



CATALOGUE OF  
**ELECTRICAL  
PRODUCTS**





# FROM STEEL TO ENERGY



U. S. Steel Košice is the largest integrated producer of flat rolled steel products in Central Europe. We successfully combine Slovak technical expertise with American plant management and market oriented business experience.

Building Value Together



## **Non-grain oriented electrical steel**

U. S. Steel Košice offers a comprehensive portfolio of electrical steels continually evolved to meet your needs in this ever-changing world.

Our commitment to innovation will help you fully leverage your technology - making tomorrow more energy efficient.





## Fully processed

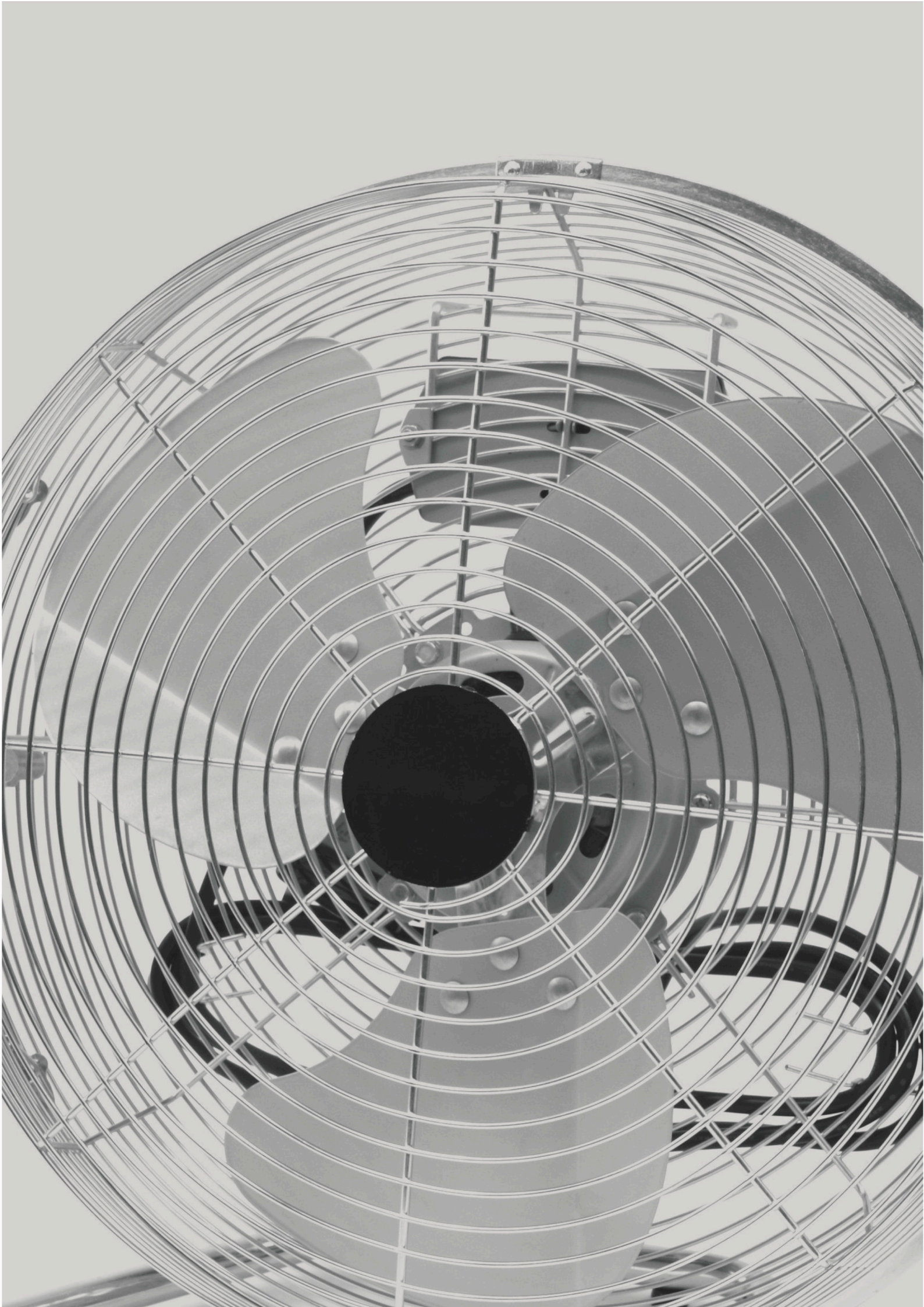
Non-grain oriented sheet metals for electrotechnical engineering is the input material for production of magnetic circuits for electrical rotating machines, small transformer coils, solenoids and other equipment.

