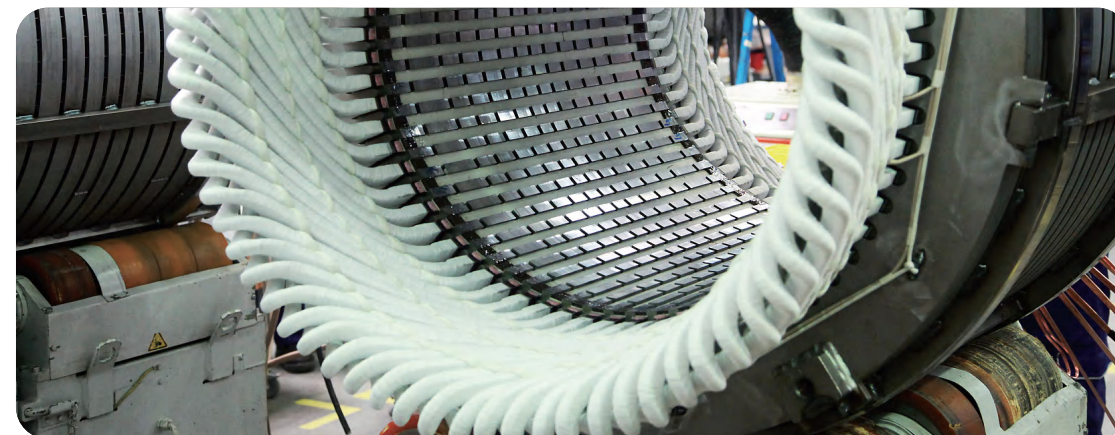


Cold Rolled Electrical Steel



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天津海晟祥时国际贸易有限公司
TIANJIN HIGHSEN TRADING CO.,LTD.

CONTENTS

01

ABOUT STEELHIGHSEN

Certification

01

02

CRGO

Production Flow

Application

Major Standard Comparison

Regular Grade

02-05

03

CRNGO

Production Flow

Application

Major Standard Comparison

Regular Grade

06-10

04

WHY US

Suppliers

Clients

Shipment

Package

11-13

ABOUT STEELHIGHSEN



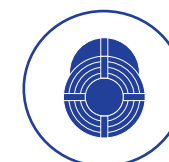
Tianjin Highsen Trading Co.,Ltd. is a global all-in-one steel solutions provider with **ISO 9001:2015** certification



80+ clients with sales coverage in over **30+** countries



40+ steel manufacturers worldwide



200,000+ MT sales volume as of Dec 31st 2024



\$150 million+ turnover of Dec 31st 2024

Certification



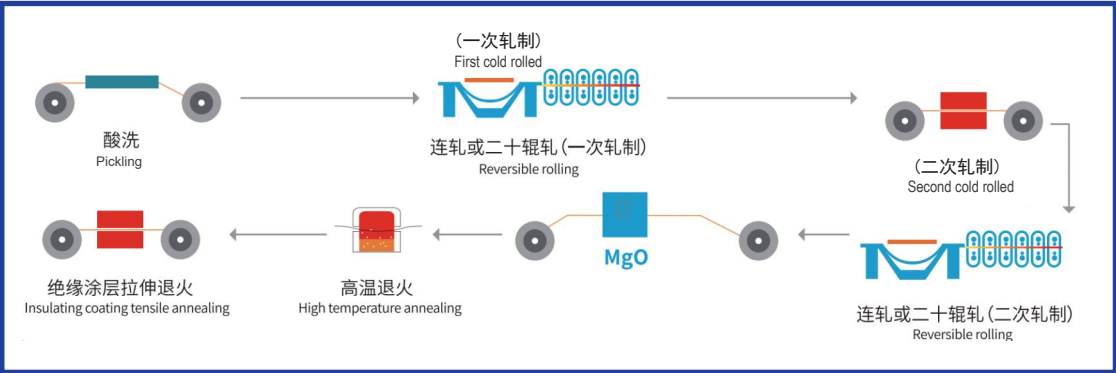
Cold Rolled Grain Oriented Steel

The easy magnetization direction of grain-oriented electrical steel is parallel to the rolling direction. It has excellent magnetic properties such as low iron loss, high magnetic permeability, and low magnetostriction.

