

isovac®



Premium quality
with reduced carbon footprint

isovac®
greentec steel

ELECTRICAL STEEL – isovac®

Range of supply
January 2024

FULLY PROCESSED ELECTRICAL STEEL

Steel grade	Magnetic sample direction	Specific total loss at 50 Hz ¹⁾				Magnetic polarization at 50 Hz ¹⁾						Mechanical sample direction	0.2 % yield strength R _{p0.2} [MPa]	Tensile strength R _m [MPa]	Elongation A ₈₀ [%]
		1.0 T P10 [W/kg]		1.5 T P15 [W/kg]		2500 A/m J25 [T]		5000 A/m J50 [T]		10000 A/m J100 [T]					
isovac® fully processed															
EN 10106 ²⁾		P10		P15		J25		J50		J100			R _{p0.2} min.	R _m	A ₈₀ min.
		max. ³⁾	typ.	max.	typ.	min.	typ.	min.	typ.	min.	typ.				
isovac® 235-35 A	Long. + Trans.	0.95	0.90	2.35	2.20	1.49	1.53	1.60	1.62	1.70	1.75	Transverse	430	550 - 610	18
isovac® 250-35 A	Long. + Trans.	1.00	0.95	2.50	2.25	1.49	1.53	1.60	1.62	1.70	1.75	Transverse	430	550 - 610	18
isovac® 270-35 A	Long. + Trans.	1.10	1.05	2.70	2.50	1.49	1.56	1.60	1.64	1.70	1.76	Transverse	335	465 - 525	24
isovac® 300-35 A	Long. + Trans.	1.20	1.15	3.00	2.70	1.49	1.56	1.60	1.65	1.70	1.77	Transverse	330	475 - 535	25
isovac® 330-35 A	Long. + Trans.	1.30	1.25	3.30	2.90	1.49	1.56	1.60	1.65	1.70	1.76	Transverse	345	485 - 545	27
isovac® 270-50 A	Long. + Trans.	1.15	1.10	2.70	2.50	1.49	1.54	1.60	1.63	1.70	1.75	Transverse	440	560 - 620	21
isovac® 290-50 A	Long. + Trans.	1.20	1.15	2.90	2.65	1.49	1.54	1.60	1.63	1.70	1.75	Transverse	370	480 - 540	20
isovac® 310-50 A	Long. + Trans.	1.25	1.20	3.10	2.80	1.49	1.57	1.60	1.66	1.70	1.77	Transverse	340	470 - 530	25
isovac® 330-50 A	Long. + Trans.	1.35	1.30	3.30	2.90	1.49	1.57	1.60	1.66	1.70	1.77	Transverse	335	475 - 535	26
isovac® 350-50 A	Long. + Trans.	1.50	1.35	3.50	3.20	1.50	1.56	1.60	1.65	1.70	1.77	Transverse	300	440 - 500	30
isovac® 400-50 A	Long. + Trans.	1.70	1.55	4.00	3.50	1.53	1.58	1.63	1.67	1.73	1.78	Transverse	305	460 - 520	29
isovac® 470-50 A	Long. + Trans.	2.00	1.85	4.70	4.20	1.54	1.59	1.64	1.68	1.74	1.79	Transverse	280	440 - 500	29
isovac® 530-50 A	Long. + Trans.	2.30	2.10	5.30	4.70	1.56	1.60	1.65	1.69	1.75	1.80	Transverse	260	405 - 465	31
isovac® 600-50 A	Long. + Trans.	2.60	2.20	6.00	4.85	1.57	1.60	1.66	1.69	1.76	1.80	Transverse	270	410 - 470	31
isovac® 700-50 A	Long. + Trans.	3.00	2.50	7.00	5.40	1.60	1.63	1.69	1.71	1.77	1.83	Transverse	290	415 - 475	30
isovac® 800-50 A	Long. + Trans.	3.60	2.90	8.00	6.10	1.60	1.65	1.70	1.73	1.78	1.84	Transverse	240	365 - 425	32
isovac® 940-50 A	Long. + Trans.	4.20	3.00	9.40	6.30	1.62	1.66	1.72	1.74	1.81	1.85	Transverse	250	365 - 425	33
isovac® 310-65 A	Long. + Trans.	1.35	1.30	3.10	2.90	1.49	1.54	1.60	1.64	1.70	1.76	Transverse	435	560 - 620	23
isovac® 330-65 A	Long. + Trans.	1.35	1.30	3.30	3.00	1.49	1.54	1.60	1.64	1.70	1.76	Transverse	435	560 - 620	23
isovac® 350-65 A	Long. + Trans.	1.50	1.45	3.50	3.35	1.49	1.57	1.60	1.65	1.70	1.77	Transverse	350	475 - 535	28
isovac® 400-65 A	Long. + Trans.	1.70	1.60	4.00	3.60	1.52	1.58	1.62	1.67	1.72	1.78	Transverse	340	485 - 545	28
isovac® 470-65 A	Long. + Trans.	2.00	1.85	4.70	4.20	1.53	1.59	1.63	1.68	1.73	1.79	Transverse	315	465 - 525	30
isovac® 530-65 A	Long. + Trans.	2.30	1.90	5.30	4.25	1.54	1.59	1.64	1.68	1.74	1.79	Transverse	315	465 - 525	30
isovac® 600-65 A	Long. + Trans.	2.60	2.35	6.00	5.20	1.56	1.62	1.66	1.70	1.76	1.81	Transverse	285	445 - 505	30
isovac® 700-65 A	Long. + Trans.	3.00	2.60	7.00	5.80	1.57	1.63	1.67	1.72	1.76	1.83	Transverse	260	410 - 470	32
isovac® 800-65 A	Long. + Trans.	3.60	3.00	8.00	6.70	1.60	1.66	1.70	1.74	1.78	1.84	Transverse	230	365 - 425	34
isovac® 940-65 A	Long. + Trans.	3.60	3.10	9.40	6.95	1.60	1.66	1.70	1.74	1.78	1.84	Transverse	230	365 - 425	34
isovac® 1000-65 A	Long. + Trans.	4.40	3.20	10.00	7.00	1.61	1.66	1.71	1.74	1.80	1.84	Transverse	230	365 - 425	34
isovac® 1000-100 A	Long. + Trans.	4.40	3.55	10.00	8.50	1.58	1.63	1.68	1.72	1.76	1.83	Transverse	285	410 - 460	33