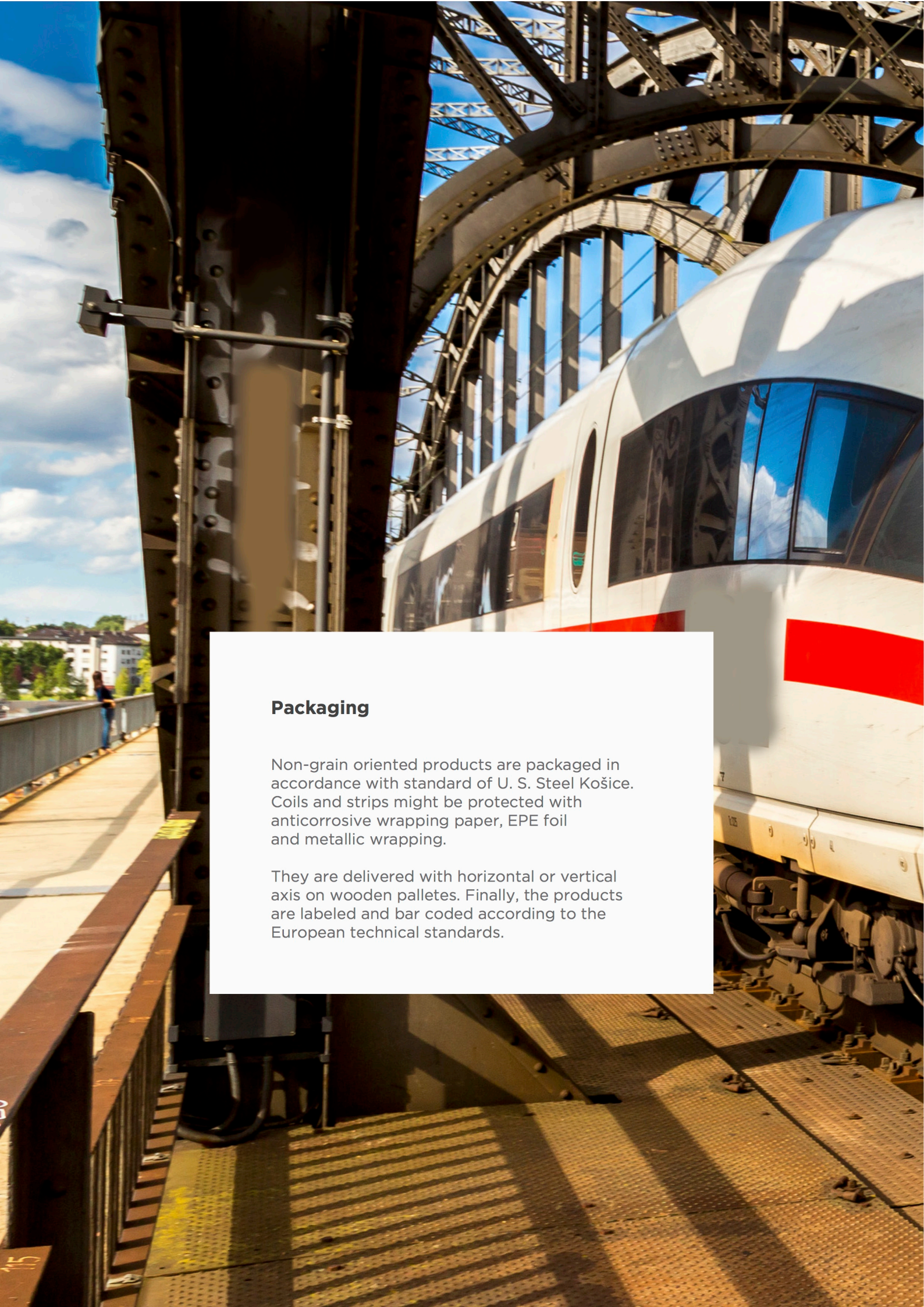
## Insulation

Electrical steels are produced with conventional insulation on both sides or without insulation. Thickness of insulation on one side: 0,5 - 10 um. Other types and thickness of insulation upon prior agreement.