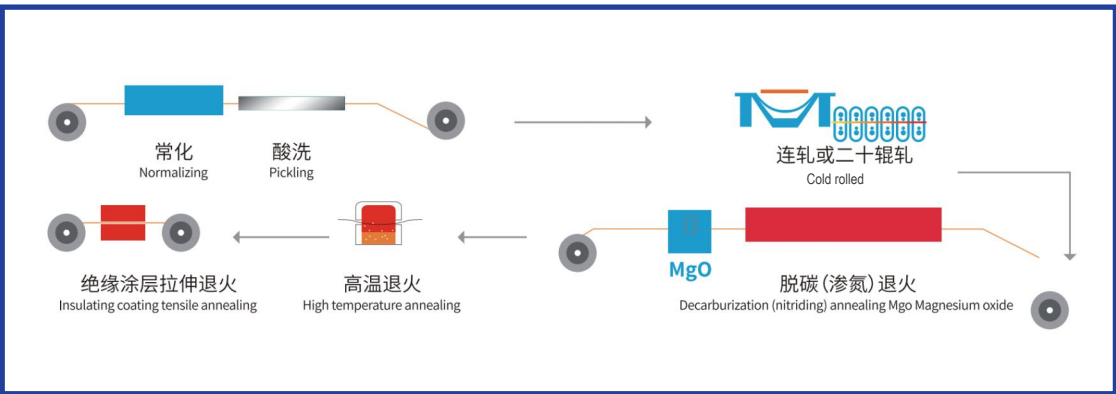
CRGO is widely used in transformers, reactors, mutual inductors, motors and other industries.

Production Flow

Conventional Grain Oriented Electrical Steel



HIB Grain Oriented Electrical Steel



Application

Varieties	Common Type	High Induction Type	Domain Refined High Induction Type
Large Motors	★	★	
Large Transformers	★	★	★
Medium and Small Transformers	★	★	★
Distributing Transformer	★	★	
Voltage Regulators	★	★	
Reactor and Magnetic	★	★	★
IF Transformers		★	
Mutual Inductors	★	★	
TV Transformers	★	★	
Radio Transformers	★	★	
Radio Broadcast Transformers		★	



Major Standard Comparation

Thickness	POSCO(2006) w/kg,	JIS C 2553 (2006) w/kg,	ASTM (1999) w/kg,	EN 10107 (1995) w/kg,	IEC 60404 (2008) w/kg,	BIS 3024 (2006) w/kg,
	P1.7/50	P1.7/50	P1.7/50	P1.7/50	P1.7/50	P1.7/50
0.23	23PHD085 / 0.85	23R085 / 0.85	-	-	M85-23P5 / 0.85	23HP85d / 0.85
	23PHD090 / 0.90	-	-	-	M90-23P5 / 0.90	M105 - 30PS / 1.05
	23PH090 / 0.90	23P090 / 0.90	23Q054 / 1.19	-	-	M130 -30S5 / 1.30
	23PH095 / 0.95	23P095 / 0.95	-	M100-23P / 1.00	M95-23P5 / 0.95	M145-35S5 / 1.45
	23PH100 / 1.00	23P100 / 1.00	23P060 / 1.32	-	M100-23P5 / 1.00	-
	23CG120 / 1.20	-	-	-	-	-
0.27	27PHD090 / 0.90	27R090 / 0.90	-	-	M90-27P5 / 0.90	27HP90d / 0.90
	27PHD095 / 0.95	-	-	-	M95-27P5 / 0.95	27HP95d / 0.95
	27PH095 / 0.95	-	-	-	-	27HP95 / 0.95
	27PH100 / 1.00	27P100 / 1.00	27P066 / 1.46	M103-27 / 1.03	M100-27P5 / 1.00	27HP100 / 1.00
	27PH110 / 1.10	-	-	-	M110-27P5 / 1.10	27HP110 / 1.10
	27PG130 / 1.30	27G130 / 1.30	-	-	M130-27S5 / 1.30	27CG130 / 1.30
0.30	30PH100 / 1.00	-	-	M105-30P / 1.05	-	-
	30PH105 / 1.05	30P105 / 1.05	-	-	M105 - 30PS / 1.05	30HP105 / 1.05
	30PG130 / 1.30	30G130 / 1.30	-	M117-30P / 1.17	M130 -30S5 / 1.30	30CG130 / 1.30



