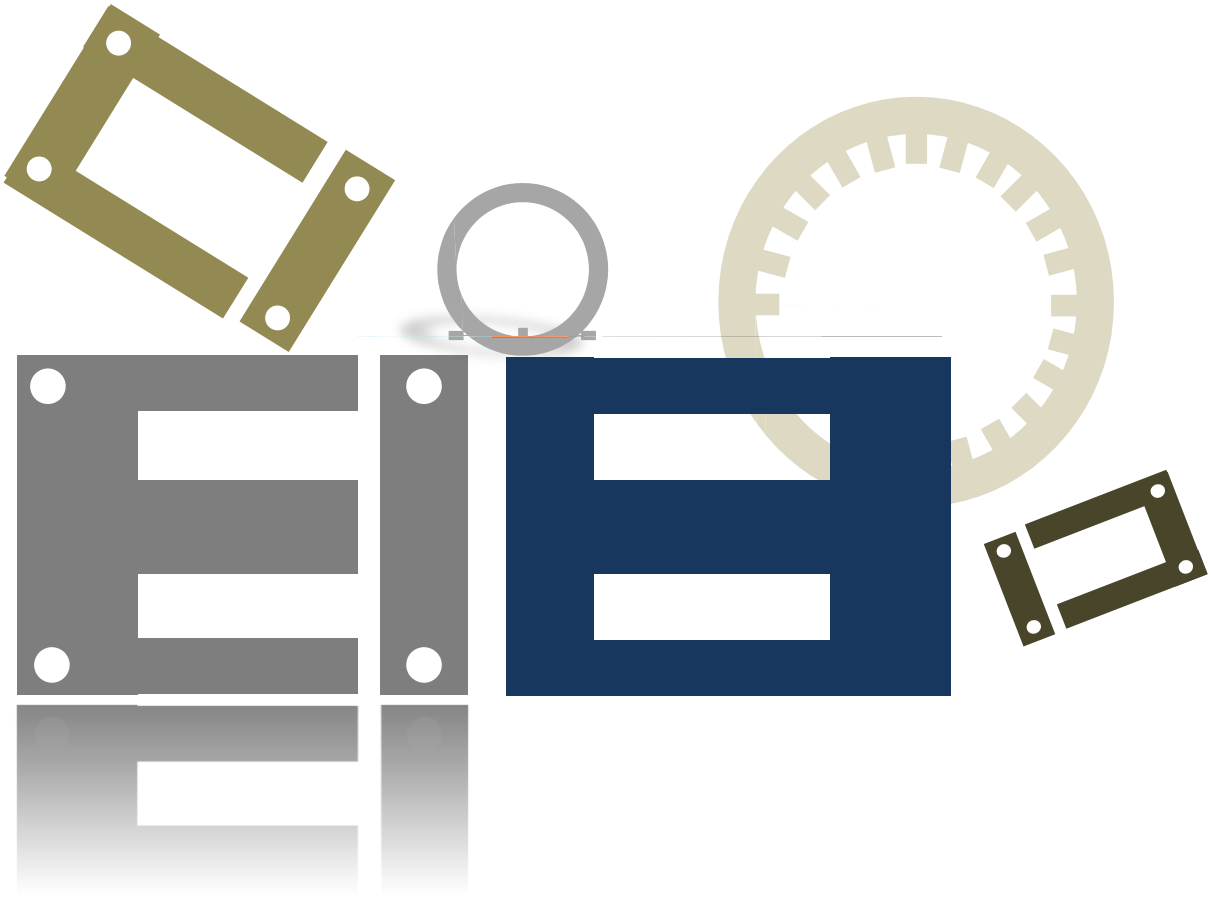
Electrical Steel Coils

Product Manual



CHINA STEEL SUMIKIN VIETNAM JOINT STOCK COMPANY

Contents

China Steel Sumikin Vietnam Joint Stock Company, a delicate steel-manufacturing company, we commit to continually improve our Quality Management System and provide good products, and will endeavor to pursue both internal and external satisfactions.