### BRAND CORRESPONDENCE

EU EN 10106/ 2007	USA ASTM A677-07	RUSSIA GOST 21427.2/1983	JAPAN JIS C 2552/ 2000
M270-35A	36F155	2412	35 A 270
M300-35A	36F175	2411	35 A 300
M330-35A	36F185	-	-
M290-50A	47F165	2413	50 A 290
M310-50A	47F180	2412	50 A 310
M330-50A	47F190	-	-
M350-50A	47F200	2411	50 A 350
M400-50A	47F240	2216	50 A 400
M470-50A	47F280	2214	50 A 470
M530-50A	-	2211	-
M600-50A	-	2112	50 A 600
M700-50A	47F400	2111	50 A 700
M800-50A	47F450	2011	50 A 800
M940-50A	-	-	-
M350-65A	64F210	-	-
M400-65A	64F235	-	-
M470-65A	64F275	-	-
M530-65A	64F320	2312	-
M600-65A	-	2212	-
M700-65A	-	2212	-
M800-65A	64F500	2122	65 A 800
M1000-65A	64F550	-	65 A 1000





## **Packaging**

Non-grain oriented products are packaged in accordance with standard of U. S. Steel Košice. Coils and strips might be protected with anticorrosive wrapping paper, EPE foil and metallic wrapping.

They are delivered with horizontal or vertical axis on wooden palletes. Finally, the products are labeled and bar coded according to the European technical standards.

## *SURFACE INSULATION*

INSULATION	TYPE ACCORDING TO ASTM 976	COLOR	WELDABILITY
REMISOL EB 5308 K	C5 - INORGANIC/ORGANIC	GRAY	YES
REMISOL EB 5014 HF	C3 - ORGANIC	GOLDEN YELLOW	NO
REMISOL EB 5350 S	C5 - INORGANIC/ORGANIC	COLORLESS	YES
REMISOL EB 5001 BETA	C6 - ORGANIC	GRAY	NO
VOLTATEX E 11 20	C5 - INORGANIC	GREEN	YES
VOLTATEX 1250 V	C5 - INORGANIC	GRAY	YES
VOLTATEX 1120 V	C5 - INORGANIC	GREEN	YES
SULFIZOL VPT	C3 - ORGANIC	BROWN	NO
DYNOPHEN 3015702	C6 - ORGANIC	GRAY	NO

## Storage

Non-grain oriented products must be stored in a closed area, which gives protection against atmospheric influence (water, smoke, steam acid vapours, chlorine, ammoniac etc.).

Storage temperature should not exceed interval +5°C to +25°C at maximum relative humidity of 70%.

### BASIC TECHNICAL CHARACTERISTICS - HIGH PERMEABILITY GRADES

TN USSK 10106-1/2014	THICKNESS [mm]	MAX. SPECIFIC LOSS [W/kg] AT 50 Hz AT 1,5 T	MIN. MAGNETIC POLARISATION [T] AT 50 Hz			MAX. ANISOTROPY OF LOSS [%]
			AT 2 500 A/m	AT 5 000 A/m	AT 10 000 A/m	
M300-35HP	0,35	3,00	1,59	1,68	1,79	± 12
M310-50HP	0,50	3,10	1,56	1,65	1,77	± 12
M350-50HP	0,50	3,50	1,61	1,69	1,80	± 12
M400-50HP	0,50	4,00	1,61	1,70	1,81	± 12
M530-50HP	0,50	5,30	1,64	1,73	1,84	± 10
M700-50HP	0,50	7,00	1,64	1,73	1,84	± 10
M800-50HP	0,50	8,00	1,65	1,74	1,85	± 10
M350-65HP	0,65	3,50	1,56	1,65	1,77	± 12
M400-65HP	0,65	4,00	1,56	1,65	1,77	± 12
M470-65HP	0,65	4,70	1,62	1,71	1,81	± 12
M700-65HP	0,65	7,00	1,64	1,73	1,84	± 10
M800-65HP	0,65	8,00	1,65	1,74	1,85	± 10



## DIMENSIONS & TOLERANCES [mm]

THICKNESS [mm]	TOLERANCES [%]	WIDTH [mm]		COIL DIAMETER [mm]		WEIGHT OF	
		SHEETS, COILS	SLIT COILS	INNER	OUTER	COIL	BUNDLE
0,35	± 8	880 - 1 030	40 +	APPROX. 500 ± 10 OR 600	650 - 1600	1,0 - 5,0 kg/mm OF WIDTH	MAX. 5 000 kg
0,50	± 8	880 - 1 260	40 +				
0,65	± 6	880 - 1 260	40 +				

