 min 0,30 sp=0,40 : 31 min 0,40 sp=0,60 : 34 min 0,60 sp=1,00 : 36 min 1,00 sp=1,60 : 37 min 1,60 sp=2,50 : 38 min 2,50 sp=3,90 : 39 min

CRC STEEL FOR PIPE & TUBE

PRODUCT SPECIFICATION
PT KRAKATAU STEEL (PERSERO) Tbk.

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Plant
Cikampek, Krakatau Plant 01a
Rantau Krakatau, Krakatau

Product



KRAKATAU STEEL
PT KRAKATAU STEEL (PERSERO) Tbk.

COLD ROLLED FOR ENAMELWARES

Our everyday enamel cookware are made of cold rolled steel sheet which coated by glass-like vitreous porcelain enamel. The benefits of this economical product are countless: safe and non-toxic for our food, high temperature fire resistant, hard, clean, non-stick and non-staining surfaces, and its beautiful colour and graphical designs; the all households qualities to make our life easier, healthier and brighter.

However, it is not easy to produce highest quality of enamelware products, as well as its raw materials: cold rolled steel sheet. The sheet Specification for enamelwares should have good formability, surface adhesion, non-sagging properties, and excellent enamellability, which means its resistance against unacceptable enamelling defects such as: carbon ball, hair-line or fish scale.

PT Krakatau Steel (Persero) Tbk. has been producing JIS G3133 SPP cold rolled sheet use ultra low carbon and titanium-stabilized steel to ensure excellent ground and cover coat formation during and after enamelling process (usually 3 times firing at 810°C). For moderate quality of enamelwares with slight enamelling process, we offers SPCC sheet with Specification treatments to enhance its drawability and enamellability.

Specification	Quality	Chemical Composition (%)				Mechanical Properties		
		C	Mn	P	S	YS (MPa)	TS (MPa)	Elongation (%)
JIS G3141 SPCC or equivalent	Commercial	-	-	-	-	-	-	-
JIS G3141 SPCC or equivalent	Commercial	0,15 max	0,6 max	0,10 max	0,05 max	-	270 min	0,25±0,30 ± 28 min 0,30±0,40 ± 31 min 0,40±0,60 ± 34 min 0,60±1,00 ± 36 min 1,00±1,60 ± 37 min 1,60±2,50 ± 38 min ± 2,50 ± 39 min
SPP or equivalent	Deep drawing	0,08 max	0,30 max	0,04 max	0,04 max	-	270 max	0,40±0,60 ± 38 min 0,60±1,00 ± 40 min 1,00±1,60 ± 41 min 1,60±2,50 ± 42 min ± 2,50 ± 43 min

Notes: ±5 HRB max for SPCC
Enamellability for SPP are fully guaranteed.

PRODUCT SPECIFICATION
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Plant
Cikampek, Ciklop, Pulo Gadung
- Bekasi, Jawa Barat

CIF FOR ENAMELWARES



KRAKATAU STEEL
PT KRAKATAU STEEL (PERSERO) Tbk.

COLD ROLLED FOR HOME, OFFICE, & ELECTRICAL APPLIANCES

PT Krakatau Steel (Persero) Tbk. produces Cold rolled steel for Home, Office, and Electrical Appliances. The steel have some properties such as Low strength, good weldability and forming, good flatness and adherence (paintability).

The available standard Specifications of CRC for Home Office Appliances are:

- ASTM : A1008 -01 CS Type B, A601 CS Type B, A366 -97 CS Type B, A97 CS Type B
- DN : 1824 S1 12,03 g, S1 12,03 m, S1 13,03 g, S1 13,03 m
- JIS : G 3141, SPCC-SD, SPCC-T-SD, SPP (Enamelware)
- SNI : 07 3087, B 100-SS, 0100T-SS