Regular Grade

Electromagnetic performance standard ordinary oriented silicon steel Q series

Grade	Thickness	Density	Max Iron Loss	Min Magnetic Induction
	(mm)	(kg/dm³)	(w/kg)	
23Q95	0.23	7.65	0.95	1.80
23Q100		7.65	1.10	1.80
23Q105		7.65	1.05	1.80
23Q110		7.65	1.10	1.80
23Q120		7.65	1.20	1.80
27Q95	0.27	7.65	0.95	1.80
27Q100		7.65	1.00	1.80
27Q105		7.65	1.05	1.80
27Q110		7.65	1.10	1.80
27Q120		7.65	1.20	1.80

High magnetic orientation silicon steel QG series

Grade	Thickness	Density	Max Iron Loss	Min Magnetic Induction
	(mm)	(kg/dm³)	(w/kg)	
23QG75	0.23	7.65	0.75	1.87
23QG80		7.65	0.80	1.87
23QG85		7.65	0.85	1.87
23QG90		7.65	0.90	1.87

Domain thinning high magnetic orientation silicon steel QGD series

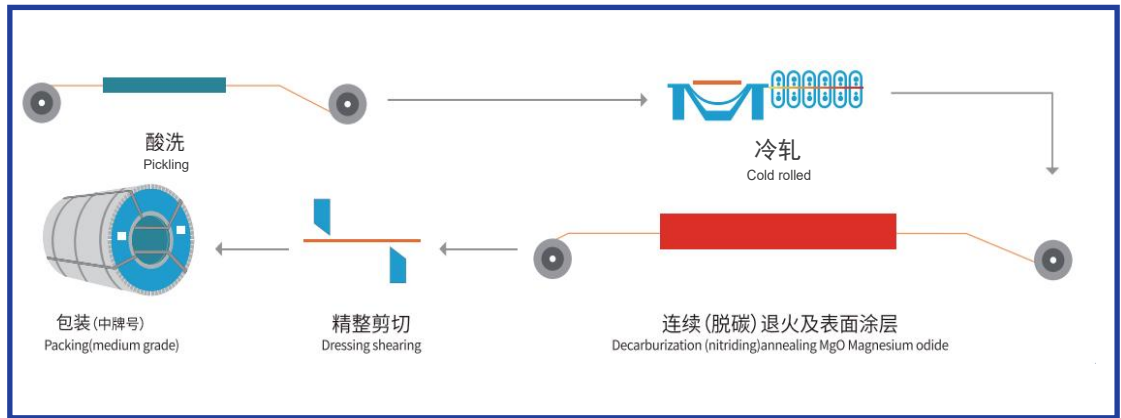
Grade	Thickness	Density	Max Iron Loss	Min Magnetic Induction
	(mm)	(kg/dm³)	(w/kg)	
23QGD75	0.23	7.65	0.75	1.87
20QGD70	0.20	7.65	0.70	1.87
20QGD65	0.20	7.65	0.65	1.87
18QGD65	0.18	7.65	0.65	1.87

Cold Rolled Non-Grain Oriented Steel

Cold rolled non-grain oriented steel is normally called CRNGO, NGO, NOES. The grain direction of non-oriented silicon steel is randomly distributed, and the electromagnetic properties are uniform, widely used in the field of motor industry.