¹⁾ Magnetic measurement pursuant to DIN EN 60404-2

²⁾ Steel grade designation deviates from standard

³⁾ not binding

FULLY PROCESSED ELECTRICAL STEEL

Steel grade	Magnetic sample direction	Specific total loss at 50 Hz ¹⁾				Magnetic polarization at 50 Hz ¹⁾						Mechanical sample direction	0.2 % yield strength R _{p0.2} [MPa]	Tensile strength R _m [MPa]	Elongation A ₈₀ [%]
		1.0 T P10 [W/kg]		1.5 T P15 [W/kg]		2500 A/m J25 [T]		5000 A/m J50 [T]		10000 A/m J100 [T]					
isovac® fully processed high-perm															
EN 10106 ²⁾		P10		P15		J25		J50		J100			R _{p0.2} min.	R _m	A ₈₀ min.
		max. ³⁾	typ.	max.	typ.	min.	typ.	min.	typ.	min.	typ.				
isovac HP 210-35 A	Long. + Trans.	0.95	0.90	2.10	2.05	1.52	1.55	1.63	1.65	1.73	1.77	Transverse	415	520 - 580	14
isovac HP 235-35 A	Long. + Trans.	1.00	0.95	2.35	2.10	1.52	1.57	1.63	1.66	1.73	1.78	Transverse	415	545 - 605	18
isovac HP 250-35 A	Long. + Trans.	1.05	1.00	2.50	2.30	1.52	1.60	1.63	1.68	1.73	1.80	Transverse	325	450 - 510	13
isovac HP 270-35 A	Long. + Trans.	1.20	1.15	2.70	2.55	1.52	1.61	1.63	1.70	1.73	1.81	Transverse	340	470 - 530	22
isovac HP 230-50 A	Long. + Trans.	1.05 ⁴⁾	1.00 ⁴⁾	2.30 ⁴⁾	2.25 ⁴⁾	1.52 ⁴⁾	1.57 ⁴⁾	1.63 ⁴⁾	1.66 ⁴⁾	1.73 ⁴⁾	1.78 ⁴⁾	Transverse	430	540 - 600	20
isovac HP 250-50 A	Long. + Trans.	1.10	1.05	2.50	2.35	1.52	1.57	1.63	1.66	1.73	1.78	Transverse	430	545 - 605	21
isovac HP 270-50 A	Long. + Trans.	1.15	1.10	2.70	2.50	1.52	1.59	1.63	1.68	1.73	1.79	Transverse	355	485 - 545	24
isovac HP 290-50 A	Long. + Trans.	1.20	1.15	2.90	2.65	1.52	1.60	1.63	1.69	1.73	1.80	Transverse	335	455 - 515	27
isovac HP 310-50 A	Long. + Trans.	1.25	1.20	3.10	2.70	1.52	1.61	1.63	1.70	1.73	1.81	Transverse	340	465 - 525	26
isovac HP 330-50 A	Long. + Trans.	1.40	1.35	3.30	3.05	1.52	1.62	1.63	1.71	1.73	1.81	Transverse	290	435 - 495	26
isovac HP 350-50 A	Long. + Trans.	1.50	1.45	3.50	3.20	1.53	1.64	1.63	1.73	1.73	1.83	Transverse	260	405 - 465	32
isovac HP 400-50 A	Long. + Trans.	1.70	1.60	4.00	3.45	1.56	1.66	1.66	1.74	1.76	1.84	Transverse	255	415 - 475	31
isovac HP 600-50 A	Long. + Trans.	2.60	2.35	6.00	5.00	1.60	1.67	1.69	1.75	1.79	1.86	Transverse	215	345 - 405	30
isovac HP 330-65 A	Long. + Trans.	1.40	1.35	3.30	3.10	1.52	1.60	1.63	1.69	1.73	1.80	Transverse	330	450 - 510	26
isovac HP 350-65 A	Long. + Trans.	1.50	1.45	3.50	3.20	1.52	1.59	1.63	1.68	1.73	1.79	Transverse	325	455 - 515	28
isovac HP 470-65 A	Long. + Trans.	2.00	1.85	4.70	4.10	1.56	1.65	1.66	1.73	1.76	1.83	Transverse	255	410 - 470	28