Specification	Quality	Chemical Composition (%)				Mechanical Properties		
		C	Mn	P	S	YS (MPa)	TS (MPa)	Elongation (%)
JIS G3141 SPCC or equivalent	Commercial	-	-	-	-	-	-	-
JIS G3141 SPCC or equivalent	Commercial	0,15 max	0,6 max	0,10 max	0,05 max	-	270 min	0,25±0,30 ± 28 min 0,30±0,40 ± 31 min 0,40±0,60 ± 34 min 0,60±1,00 ± 36 min 1,00±1,60 ± 37 min 1,60±2,50 ± 38 min ± 2,50 ± 39 min
JIS G3141 SPCC or equivalent	Drawing	0,12 max	0,5 max	0,04 max	0,04 max	240 max	270 min	0,25±0,30 ± 28 min 0,30±0,40 ± 31 min 0,40±0,60 ± 34 min 0,60±1,00 ± 36 min 1,00±1,60 ± 37 min 1,60±2,50 ± 38 min ± 2,50 ± 39 min
JIS G3141 SPCC or equivalent	Deep Drawing	0,10 max	0,45 max	0,03 max	0,03 max	220 max	270 min	0,25±0,30 ± 28 min 0,30±0,40 ± 31 min 0,40±0,60 ± 34 min 0,60±1,00 ± 36 min 1,00±1,60 ± 37 min 1,60±2,50 ± 38 min ± 2,50 ± 39 min
JIS G3141 SPCC or equivalent	Deep Drawing non-sagging	0,08 max	0,45 max	0,03 max	0,03 max	210 max	270 min	0,40±0,60 ± 40 min 0,60±1,00 ± 42 min 1,00±1,60 ± 43 min 1,60±2,50 ± 44 min ± 2,50 ± 45 min

PRODUCT SPECIFICATION
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Plant
Cikampek, Ciklop, Pulo Gadung
- Bekasi, Jawa Barat

CIF FOR CABINET & OFFICE APPLIANCES

Product



KRAKATAU STEEL
PT KRAKATAU STEEL (PERSERO) Tbk.

DIMENSION COLD ROLLED STEEL COIL SHEET

DIMENSION & WEIGHT

1. Annealed Steel Cold Rolled Coil

Thickness (mm)		Width (mm)		Diameter (mm)		Weight (MT)
Min	Max	Min	Max	Min	Max	Max
0,20	0,24	620	1.250	508	2080	23,4
0,25	3,06					

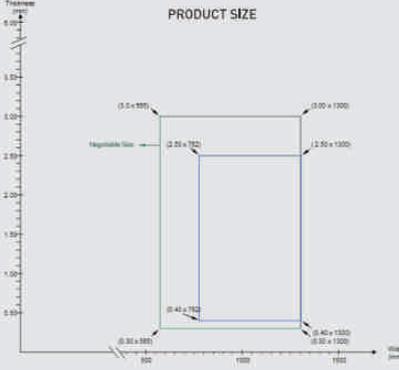
2. Annealed Cold Rolled Sheet

Thickness (mm)		Width (mm)		Length (mm)		Weight in one (MT) Max
Min	Max	Min	Max	Min	Max	
0,40	2,00	620	1.250	762	4.880	3,0

3. Full Hard & As Rolled

Thickness (mm)		Width (mm)		Diameter (mm)		Weight (MT)
Min	Max	Min	Max	ID	OD	Max
0,20	0,24	620	1.250	508	2080	23,4
0,25	2,00					

PRODUCT SIZE



PRODUCT SPECIFICATION
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KRAKATAU STEEL
PT KRAKATAU STEEL (PERSERO) Tbk.

CHECKERED PLATE

Steel checker plate (also known as floor plate) is a steel plate with a raised pattern on one side of the surface.

Application : stairs, walkways, ramps, infrastructure, automobile floor, and engineering stairs

STANDARD	GRADE	GROUP APPLICATION
KRAKATAU STEEL	Checkered	Floor Plate
KRAKATAU STEEL	Checkered 400	Floor Plate



Can be supplied in coil or plate
 Gauge : Thin Gauge : 2,30 – 6,00 mm (for Checker)
 : Thick Gauge : 3,50 – 6,00 mm (for Checker 400)
 : 4,00 – 12,70 mm
 Width : 600 – 1.524 mm

DIMENSION	STRIP THICKNESS	
	2,30 – 6,00 mm	6,00 – 12,70 mm
Length (L)	26,80 mm	33,00 mm
Width (W)	4,90 mm	7,70 mm
Height (H)	1,50 mm max.	1,50 mm max.
Pitch Size (P)	45,00 mm	60,00 mm
Angle of Profile to Rolling Direction (α)	45	45

Specification	Yield Strength	Tensile Strength	Elongation
Checker 400	Min. 235 MPa	400 – 510 MPa	13,00 – 4,99 mm : Min. 23% (Lo : 50 mm) 1 5,00 – 12,70 mm : Min. 17% (Lo : 200 mm)

PRODUCT SPECIFICATION
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Product

HOT ROLLED FOR BOILER & PRESSURE VESSEL APPLICATION



HOT ROLLED FOR BOILER AND PRESSURE VESSEL APPLICATION

Hot rolled steel plate for boiler and pressure vessel produced by PT Krakatau Steel (Persero) Tbk. has the following properties,
 Strength level according to standard specification
 Good weldability
 Good formability
 Good steel cleanliness achieved by clean steel practice in steelmaking.
 Accurate dimension according to standard

Application of these materials are boiler and pressure vessels in several industries such as power plants, coal gasifiers, refineries, process industries, and petrochemical exchangers. The steel for such applications are ASTM A285, ASTM A516, BSEN 10120, etc. PT Krakatau Steel (Persero) Tbk. supplies the steel in the form of coils or plates with supply condition as hot-rolled or thermomechanically controlled process (TMCP).