1. Introduction

China Steel Sumikin Vietnam Joint Stock Company (abbreviated as CSVC) is a joint stock company of Taiwanese and Japanese companies. The main investors are China Steel Corporation (Taiwan, R.O. China) and Nippon Steel & Sumitomo Metal Corporation (Japan). CSVC started its construction in September 2011, and start commercial running in November 2013.

CSVC can provide P/O, Cold Rolled, ASCR, Galvanized (GI & GA), and Electrical Steel product with high quality. The total annual production capacity is 1.2 million metric tons.

CSVC implemented its quality management system based on ISO 9001 requirement, we especially stress on meeting customer requirement and continually improving products quality. That's why it makes CSVC to be a reliable and trustworthy supplier of steel products. Besides, in order to commit our responsibility to the environment, CSVC also put much effort in reducing or even eliminating of any hazardous substance to make our products eco-friendly.

CSVC achieves many certificates such as: ISO 9001, ISO 17025, SNI Mark, SIRIM Mark…

ISO 9001

ISO 17025

SNI Mark

SIRIM Mark

2. Features of Electrical Steel Coils

Electrical steel sheets are widely used in modern society, such as AC motor, compressor and transformers and so on, the main applications are shown as Table1. To meet the multiple requirements, the specification of electrical steel became more and more diversified. Brief introductions of products are as follows:

■ Normal grade ES

Normal grade ES with low iron loss, adequate magnetic flux density and economical price such as 50CSV1300, 50CSV1000, 65CSV1300, 65CSV1000. It could be used in various types of motor and transformer.

■ Medium grade ES

Medium grade ES with improving iron loss, magnetic flux density and surface quality such as 50CSV800, 50CSV700, 50CSV600, 50CSV600H. It could be widely used in all kinds of AC motor, compressor and transformers.

■ High grade ES

High grade ES with so good iron loss and magnetic flux density such as 50CSV470, 50CSV470H, 35CSV550, 35CSV440. It could be used in special kinds of AC motor, compressor and transformers.

Table1. The main applications of ES products

Application / Grade	35CSV 440~550	50CSV 470~470H	50CSV 600~800	50CSV 1000~1300
Rotating Machine				
Large size		○		
Medium size			○	
General use AC motors	○		○	○
Compressor Motor	○	○	○	
Small motor & Intermittent AC service motors	○		○	○
Static Machine				
Small & Medium power transformers	○	○	○	○
Audio transformers	○	○	○	○
Welding transformers	○	○	○	○
Ballast	○	○	○	○
Magnetic switch cores	○			

3. Manufacturing Process

Electrical steel sheets are produced by cold rolling from hot-rolled coils, the typical manufacturing processes are described as Fig 1.

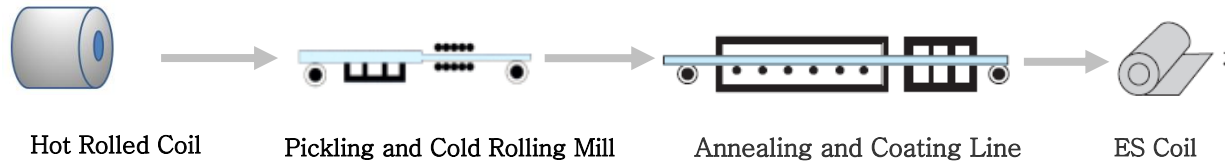


Fig.1: Manufacturing process flow of ES products

CSVC produce its ES products by the combination line of PLTCM (abbreviated from Pickling and Tandem Cold-rolling Mill), and ACL (abbreviated from Annealing and Coating Line) respectively.