isovac® fully processed high-strength															
EN 10106 ²⁾		P10		P15		J25		J50		J100			R _{p0.2} min.	R _m	A ₈₀ min.
		max. ³⁾	typ.	max.	typ.	min.	typ.	min.	typ.	min.	typ.				
isovac 470-50 A HS	Long. + Trans.	2.00	1.65	4.70	3.50	1.54	1.57	1.64	1.66	1.74	1.78	Transverse	485	605 - 665	25
isovac 350-65 A HS	Long. + Trans.	1.50	1.40	3.50	3.10	1.49	1.55	1.60	1.64	1.70	1.76	Transverse	445	575 - 635	23
isovac 530-65 A HS	Long. + Trans.	2.30	1.75	5.30	3.85	1.54	1.57	1.64	1.66	1.74	1.78	Transverse	485	600 - 660	25

¹⁾ Magnetic measurement pursuant to DIN EN 60404-2

²⁾ Steel grade designation deviates from standard

³⁾ not binding

⁴⁾ Eroded edges

FULLY PROCESSED ELECTRICAL STEEL

Steel grade	Magnetic sample direction	Specific total loss ¹⁾ at 400 Hz						Magnetic polarization ¹⁾ at 50 Hz						Mechanical sample direction	0.2 % yield strength R _{p0.2} [MPa]	Tensile strength R _m [MPa]	Elongation A ₈₀ [%]
		50 Hz 1.5 T P15 [W/kg]	1.0 T P10 [W/kg]		1.5 T P15 [W/kg]		700 Hz 1.0 T P10 [W/kg]	2500 A/m J25 [T]		5000 A/m J50 [T]		10000 A/m J100 [T]					
isovac® automotive grades																	
EN 10303 ²⁾		P15 typ.	P10 max. typ.		P15 max. ³⁾ typ.		P10 typ.	J25 min. typ.		J50 min. typ.		J100 min. typ.			R _{p0.2} min.	R _m	A ₈₀ min.
isovac HP NO25-13 Y420	Long. + Trans.	2.15	13.00	12.70	38.00	29.40	28.60	1.48	1.56	1.59	1.65	1.69	1.78	Longitudinal	420	525 - 585	13
isovac HP NO27-14 Y420	Long. + Trans.	2.20	14.00	13.40	41.00	31.10	30.40	1.48	1.57	1.59	1.66	1.69	1.78	Longitudinal	420	530 - 590	16
isovac HP NO30-15 Y420	Long. + Trans.	2.20	15.00	14.20	43.00	33.40	33.20	1.48	1.57	1.59	1.66	1.69	1.78	Longitudinal	420	525 - 585	14
isovac HP NO30-16 Y370	Long. + Trans.	2.25	16.00	15.40	47.00	35.80	35.30	1.49	1.59	1.60	1.68	1.70	1.79	Longitudinal	370	480 - 540	17
isovac HP NO30-19 Y320	Long. + Trans.	2.25	19.00	15.70	47.00	37.40	36.70	1.49	1.59	1.60	1.67	1.70	1.79	Longitudinal	320	420 - 480	18
isovac HP NO35-18 Y420	Long. + Trans.	2.30	18.00	16.40	50.00	38.50	38.70	1.49	1.58	1.60	1.67	1.70	1.78	Longitudinal	420	545 - 605	19
isovac HP NO35-19 Y370	Long. + Trans.	2.50	19.00	17.60	50.00	41.20	41.50	1.49	1.59	1.60	1.68	1.70	1.79	Longitudinal	370	480 - 540	18
isovac NO35-22 Y460	Long. + Trans.	3.00	22.00	18.20	55.00	43.00	43.00	1.49	1.53	1.60	1.62	1.70	1.74	Longitudinal	460	580 - 640	13
isovac NO35-26 Y500	Long. + Trans.	3.90	26.00	21.50	60.00	49.70	47.50	1.49	1.54	1.60	1.63	1.70	1.75	Longitudinal	500	600 - 660	13