Other application of the steel is LPG bottle. PT Krakatau Steel (Persero) Tbk. has been supplying materials for LPG bottle 3 kg, 12 kg, and 50 kg according to JIS G3116 and SNI 07-2018-2006. As the addition of common mechanical testing, there are other testings which are required for LPG bottle application: bursting test and expansion resistance testing. PT Krakatau Steel (Persero) Tbk. material of SNI 07-3018-2006 B1 TG-255 and B1 TG-295 (equivalent to JIS G3116S0255 and S0295 respectively) shows good performance on the testing.

Hot rolled steel plate for boiler and pressure vessel application

STANDARD	GRADE	GROUP APPLICATION
ASTM A53	ASTM A53 GRB	Pipe Hot Dipgal, Zinc-Coated, Welded and Seamless
ASTM A285	ASTM A285 GRA	Plates, Carbon Steel, Low and Intermediate-Tensile Strength
	ASTM A285 GRB	
	ASTM A285 GRC	
	ASTM A285 GRD	
ASTM A285	ASTM A285 GRA	Plates, Carbon Steel, for Intermediate and Higher-Temperature Service
	ASTM A285 GRB	
	ASTM A285 GRC	
	ASTM A285 GRD	
ASTM A516	ASTM A516 GR70	Plates, Carbon Steel, for Moderate and Lower-Temperature Service
BSEN 10120	BSEN 10120 P255NB	Plates for building boilers and pressure vessels such as petroleum, chemical industry, reactor, etc.
SNI 07-3018-2006	B1 TG 255	Welded containers for high pressure gas bottles of volume less than 500 l for LPG, acetylene and propane gas.
	B1 TG 295	
JIS G3116	S0255	These steels are the lowest carbon steels of the plain carbon type, and are selected when cold formability is the primary requisite of the user. They are produced both as rimmed and killed steels.
SAE 1019	SAE 1019	
SAE 1020	SAE 1020	
SAE 1021	SAE 1021	
SAE 1022	SAE 1022	
SAE 1024	SAE 1024	

PRODUCT SPECIFICATION PT KRAKATAU STEEL (PERSERO) Tbk.

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Plant
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau



HOT ROLLED FOR HEAVY EQUIPMENT

High strength structural steel plate for heavy equipment application such as excavator, tractor or dump truck requires high strength and also impact due to its operations in critical condition. The tensile strength required varies depending on the components and specifications, ranging from 440 MPa, 490 MPa, 590 MPa, and 620 MPa or higher. PT Krakatau Steel (Persero) Tbk. has been producing hot rolled steel having tensile strength ranging from 400 to 630 MPa for heavy equipment application using High Strength Low Alloy Steel.

The requirements of steel specification for heavy equipments must have characteristics following these:
 High strength and impact to withstand the impact loads in critical condition
 Good fatigue resistance to improve the life time
 Good weldability while manufacturing process.

PT Krakatau Steel (Persero) Tbk. has been producing and supplying the steel specification which comply with those characteristics to the producer of heavy equipment.

Specification for Automotive Structure (Hot Rolled) :

Specification	Chemical Composition (%)				Mechanical Properties			
	C	Mn	P	S	YS (MPa)	TS (MPa)	Elongation (%)	Impact In (Joule)
SS 400	-	-	0,030 max	0,050 max	YS: 245 min	400 - 510	≥5 : 21 min	27 min
					TS: 235 - 235 min			
SM 400FA	0,20 max	1,40 max	0,035 max	0,035 max	YS: 345 min	490 min	≥5 : 19 min	27 min
					TS: 355 - 355 min		≥5 : 15 min	
SM 400FB	0,20 max	1,40 max	0,035 max	0,035 max	YS: 345 min	490 min	≥5 : 19 min	27 min
					TS: 355 - 355 min		≥5 : 15 min	
KSAPH 340	0,25 max	1,5 max	0,05 max	0,02 max	375 min	540 min	≥5 : 19 min	27 min
KSAPH 390	0,09 max	1,5 max	0,04 max	0,04 max	440 min	590 min	≥5 : 18 min	27 min
KSAPH 420	0,20 max	1,0 - 1,3	0,025 max	0,010 max	550 min	620 min	≥5 : 18 min	27 min

HOT ROLLED FOR HEAVY EQUIPMENT

PRODUCT SPECIFICATION PT KRAKATAU STEEL (PERSERO) Tbk.