Some picture of Annealing and Coating Line

01. Furnace

02. Coating machine

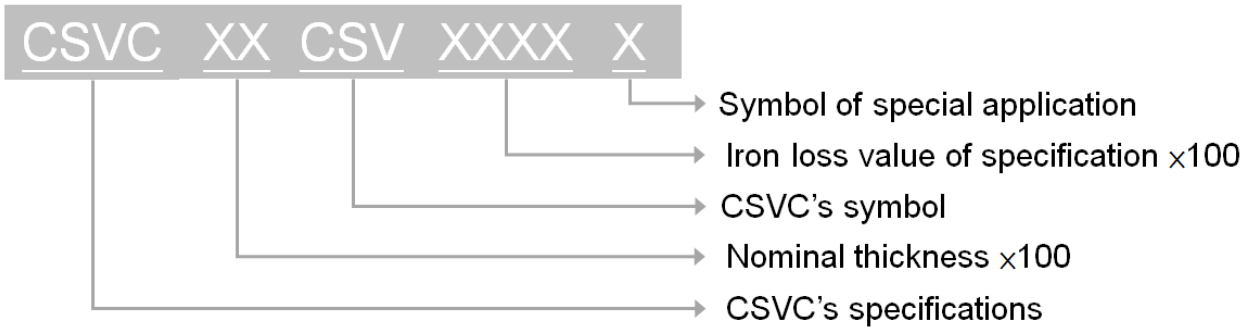
03. Delivery section

4. Specifications

While much effort has been made to ensure the accuracy of the information contained within this publication, the use of the information is at the user's risk and no warranty is implied or expressed by CSVC with respect to the use of information contained herein. The information in this publication is subject to change without notice. Please contact CSVC office for the latest information.

4.1 Symbol Description

The specifications of CSVC electrical steel coils are stated as the following：



4.2 Classification of insulation films

Symbol	Type of insulating film	Remark
C6N8	Semi-inorganic material (inorganic＋organic)	Chrome free
C628		Chromate

4.3 Magnetic Properties

Iron Loss and Magnetic Flux Density for Non-Oriented Electrical Steel Coils

Symbol of class	JIS C2552 Classified Symbol	Thickness mm	Density kg/dm^3	Iron loss W/kg (max.)	Magnetic flux density T(min.)
				$W_{15/50}$	B_{50}
35CSV550	-	0.35	7.75	5.50	1.64
35CSV440	35A440		7.70	4.40	1.64
50CSV1300	50A1300	0.50	7.85	13.00	1.70
50CSV1000	50A1000		7.85	10.00	1.70
50CSV800	50A800		7.75	8.00	1.68
50CSV700	50A700		7.75	7.00	1.68
50CSV600	50A600		7.75	6.00	1.65
50CSV470	50A470		7.70	4.70	1.62
65CSV1300	65A1300	0.65	7.85	13.00	1.64
65CSV1000	-		7.85	10.00	1.64

Remarks: (1) The density is used for calculation of cross sectional area of test piece.

(2) Iron loss $W_{15/50}$ means the iron loss testing under the condition that frequency is 50 Hz and the maximum magnetic flux density is 1.5T.

(3) Magnetic flux density B_{50} means the magnetic flux density at a magnetic field strength of 5000 A/m.

(4) The data on above table is one sample of sampling and for reference only.

4.4 Tolerances

Dimension Tolerances for Non-Oriented Electrical Steel Coils

4.4.1 Thickness Tolerances

Unit：mm

width(w)	thickness	Thickness tolerance (%)	Deviation of thickness in lateral direction(mm)	Width tolerance (Mill edge)
w≦1000	0.35	±10	0.02 max.	+4 -0
	0.50	±8	0.03 max.	
	0.65	±8	0.04 max.	
w＞1000	0.35	±10	0.03 max.	
	0.50	±8	0.04 max.	
	0.65	±8	0.04 max.	

Remarks: (1) The thickness tolerances shall be measured at any point 15 mm or over from the side edge.

(2) The deviation of thickness in longitudinal direction shall not exceed 8%, 8%, and 6% in the case of nominal thickness 0.35mm, 0.50mm and 0.65mm respectively.