¹⁾ Magnetic measurement pursuant to DIN EN 60404-2

²⁾ Steel grade designation deviates from standard

³⁾ not binding

SEMI-PROCESSED ELECTRICAL STEEL

Steel grade	Magnetic sample direction	Magnetic values after final annealing according to EN 10341						Mechanical sample direction	0.2 % yield strength R _{p0.2} [MPa]	Tensile strength R _m [MPa]	Elongation A ₈₀ [%]				
		Specific total loss at 50 Hz ¹⁾		Magnetic polarization at 50 Hz ¹⁾											
		1.0 T P10 [W/kg]		1.5 T P15 [W/kg]		2500 A/m J25 [T]		5000 A/m J50 [T]		10000 A/m J100 [T]					
EN 10341 ²⁾		P10		P15		J25		J50		J100			R _{p0.2} min.	R _m	A ₈₀ min.
		max. ³⁾	typ.	max.	typ.	min.	typ.	min.	typ.	min.	typ.				
isovac® semi-processed high-perm															
isovac® HP290-50KHE	Long. + Trans.	On request		On request		On request		On request		On request		Transverse	On request	On request	On request
isovac® HP310-50KHE	Long. + Trans.	1.40	1.20	3.10	3.05	1.54	1.57	1.62	1.65	1.72	1.76	Transverse	415	440 - 500	17
isovac® semi-processed high-efficiency															
isovac® 340-50KHE	Long. + Trans.	1.42	1.25	3.40	3.10	1.54	1.57	1.62	1.65	1.72	1.76	Transverse	415	440 - 500	17
isovac® 420-50KHE	Long. + Trans.	1.82	1.50	4.20	3.70	1.56	1.61	1.65	1.69	1.75	1.80	Transverse	375	395 - 455	18
isovac® 450-50KHE	Long. + Trans.	1.92	1.55	4.50	3.80	1.57	1.61	1.65	1.69	1.75	1.80	Transverse	375	395 - 455	18
isovac® 520-65KHE	Long. + Trans.	2.22	1.90	5.20	4.70	1.57	1.61	1.65	1.69	1.75	1.80	Transverse	385	405 - 465	16
isovac® semi-processed															
isovac 560-50 K	Long. + Trans.	2.42	2.05	5.60	4.65	1.58	1.63	1.66	1.72	1.76	1.83	Transverse	410	470 - 530	12
isovac 660-50 K	Long. + Trans.	2.80	2.30	6.60	5.30	1.62	1.65	1.70	1.73	1.79	1.85	Transverse	350	415 - 475	13
isovac 800-65 K	Long. + Trans.	3.30	3.00	8.00	6.85	1.62	1.65	1.70	1.74	1.79	1.85	Transverse	370	420 - 480	10
isovac 1000-65 K	Long. + Trans.	4.20	3.30	10.00	7.80	1.60	1.65	1.68	1.73	1.78	1.85	Transverse	290	335 - 395	24
isovac 1800-100 K	Long. + Trans.	4.80	5.50	18.00	14.70	1.62	1.65	1.68	1.73	1.78	1.84	Transverse	280	325 - 385	26