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Product

HOT ROLLED WEATHERING CORROSION RESISTANT



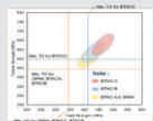
HOT ROLLED FOR WEATHERING CORROSION RESISTANT

Weathering corrosion resistant High-Strength Low-Alloy (HSLA) steel is intended for structural applications where a combination of high strength and enhanced atmospheric corrosion resistance are desired. It has approximately 4 times the atmospheric corrosion resistance of structural carbon steel, good formability and weldability. This atmospheric corrosion resistant steel has strength 25-40% higher than carbon steel (without vanadium addition). The extra strength of HSLA steel makes it more durable and offers a longer useful life span for chimney, bridge, tubular bridge, container and tank.

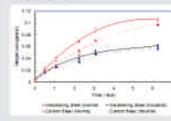
STANDARD	GRADE	GROUP APPLICATION
JIS G3125	SPAH	Having Superior atmospheric corrosion resistance, it is applied to architecture, steel tower, steel container and other structures.
KRAKATAU STEEL	BTRC-DKA	Weather corrosion resistance steel for structure
	BTRC-GRB	
	BTRC-GRC	
BS 4360	BS 4360 WR50A	Weathering resistant steel

Specification	Chemical Compositions										Mechanical Properties		
	C	Si	Mn	P	S	Cu	Ni	Cr	V	Yield Strength (MPa)	Tensile Strength (MPa)	Elongation (%)	
SPAH	0.12 max	0.20	0.6	0.07	0.035	0.25	0.65	0.30	-	355 min	490 min	22 min	
	-	-	-	0.25	-	-	-	-	-	Max	Max	Max	
BTRC-A	0.12 max	0.20	0.30	0.07	0.050	0.25	0.65	0.30	-	345 min	485 min	22 min	
	-	-	-	max	-	-	-	-	-	Max	Max	Max	
BTRC-B	0.19 max	0.30	0.80	0.040	0.050	0.25	0.40	0.40	0.02	345 min	485 min	21 min	
	-	-	-	max	-	-	-	-	-	Max	Max	Max	
BTRC-C	0.19 max	0.30	0.90	0.040	0.050	0.25	0.40	0.40	0.04	415 min	580 min	21 min	
	-	-	-	max	-	-	-	-	-	Max	Max	Max	

Typical Mechanical Properties



Weight Loss Testing and Measurement



Product Dimension

Thickness	1.80 - 25.0 mm
Width	600 - 2,000 mm
Coil Inner Diameter	760 - 2,000 mm
Coil weight	30 Ton Max
Length for Plate	12,000 mm max

PRODUCT SPECIFICATION PT KRAKATAU STEEL (PERSERO) Tbk.

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Plant
Ciklop, Jember, East Java
Koror, Palang, East Java



HOT ROLLED STEEL PLATE FOR ARMOUR APPLICATION

Needs of bullet-proof steel plate (armour plate) for the military industry as well as for the police and other defense functions nowadays can be produced in the country with quality no less than imported steel plates. PT Krakatau Steel (Persero) Tbk, as the state owned and the largest company in the field of steel industry in Indonesia has stepped up its own resources to build the roll-quotcher and temper machine, which has been able to produce armour plate with a hardness value equivalent to 500 HBW, so the quality can be equated with a plate of imports.

Specification	Thickness (mm)	Hardness (HBW)
KSW 450	6,00 - 20,00	420 - 440
KSW 500	6,00 - 20,00	480 - 540

Process of Quench & Temper :

Wear resistant steel plate KSW 450 and KSW 500 are designed using specification alloy steel with high contents of carbon and manganese, and using molybdenum, chromium and nickel alloy to obtain a superior hardening properties.

The process of steel making specification using a ladle furnace which undergo an intensive process to get the best quality of steel slab which is very clean and homogeneous.

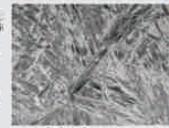
Steel slab then processed in the hot strip mill to produce steel plates with dimensions of thickness, width and length according to the order. Furthermore, the steel plate is processed in the roll-quotcher to produce steel plate with martensite structures which has a very high hardness. At the final stage the steel plate is processed in a temper furnace to get a tempered martensite structure that ensures superior toughness properties.