(3) The deviation of thickness in longitudinal direction means the difference between the maximum thickness and the minimum thickness measured on a steel sheet excluding the portions within 15mm from the edges.

4.4.2 Flatness Tolerances

Unit：mm

Type / Width (w)	Flatness tolerances (max.)		
	Bow, wave	Edge wave	Centre buckle
w＜1000	12	8	6
1000≦w＜1250	15	9	8
1250≦w＜1600	15	11	8

Remarks: (1) The table is not applicable by the plate and sheet leveling done after leveling machine.

(2) The values in this table is the high of wave, it was measured at the places on the surface of steel strip.

4.4.3 Camber Tolerances

Unit：mm

Width (w)	Camber tolerances
w≧630	2 in length 2000

Remarks: (1) This is the curving to right and left from the rolling direction and expressed by the maximum clearance when the reference line is applied to one edge along the rolling direction.

(2) The method to measure shall be taken same as JIS G2550. Stretch one end of steel strip, place an edge of the steel strip on the reference line of 2m and measure the maximum gap with a scale.

4.5 Classification of Quality

Classification	Common Specification	Typical Application
Normal Grade	50CSV1300 50CSV1000 65CSV1300 65CSV1000	AC Motor, Small size rotating machines, audio transformers, ballast
Medium Grade	50CSV800 50CSV700 50CSV600 50CSV600H	General used of AC motor, compressor motor, welding transformer, ballast, Small and medium size rotating machines
High Grade	35CSV440 35CSV550 50CSV470 50CSV470H	Used of AC motor, compressor motor and transformer which need good iron loss and magnetic flux density

5. Product Availability

5.1 Unit mass

Product Type	Maximum Unit Mass
Electrical Steel Coil	20MT/Coil

5.2 Available Sizes

Unit：mm

Product Type	Thickness			Width	Inner Diameter
Electrical Steel Coil	0.35	0.50	0.65	1000 ~ 1250	508

Remarks: The above data is reference only. Actual available sizes range shall be confirmed with CSVC sales department

6. Marking and Packing

6.1 Marking for Electrical Steel Coil

CSVC

CÔNG TY CỔ PHẦN CHINA STEEL SUMIKIN VIỆT NAM
CHINA STEEL SUMIKIN VIETNAM JOINT STOCK COMPANY
ĐỊA CHỈ: KCN Mỹ Xuân A2, xã Mỹ Xuân, huyện Tân Thành, tỉnh Bà Rịa-Vũng Tàu, Việt Nam
Address: My Xuan A2 Industrial Zone, My Xuan Commune, Tan Thanh District, Ba Ria – Vung Tau Province, Vietnam

Tên Sản Phẩm Product name	MAGNETIC COIL (NON-ORIENTED)
Khách Hàng Customer	********
Tiêu Chuẩn Specification	CSVC 50CSV1300
Kích Thước Size	0.500mm x 1200.0mm X COIL
Mã Cuộn Coil ID	123456
Khối Lượng Tịnh Net mass	8,848 kg
Khối Lượng Tổng Gross mass	8,888 kg

Sản Xuất Tại Việt Nam
Made in Vietnam

Certified to:
Certification No.

Mã Chất Lượng Quality Type	UE
Mã Độ Nhám Rough Code	30
Mã Nhiệt Heat No.	4750317
Ngày Sản Xuất Product Date	24.08.2014

(The label is a sample and just for reference)