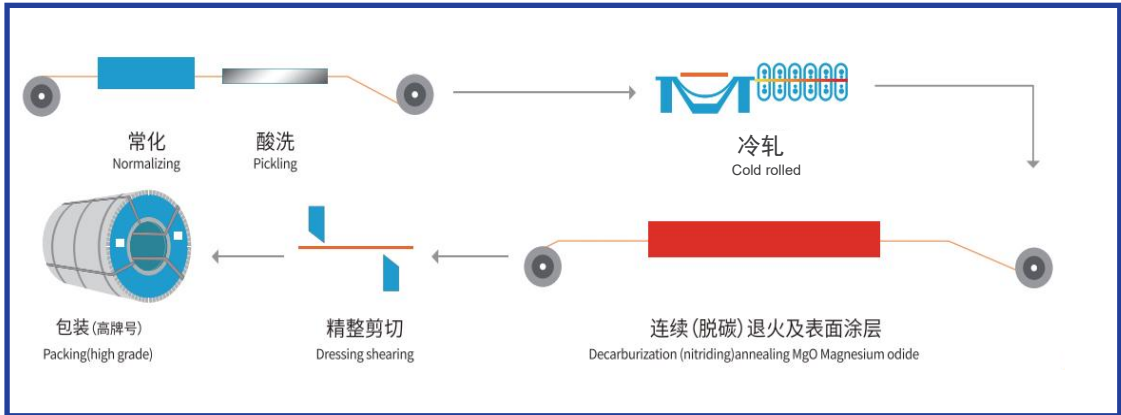
Production Flow

Low and Medium Grade Non-oriented Electrical Steel



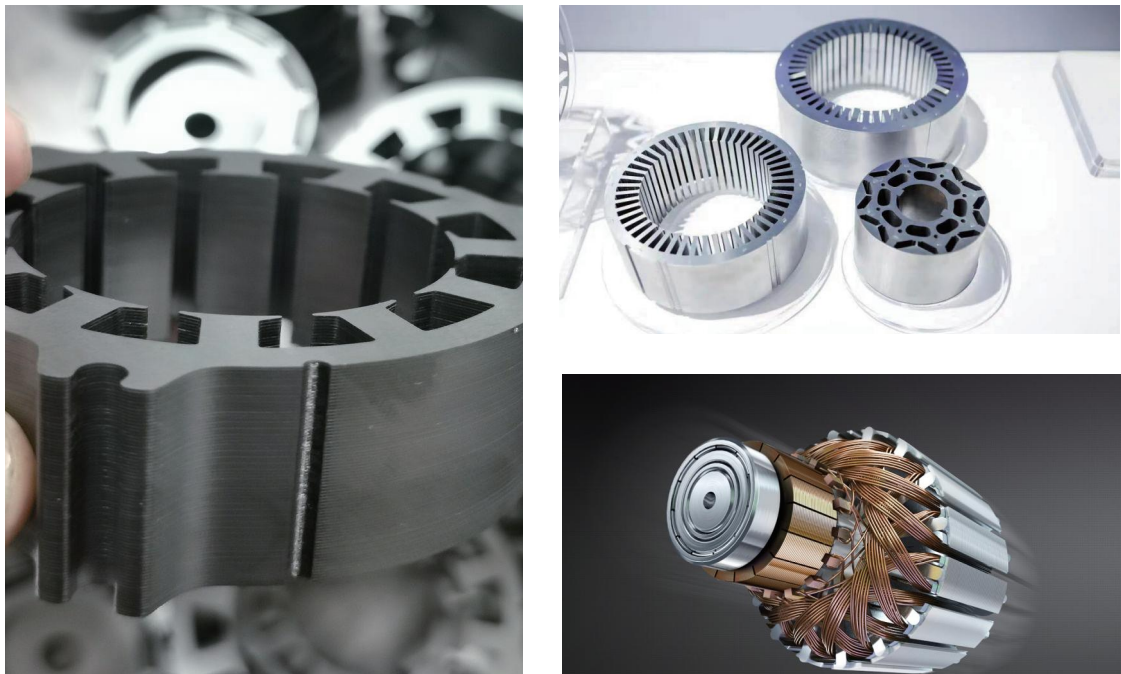
High Grade Non-oriented Electrical Steel