Specification	Thickness (mm)	Chemical Composition, max in wt%					Carbon Equivalent, Typical
		C	Mn	Cr	Ni	Mo	
KSW 450	6,00 - 20,00	0,30	1,4	0,8	0,30	0,25	0,55
KSW 500	6,00 - 20,00	0,30	1,4	1,0	0,50	0,40	0,60

Certification & Test Result

KSW 500 plate has been used by PT Pertamina raw material for body armor and APC. It has been ordered by the Ministry of Defense and the army production process with the final inspection acceptance tests in which the military certificate was issued by Directorate of Standardization & Accreditation, Directorate General of Defense Procurement, Ministry of Defense.

The wear resistance test result of KSW 500 which performed at Laboratory of Material Testing Department of Metallurgy & Materials Engineering University of Indonesia shows superior abrasion resistance which is equal and even better than imported plates.



Typical Microstructure

Available Dimension

Available dimensions of KSW 450 and 500 steel plates are in the table below. On the other hand, special dimensions can also be accepted as far as in the range of 600mm width and 2000mm length, is available for the length of the plate which is not suitable to measure, likewise, for quality which in particular plate (plate) can also be met through sales representative who have been appointed.

Specification	Thickness (mm)	Width (mm)	Length (mm)
KSW 450	6,00 - 20,00	1000 - 1600	3000 max
KSW 500	6,00 - 20,00	1000 - 1600	3000 max

PRODUCT SPECIFICATION PT KRAKATAU STEEL (PERSERO) Tbk.

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Plant
Ciklop, Jember, East Java
Koror, Palang, East Java

Product

HOT ROLLED STEEL FOR SHIP BUILDING APPLICATION



HOT ROLLED STEEL PLATE FOR SHIP BUILDING APPLICATION

Hot rolled steel plate for shipbuilding produced by PT Krakatau Steel (Persero) Tbk. has the following properties:
 Strength level according to standard
 High toughness
 Good formability
 Good weldability
 Excellent corrosion resistant

Some advantages of ship plate from PT Krakatau Steel (Persero) Tbk.
 Accurate dimension
 Suitable chemical composition
 Its high impact resistant at temperature up to as low as 40°C makes the plates suitable for extreme environment ranging from warm tropical ocean to cold polar ocean

Applications: Material for pier facilities, bridge, dock, and other construction near corrosive environment.

PT Krakatau Steel (Persero) Tbk. is currently capable of producing ship plate with various class of certifications, from the ordinary strength (Grade A and B) until higher strength (Grade A32 and A36).

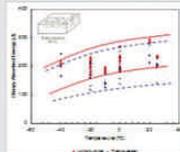
STANDARD	GRADE
Klasifikasi Indonesia (KI)	KI Grade A, KI Grade B, KI A32, KI A36
ABS Register	ABS Grade A, ABS AH32, ABS AH36
BV Register	BV Grade A, BV Grade B, BV AH32, BV AH36
GL Register	GL Grade A, GL Grade B
LR Register	LR Grade A
NK Register	NK Grade A, NK A32, NK A36
DNV Register	DNV Grade A, NV A32, NV A36
RINA Register	RINA Grade A, RINA Grade AH32, RINA Grade AH36
ASTM A333	A333 Grade B

Typical mechanical properties requirements of ship plate.

Ship Plate Grade	YS (MPa)	TS (MPa)	Elongation (%)	Impact Energy (Joule)
Grade A	235 min	400 - 520	22 min	Not Specified/Not
Grade B	235 min	400 - 520	22 min	27 min (Long) at 0°C 20 min (Trans) at 0°C
Grade A32	315 min	440 - 590	22 min	31 min (Long) at 0°C 22 min (Trans) at 0°C
Grade A36	355 min	490 - 620	21 min	34 min (Long) at 0°C 24 min (Trans) at 0°C

Typical range of ship plate produced by PT Krakatau Steel (Persero) Tbk.

Thickness	4,00 - 25,00 mm
Width	400 - 2,050 mm
Length	6,000 - 12,000 mm



PRODUCT SPECIFICATION

PT KRAKATAU STEEL (PERSERO) Tbk.