6.2 Packing for Electrical Steel Coil

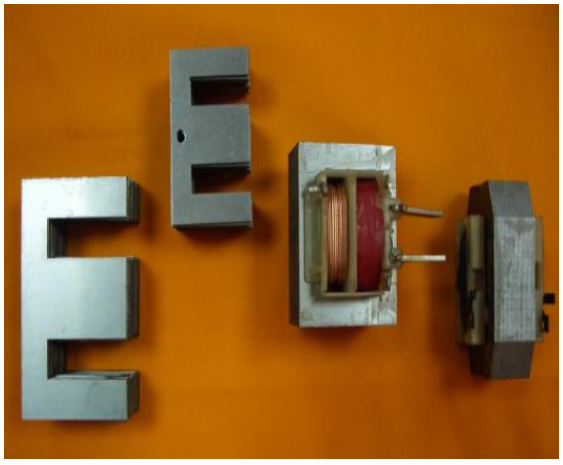
Case 1
Film/Paper wrapping + Paper edge protector + Metal edge protector + Hard board paper + Metal protector + Circumferential strapping + Eye strapping

Case 2
Film/Paper wrapping + Paper edge Protector + Hard Board paper + Circumferential strapping + Eye Strapping

7. Application Examples

01. Converter Motor and Compressor

02. Motor Iron Core



03. EI for transformer

8. Conversion Tables

	ft	in	mm	m
Length	1	12	304.8	0.3048
	0.08333	1	25.4	0.0254
	0.003281	0.03937	1	0.001

Weight	1kg = 2.20462 lb

Force	1kgf = 9.80665 N

	ksi(=1000psi)	psi	kgf/mm^2	N/mm^2(MPa)
Stress	1	1000	0.703070	6.89476
	0.001	1	0.703070×10^{-4}	6.89476×10^{-3}
	1.42233	1422.33	1	9.80665
	0.145038	145.038	1.101972	1

	ft-lbf	Kgf-m	N-m (=Joule)
Absorbed Energy	1	0.138255	1.35582
	7.23301	1	9.80665
	0.737562	0.101972	1

9. Order Information

For promptly and properly processing of your orders, please clearly specify the items as shown in the table below. If you need to confirm any information about CSVC's products or services, please feel free to contact with CSVC's sales or QC/QA department.

Required Ordering Data			Example
1	Specification		CSVC 50CSV1300
2	Coating Type	C628	C6N8
		C6N8	
3	Edge Type	Cut Edge	Mill Edge
		Mill Edge	
4	Surface Quality	Unexposed (UE)	UE
		General Purposes (GP)	
5	Dimensions	(Thickness × Width× Coil)	0.50mm×1200mm×Coil
6	Inner Diameter		ID 508mm
7	Mass	Max. Mass	10 MT max.
		Order Mass	450 MT
8	Application	(or Fabrication Methods)	Small Motor cores
9	Special Requirements (if any)		$W_{15/50}$：6.3 Max

Notes:

1. The contents of this catalog are for reference only. Customers are recommended to consult the specifications published by the corresponding associations.
2. Information of the available steel grades, sizes, marking and packing as shown herein may be updated without notice to comply with actual production situations.
3. Customers are recommended to confirm with CSVC, should you have any questions concerning steel specifications or ordering requirements.

10. Notification

10.1 Rust Prevention

Due to slitting and punching process that causing broken coating film, the ruptured surface will easily become rusted. So, careful package and anti-rust treatment are required for where is high humidity.

10.2 Magnetic aging:

For having better magnetic properties, it is suggested to prevent steel coils from long time storage.

10.3 Stress-relief annealing

Magnetic properties of magnetic steel coils will be deteriorated by mechanical strains when it was sheared cut and punched into interlaminations or cores. In order to relieve these stress and restore the original magnetic properties, generally stress-relief annealing is necessary.

The magnetic properties almost was not affected by ordinary industial cooling rate scale, but abrupt heating and cooling will make distortion in cores. However, cooling should be taken untill it reaches 350^0C so that no strain will occur in material.

10.4 Precausion

Please be careful when unpacking the coils. The steel strip or material packing maybe make injury.

CSVC Plant Birdviews

China Steel Sumikin Vietnam Joint Stock Company

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CHINA STEEL SUMIKIN VIETNAM JOINT STOCK COMPANY

OUR QUALITY, YOUR BETTER LIFE

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