¹⁾ Magnetic measurement pursuant to DIN EN 60404-2

²⁾ Steel grade designation deviates from standard

³⁾ not binding

HOT-ROLLED POLE SHEETS

Steel grade	Sample direction	0.2 % yield strength R _{p0.2} [MPa]	Tensile strength R _m [MPa]	Elongation		Magnetic polarization at DC (Direct current) ¹⁾	
				A ₈₀ [%]	A ₅ [%]	5000 A/m J50 [T]	15000 A/m J150 [T]
Hot-rolled pole sheets							
Standard grades according to EN 10265		R_{p0.2} min.	R_m min.	A₈₀ min.	A₅ min.	J50 min.	J150 min.
250-TG-180	Transverse	250	350	22	26	1.60	1.80
300-TG-180	Transverse	300	400	20	24	1.60	1.80
350-TG-179	Transverse	350	450	18	22	1.55	1.79
400-TG-179	Transverse	400	500	16	19	1.55	1.79
450-TG-179	Transverse	450	550	14	17	1.54	1.79
500-TG-179	Transverse	500	600	12	14	1.53	1.79
550-TG-178	Transverse	550	650	12	14	1.52	1.78
600-TG-178	Transverse	600	700	10	12	1.50	1.78
650-TG-178	Transverse	650	750	10	12	1.48	1.78
700-TG-178	Transverse	700	800	10	12	1.46	1.78
voestalpine special grade		R_{p0.2} min.	R_m min.	A₈₀ min.	A₅ min.	J50 min.	J150 min.
750-VA-175	Long. + Trans.	750	800	10	12	1.46	1.75

Measurement of fracture elongation: A₈₀ for thicknesses < 3 mm
A₅ for thicknesses ≥ 3 mm

¹⁾ Magnetic measurement pursuant to DIN EN 60404-4

INSULATING VARNISH SYSTEMS

Deliverable insulating varnish systems					
Product variant	Uncoated	C-3	Backlack	C-5	C-6
isovac®	✓	✓	✓	✓	✓

Range of properties for available insulating varnish systems						
Requirements	C-3		Backlack	C-5		C-6
Layer thickness	1 µm	2-4 µm	4 µm	1 µm	2-4 µm	3-8 µm
Insulation resistance	-	-	*	o	+	+
Resistance to annealing	-	-	-	+	o	o
Burn-off repair	-	-	-	o	o	+

- Not recommended o Recommended + Highly recommended
* Not clear in as-delivered condition (B condition)

Indicated references are standard values. Limitations are possible depending on thickness.
Available insulating varnish systems and combinations of widths and thicknesses vary depending on the steel grade.

DIMENSIONS

Available dimensions: wide strip (coil)				
Product variant	Thickness [mm]	Width ¹⁾ [mm] max.	Outside diameter [mm] max.	Inside diameter [mm]
isovac®	0.25 - 1.00	1600	2000	600

Available dimensions: slit (slit strip)				
Product variant	Thickness [mm]	Strip width ¹⁾ [mm] min.	Outside diameter [mm]	Inside diameter [mm]
isovac®	0.25 - 1.00	19	850 - 2000	500 / 600

Available dimensions: cut-to-length (sheet)				
Product variant	Thickness [mm]	Width ¹⁾ [mm]	Length [mm]	Package weight [t] max.
isovac®	0.25 - 1.00	300 - 1550	300 - 5000	6
Hot-rolled pole sheets	2.00 - 12.00	900 - 1620	1500 - 14000	10

¹⁾ Indicated references are standard values. The available combinations of widths and thicknesses and supply forms vary depending on the steel grade and insulating varnish system. Limitations are possible depending on thickness.

This document provides an overview of the electrical steel products supplied by the voestalpine Steel Division. Other grades are available upon request. Please find further information and downloads under the following link:

www.voestalpine.com/isovac



Premium quality with reduced carbon footprint



Semi-processed electrical steel – greentec steel Edition

Max. carbon footprint 2.12 kg CO₂e per kg of steel ¹⁾

Fully processed electrical steel – greentec steel Edition

Max. carbon footprint 2.30 kg CO₂e per kg of steel ¹⁾

¹⁾ per EN 15804+A2 (EPD methodology) cradle to gate

All products, dimensions and steel grades listed in each voestalpine supply range are available as greentec steel Edition.

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voestalpine
ONE STEP AHEAD.