Head Office
 Gedung Krakatau Steel
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau

Jakarta Office
 Gedung Krakatau Steel
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau

Surabaya Branch Office
 Gedung Krakatau Steel
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau

Plant
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau



HOT ROLLED STEEL FOR AUTOMOTIVE STRUCTURE

Steel for automotive structures in major application is used for heavy vehicle. Heavy vehicles such as medium-heavy truck and bus have heavy load which need material made from steel that resist the load. Chassis is one of component that functions to absorb engine and driveline torque, endure shock loading, and accommodate twisting on uneven road surfaces. Therefore, it requires material made from steel which fulfill those functions. The main components of Chassis generally consist of Side Rail and Cross Member.

PT Krakatau Steel (Persero) Tbk. has been producing the steel which comply with those requirements. The excellence following these:

- Medium-High Strength
- Excellent in formability
- Good Impact and fatigue resistance
- Good surface appearance (painting)

Specification for Automotive Structure :

Specification	Chemical Composition (%)					Mechanical Properties		
	C	Mn	P	S	YS (MPa)	TS (MPa)	Elongation (%)	
JIS G3113 SAPH 300*	-	-	0,04 max	0,04 max	≤ 4,0 / 185 min	300 min	1,600 ≤ 2,00 / 33 min	
					4,00 ≤ 0,0 / 185 min		2,000 ≤ 2,50 / 34 min	
					≤ 0,0 / 175 min		2,500 ≤ 3,15 / 38 min	
JIS G3113 SAPH 370*	-	-	0,04 max	0,04 max	≤ 4,0 / 225 min	370 min	1,600 ≤ 2,00 / 32 min	
					4,00 ≤ 0,0 / 225 min		2,000 ≤ 2,50 / 33 min	
					≤ 0,0 / 215 min		2,500 ≤ 3,15 / 35 min	
JIS G3113 SAPH 400*	-	-	0,04 max	0,04 max	≤ 4,0 / 255 min	400 min	1,600 ≤ 2,00 / 31 min	
					4,00 ≤ 0,0 / 255 min		2,000 ≤ 2,50 / 32 min	
					≤ 0,0 / 235 min		2,500 ≤ 3,15 / 34 min	
JIS G3113 SAPH 440*	-	-	0,04 max	0,04 max	≤ 4,0 / 305 min	440 min	1,600 ≤ 2,00 / 29 min	
					4,00 ≤ 0,0 / 295 min		2,000 ≤ 2,50 / 30 min	
					≤ 0,0 / 275 min		2,500 ≤ 3,15 / 32 min	
KSAPH 540	0,10 max	1,5 max	0,03 max	0,02 max	375 min	540 min	26 min	
KSAPH 590	0,20 max	1,6 max	0,02 max	0,02 max	440 min	590 min	23 min	
KSAPH 620	0,20 max	1,8 max	0,02 max	0,02 max	550 min	620 min	18 min	

*Note: PT Krakatau Steel (Persero) Tbk. also produces the Hot Rolled Plate for

PRODUCT SPECIFICATION

PT KRAKATAU STEEL (PERSERO) Tbk.

Head Office
 Gedung Krakatau Steel
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau

Jakarta Office
 Gedung Krakatau Steel
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau

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 Gedung Krakatau Steel
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau

Plant
 Kawasan Industri Krakatau
 Kawasan Industri Krakatau

Gunung Raja Paksi Tbk (GRP), PT



PT Gunung Raja Paksi Tbk (GRP) is a member of Gunung Steel Group, one of the largest private steel companies in Indonesia. Established in 1970 in Medan, North Sumatra, our company started the business by producing hot steel, gradually producing beams and steel sheets. In 1991, PT Gunung Naga Mas transitioned to PT Gunung Raja Paksi (GRP). GRP is located in Cikarang Barat, West Java Province, Indonesia, covering more than 200 hectares.

With more than 50 years of experience in the steel industry, we produce 2,800,000 tons of high quality steel annually certified by local and international certification organizations. Today, our company has become one of the largest private steel companies in Indonesia. Together we develop a better future.

The new logo of PT Gunung Raja Paksi Tbk marks a new milestone in the journey of the company as it progresses under the

leadership of the next generation. The logo was designed to be relevant with the spirit of the new leadership and the current demand of the industry. It signifies the growth of the company together with the nation. The red colour of the new logo represents courage while the diagonal line represents agility and speed of the next generation.

CERTIFICATIONS:

GRP is very concerned about the quality of products and management system. This is evident from the many international certifications obtained such as ISO 9001, ISO 14001, OHSAS 18001, SNI, ABS, JIS Marking, Bureau Veritas (BV), Lloyd Register (LR), BKI, Germanischer Lloyd (GL), Det Norske Veritas (DNV), Nippon Kaiji Kyokai (NK), and others.