## BASIC TECHNICAL CHARACTERISTICS - STANDARD GRADES

GRADES ACCORDING TO EN 10106/2007	THICKNESS [mm]	MAX. SPECIFIC LOSS [W/kg] AT 50 Hz AT 1,5 T	MIN. MAGNETIC POLARISATION [T] AT 50 Hz			MAX. ANISOTROPY OF LOSS [%]
			AT 2 500 A/m	AT 5 000 A/m	AT 10 000 A/m	
M270-35A	0,35	2,70	1,49	1,60	1,70	± 17
M300-35A	0,35	3,00	1,49	1,60	1,70	± 17
M330-35A	0,35	3,30	1,49	1,60	1,70	± 17
M290-50A	0,50	2,90	1,49	1,60	1,70	± 17
M310-50A	0,50	3,10	1,49	1,60	1,70	± 14
M330-50A	0,50	3,30	1,49	1,60	1,70	± 14
M350-50A	0,50	3,50	1,50	1,60	1,70	± 12
M400-50A	0,50	4,00	1,53	1,63	1,73	± 12
M470-50A	0,50	4,70	1,54	1,64	1,74	± 10
M530-50A	0,50	5,30	1,56	1,65	1,75	± 10
M600-50A	0,50	6,00	1,57	1,66	1,76	± 10
M700-50A	0,50	7,00	1,60	1,69	1,77	± 10
M800-50A	0,50	8,00	1,60	1,70	1,78	± 10
M940-50A	0,50	9,40	1,62	1,72	1,81	± 8
M350-65A	0,65	3,50	1,49	1,60	1,70	± 14
M400-65A	0,65	4,00	1,52	1,62	1,72	± 14
M470-65A	0,65	4,70	1,53	1,63	1,73	± 12
M530-65A	0,65	5,30	1,54	1,64	1,74	± 12
M600-65A	0,65	6,00	1,56	1,66	1,76	± 10
M700-65A	0,65	7,00	1,57	1,67	1,76	± 10
M800-65A	0,65	8,00	1,60	1,70	1,78	± 10
M1000-65A	0,65	10,00	1,61	1,71	1,80	± 10

## CONVERSION TABLE

SIZE	UNIT IN	TO	CONVERSION FACTOR
MAGNETIC POLARIZATION J	$T = \text{Wb/m}^2 = \text{Vs/m}^2$	$\text{Wb/cm}^2 = \text{Vs/cm}^2$	$10^{-4}$
	T	G	$10^4$
	T	LINES/SQUARE INCH	$6,45 \times 10^4$
	$\text{Vs/cm}^2$	T	$10^4$
	G	T	$10^{-4}$
	LINES/SQUARE INCH	T	$1,55 \times 10^{-5}$
MAGNETIC FIELD INTENSITY H	A/m	A/cm	0,01
	A/m	Oe	0,0126
	A/m	AMPERE - TURNS/INCH	0,0254
	A/cm	A/m	100
	Oe	A/m	79,6
	AMPERE - TURNS/INCH	A/m	39,4
CORE LOSS	W/kg	W/lb	0,454
	W/lb	W/kg	2,2046
	W/kg (50 Hz)	W/kg (60 Hz)	1,266
	W/kg (60 Hz)	W/kg (50 Hz)	0,79
	W/kg (50 Hz)	W/kg (60 Hz)	0,574
	W/kg (60 Hz)	W/kg (50 Hz)	1,737
TENSILE STRENGTH	$\text{N/mm}^2$	$\text{kp/mm}^2$	0,102
	$\text{N/mm}^2$	psi	145
	$\text{kp/mm}^2$	$\text{N/mm}^2$	9,81
	psi	$\text{N/mm}^2$	$6,90 \times 10^{-3}$
FORCE F	$\text{N} = \text{kgm/s}^2$	kp	0,102
	Force F	$\text{N} = \text{kgm/s}^2$	9,81
WEIGHT m	g	OUNCE	0,0353
	kg	POUND	2,2046
	OUNCE	g	28,4
	POUND	kg	0,454
LENGTH L	mm	inch	0,0394
	inch	mm	25,4
AREA A	$\text{cm}^2$	SQUARE INCH	0,155
	SQUARE INCH	$\text{cm}^2$	6,45
VOLUME V	$\text{cm}^3$	CUBIC INCH	0,061
	CUBIC INCH	$\text{cm}^3$	16,387
TEMPERATURE T	$^{\circ}\text{C}$	$^{\circ}\text{F}$	$1,8 + 32$
	$^{\circ}\text{F}$	$^{\circ}\text{C}$	$0,556 - 17,8$

U. S. Steel Košice is the largest integrated producer of flat rolled steel in Central Europe committed to provide a combination of products and complex advisory services. As a reliable partner, U. S. Steel Košice supplies electrical steels across many fields including automotive, engineering and energy industry. Our electrical products are used for various purposes in the process of generation, transformation and utilization of electrical power by the companies successful worldwide.

## Offices



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**U. S. Steel Košice**



**BUILDING VALUE TOGETHER**

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