Non-oriented Electrical Steel for New Energy Vehicles



Application

Application	General Class		High- Efficiency Class		Annealing	Interediate Frequency Thin Strip
	High-Grade	Medium & Low Grade	High-Grade	Medium & Low Grade		
Large Motor	★					
Mediun and Small Motor	★	★	★			
Compressor Motor	★	★	★	★	★	
General Motor	★	★	★	★	★	★
Small Precision Motor	★	★	★		★	★
Electric Vehicle Motor	★					
High Frequency Working Motor	★	★				★
Small Power Transformer	★	★	★	★	★	
Power Switch	★					
Welding Motor		★	★	★		
Voltage Regulator	★	★		★	★	
Magnetic Seals	★	★				
Accelerator Elecytomagnet		★	★			
Reactors and Magnetic Amplifier	★					



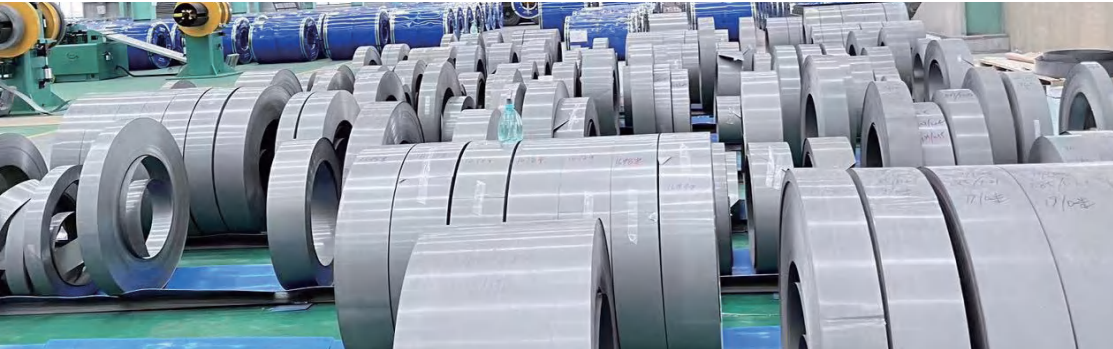
Major Standard Comparison

Type	Thickness	Shougang	NSC	JFE	TKS	POSCO	NI&Sco	AK
	(MM)							
General series	0.35	35SW230	35H230	35JN230	M235-35A	35PN230	-	-
		35SW250	35H250	35JN250	M250-35A	35PN250	2413	M-15
		35SW270	35H270	35JN270	M270-35A	35PN270	2412	M-19
		35SW300	35H300	35JN300	M300-35A	35PN300	2411	M-22/M-27
		35SW360	35H360	35JN360	-	35PN360	-	-
		35SW440	35H440	35JN440	-	35PN455	-	-
		35SW550	-	-	-	35PN56	-	-
	0.50	50SW230	50H230	50JN230	M230-50A	5DPN230	-	-
		50SW250	50H250	50JN250	M250-50A	50PN25	-	-
		50SW270	50H270	50JN270	M270-50A	50PN270	2414	
		50SW290	50H290	50JN290	M290-50A	50PN290	2413	M-15
		50SW310	50H310	50JN310	M310-50A	50PN310	2412	M-19
		50SW350	50H350	50JN350	M350-50A	50PN350	-	M-22
		50SW400	-	-	M400-65A	50PN400	-	M-27/M-36
		50SW470	50H470	50JN470	M470-50A	50PN445	2214	-
		50SW600	50H600	50JN600	M600-50A	50PN595	2212	-
		50SW700	50H700	50JN700	M700-50A	50PN76		M-47
		50SW800	50H800	50JN800	M800-50A	50PN89	2011	-
		50SW1000	50H1000	50JN1000	M940-50A	50PN1015	-	-
		50SW1300	50H1300	50JN1300	M1100-50A	50PN1270	-	-
	0.65	65SW400	-	-	-	65PN40	-	-
		65SW800	-	65JN800	M800-65A	65PN890	-	M-47
		65SW1000	-	65JN1000	M1000-65A	65PN1015	-	-
		65SW1300	-	65JN1300	M1300-65A	65PN1270	-	-
High efficient series	0.35	35SWH250	-	-	-	-	-	-
		35SWH300	-	-	-	-	-	-
	0.50	50SWH470	-	50JNE470	-	-	-	-
		50SWH600	-	-	-	-	-	-
		50SWH800	-	-	-	-	-	-
		50SWH1300	-	-	-	-	-	-
Stress relief annealing series	0.50	50SWR350	-	50JNA350	-	-	-	-