ABS Certificate:

- Approval Of ABS Materials Certificate No: JKK2229203
- Product Of Service: Steel Mill Facility And Process Approval

DNV.GL Certificate:

- Approval Of Manufacturer Certificate Certificate No: AMMM00001ZV:
- Product Of Service: Rolled Steel Product

LLOYD'S Register:

- Certificate of Conformity of Factory Production Control Certificate No: 0038/CPR/MUM/0610008/1
- Product Of Service: Hot Rolled Structural Steels – Flat

British Standard Institute

(BSI) REGISTER:

- Certificate of Approval Certificate No: OHSAS 18001:2007, OHS 727495
- Occupational Healthy and Safety Management System, for the following scope: Manufacture of Hot Rolled Steel Plate and Coil

LLOYD'S Register:

- Certificate of Approval Certificate No: ISO 14001-0049519

Bureau Veritas:

- Approval Certificate for Materials Certificate No: 31751/BO BV Product Of Service: Higher Strength Hull Steel Rolled Products

Komite Akreditasi Nasional:

- Sertifikasi Akreditasi Certificate No: SNI ISO/IEC 17025:2017 Product Of Service: Persyaratan Umum Untuk Kompetensi Laboratorium Pengujian dan Laboratorium Kalibrasi

ACRS Certificate:

- Certificate of Product Performance
Certificate No: 190502
Scope Of Certification: Manufacture of structural steel hot-rolled and slab to AS/NZS 1594:2002

ACRS Certificate:

- Certificate of Product Performance
Certificate No: 17120241
Scope Of Certification: Manufacture of structural steel hot-rolled and slab to AS/NZS 3678:2016

SIRIM Certificate:

- Product Certification Licence
License No: Pc001331
Scope Of Certification: Hot Rolled Plates and Strips of Non-Alloy Structural Steel

LADBS Certificate:

- Department of Building and Safety
License No: Fb03394
Scope Of Certification: Fabricator of HSS (High Strength Steel) and MWS (Medium Weight Steel)

Bureau Veritas:

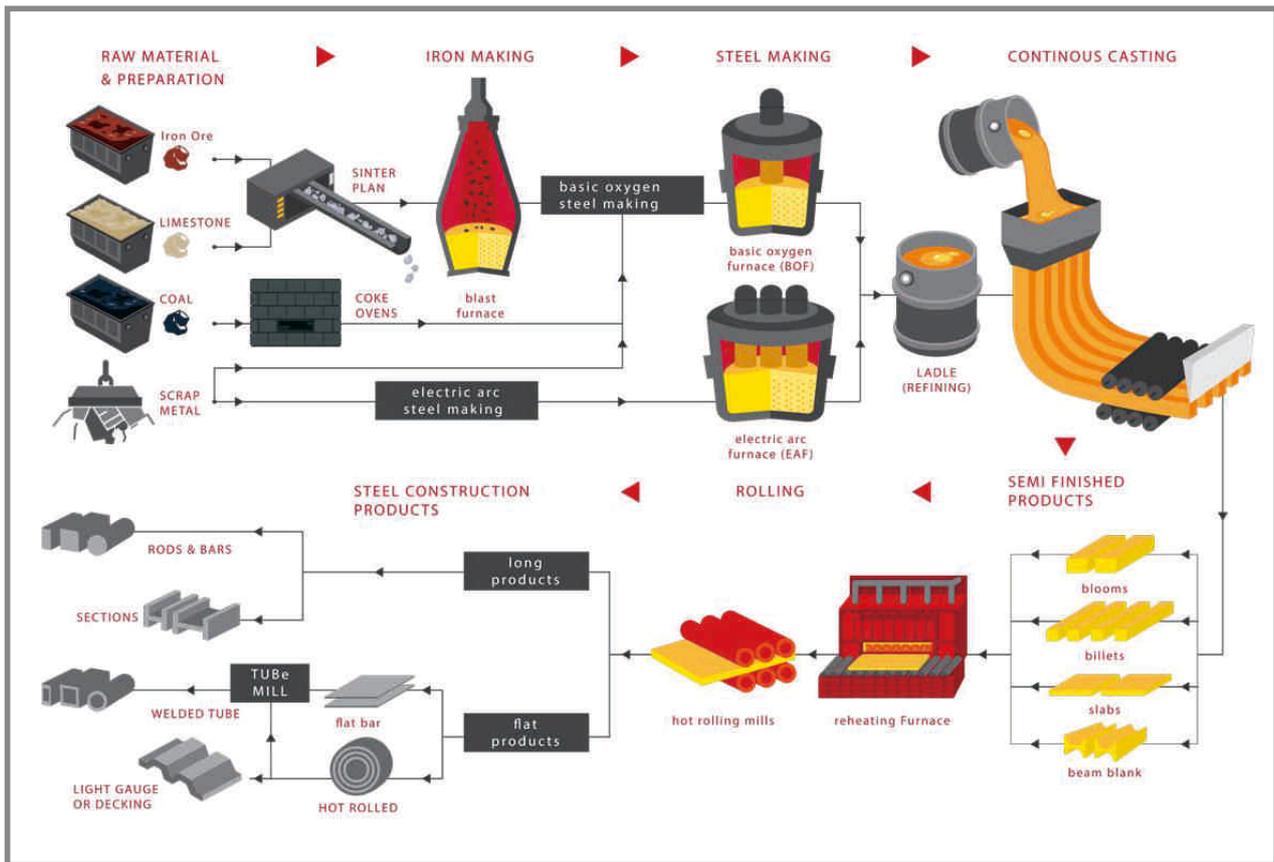
- Approval Certificate for

Materials Certificate No: 31920/BO BV
Product Of Service: Normal Strength Hull Steel Rolled Products

LLOYD'S Register:

- Certificate for Approval
Certificate No: OHSAS 18001:2007
The scope of this approval is applicable to: Manufacture of Hot Rolled Steel Plate and Coil





STEEL MAKING PROCESS 42

As a leading steel producer, GRP has complete and integrated production facilities to produce quality steels capable of meeting

various types of steel. With an integrated system, GRP is able to process steel from its raw form into finished product form and is ready for use in various construction and construction projects. All of these processes are carried

out within a single complex area and performed daily through a series of steps as follows:

- Collection of scrap metal or scrap metal and iron ore into the initial process. The quality of scrap metal became a major assessment when they arrived at our factory. The assessed old iron will be grouped and ready for the melting process.
- The next step is the melting process, at this stage the scrap metal and iron ore is melted by using Electric Arc Furnace (EAF), which will fill the old iron with electricity and turn it into molten metal. At the same stage, to ensure that quality





meets standards, raw elements such as sulfur, phosphorus and carbon elements are removed, while alloying elements are added to obtain the correct chemical composition according to the standard.

- Once the exact chemical composition is obtained, the molten steel is then fed through the continuous casting machine into Billet, Bloom, Beam Blank, and Slabs.
- In the final process, the semi-finished product will be sent to the finishing mill where it will be reheated until about $\pm 1400^{\circ}\text{C}$ and then in shape to the desired dimensions until the finished product process.
- All finished products are then inspected by our qualified Quality Control officers in ensuring all GRP steels are produced in accordance with international standards to fulfill orders. Any material

that has passed the process of quality control will be stored in our warehouse, ready to be distributed and used in every building and construction project.

Additional services that the GRP can provide:

- Galvanizing
- Normalizing Furnace
- Shot Blasting
- Primer coating and other coating applications
- Components fabrication (stamping, drilling, stamping, punching, shearing, cut-to-length, cut-to-shapes, welding)

PRODUCT:

Hot Rolled Coil (HRC)
Hot Rolled Coil, steel plate with best quality.
Our Hot Rolled and Cold Rolled steel plate can be formed into coils. Cold rolled coils have better surface quality, thinner and with more precise size, also have good mechanical property and excellent durability and finishes, while hot rolled coils have excellent formability

and weldability.

Standard & Specification:

ASTM A-36, ASTM A-572, JIS G 3101, JIS G 3131
Available Size : Thickness 2mm - 12mm, Width 900mm - 1524mm, Maximum 25 MT/Coil

Cold Rolled Coil (CRC)

Cold Rolled Coil, steel plate with best quality.

Our Hot Rolled and Cold Rolled steel plate can be formed into coils. Cold rolled coils have better surface quality, thinner and with more precise size, also have good mechanical property and excellent durability and finishes, while hot rolled coils have excellent formability and weldability.

Standard & Specification:

ASTM A-36, ASTM A-572, JIS G 3101, JIS G 3131, JIS G 3141 IB, JIS G 3141 SB, JIS G 3141 SD
Available Size: Thickness 0.2mm - 1.5mm, Width 700mm - 1000mm, Maximum 25 MT/Coil

**Directorate General Of National Export Development
Ministry Of Trade Of Republic Of Indonesia**

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 Ditjen Pengembangan Ekspor Nasional  [djpen.kemendag](https://www.instagram.com/djpen.kemendag)