Regular Grade

Magnetic properties and technical characteristics of common type non- oriented electrical steel.

Grade	Thickness	Max Total Loss	Min Magnetic Polarization	Min Lamination Coefficient	Min Number of Bending	Density
	(mm)	(w/kg)		(%)		(kg/dm³)
35W230	0.35	2.10	1.62	0.95	2	7.60
35W250		2.28	1.64		2	7.60
35W270		2.45	1.64		2	7.60
35W300		2.65	1.64		2	7.65
35W360		3.20	1.65		3	7.65
35W440		3.40	1.67		3	7.70
50W250	0.50	2.30	1.64	0.97	2	7.60
50W270		2.48	1.64		2	7.60
50W290		2.65	1.64		2	7.60
50W310		2.85	1.64		2	7.60
50W350		3.00	1.65		2	7.65
50W400		3.20	1.65		5	7.65
50W470		3.30	1.70		10	7.70
50W600		4.20	1.68		10	7.75
50W700		4.70	1.70		10	7.80
50W800		5.50	1.71		10	7.80
50W1000		6.00	1.74		10	7.85
50W1300		7.00	1.74		10	7.85



Magnetic properties and technical characteristics of new energy vehicle non-oriented electrical steel.

Type	Grade	Thickness	Max Total Loss	Min Magnetic Polarization	Min Lamination Coefficien	Min Number of Bending	Density
		(mm)			(%)		(kg/dm³)
Common Type	20AV1200	0.20	12.00	1.61	0.93	2	7.60
	20AV1300		13.00	1.63	0.93	2	7.65
	25AV1300	0.25	13.00	1.62	0.94	2	7.60
	27AV1400	0.27	14.00	1.62	0.94	2	7.60
	30AV1500	0.30	15.00	1.63	0.94	2	7.60
	35AV1700	0.35	17.00	1.64	0.95	2	7.60
	35AV1800		18.00	1.64	0.95	2	7.60
	35AV1900		19.00	1.65	0.95	2	7.65
	35AV2000		20.00	1.65	0.95	3	7.65
	35AV2100		21.00	1.66	0.95	3	7.65
High Magnetic	20AVG1200	0.20	12.00	1.68	0.93	2	7.65
	25AVG1300	0.25	13.00	1.68	0.94	2	7.65
Induction	27AVG1400	0.27	14.00	1.68	0.94	2	7.65
	30AVG1500	0.30	15.00	1.68	0.94	2	7.65
	35AVG1700	0.35	17.00	1.68	0.95	2	7.65
	35AVG1900		19.00	1.68	0.95	3	7.65
High Efficiency	20AVX1200	0.20	12.00	1.64	0.93	2	7.65
	20AVX1300		13.00	1.65	0.93	2	7.65
	27AVX1400	0.27	14.00	1.65	0.94	2	7.65
	30AVX1500	0.30	15.00	1.66	0.94	2	7.65
	35AVX1700	0.35	17.00	1.66	0.95	2	7.65
High Strength	35AVQ500	0.35	25.00	1.64	0.95	2	7.60
	35AVQ550		32.00	1.63	0.95	2	7.60
	35AVQ600		35.00	1.60	0.95	2	7.60
High Efficiency & Strength	25AVM1300	0.25	13.00	1.65	0.94	2	7.60
	27AVM1400	0.27	14.00	1.65	0.94	2	7.60
	30AVM1500	0.30	15.00	1.65	0.94	2	7.60



WHY US

Suppliers



BAOSTEEL
宝钢集团



武汉钢铁



首钢集团
SHOUGANG GROUP



鞍钢集团
ANSTEEL



沙钢集团
SHAGANG GROUP



宏旺集团
HONGWANG GROUP



山西利国



包头威丰



首玉硅钢
Shouyu silicon steel

Clients



Vardhman Stampings Pvt. Ltd.
The most relied name in CRGO products



TATA

Shipment

By Container

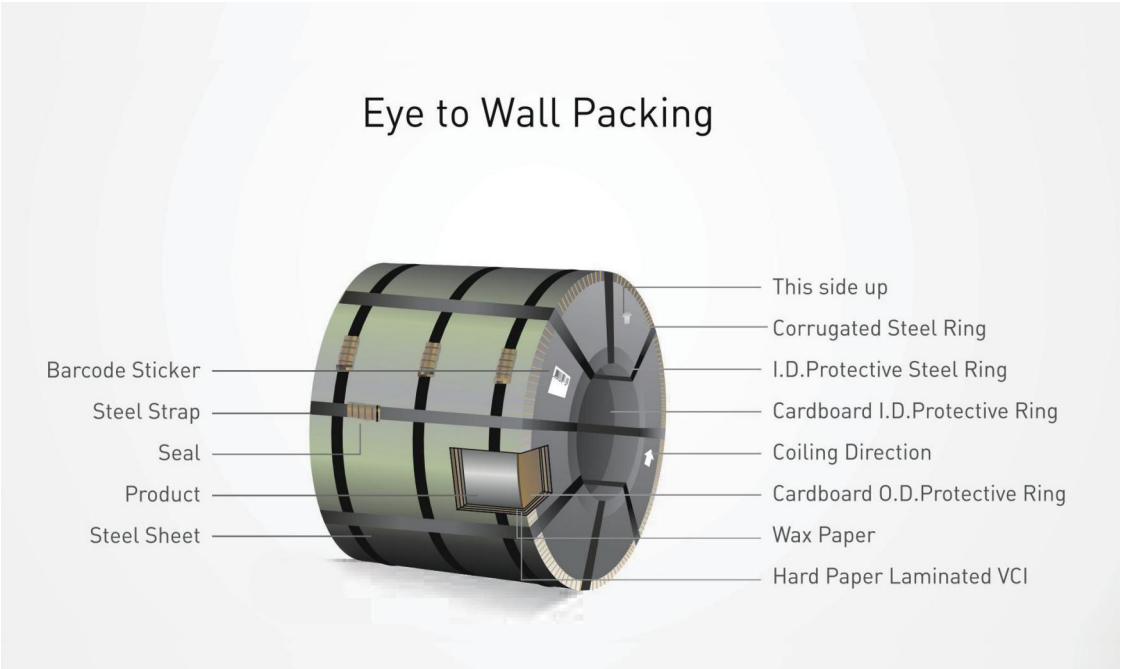


By Bulk



Package

Horizontal Packaging



Vertical Packaging

