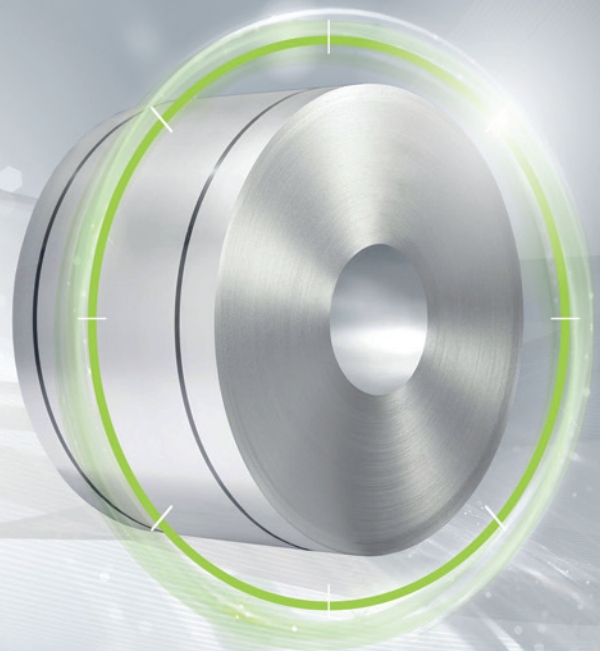


FULLY
PROCESSED

isovac high-perm 250-50 A

The specialist with the highest permeability

Manufactured in the most modern production lines, this fully processed isovac® grade exhibits highly homogeneous properties across the width and length of the entire strip. The result is excellent and consistent processability in the manufacture of highly efficient electrical components.

The optimum adjustment of texture increases magnetizability and reduces core losses of isovac HP 250-50 A. This increase in efficiency makes it possible to maintain the same level of performance while reducing component size and saving material, weight and costs. This also means that a higher level of performance can be achieved with the same component size.

Upon request, isovac HP 250-50 A can be supplied with an electrical steel insulation system and can be used directly in as-delivered condition.

Convincing advantages:

- » Increased performance achieved by increasing torque based on higher magnetizability (improvement by up to 0.05 T at J25, J50, J100)
- » Possible cost optimization through less material usage, less weight and less space requirement resulting from downsizing while maintaining the same level of performance
- » Best processability through consistent mechanical properties and homogeneous, clean surfaces
- » Excellent stackability resulting from high dimensional accuracy in rolling direction and perpendicular to rolling direction (thickness tolerance)
- » Innovative electrical steel insulation systems upon request

voestalpine supplies isovac HP 250-50 A, an electrical steel of the highest quality. We offer you a customer-focused overall package of products, service and logistics in addition to all the advantages of our integrated metallurgical facility and Steel Service Centers.

Grade named according to conventional international standards:

Grade named according to isovac®	DIN EN 10106		IEC 60404-8-4	JIS C2552	GOST 21427.2	ASTM A677	AISI	IS648	GB/T2521.1
	Material No.	Abbreviation							
isovac HP 250-50 A	1.0891	M250-50A	M250-50A 5	50A250	-	-	-	-	50W250

Mechanical properties:

Tensile test according to DIN EN ISO 6892-1 and hardness according to DIN EN ISO 6507-1 (Typical values);
Test direction: Transverse

Grade named according to isovac®	Yield strength R_{eH} [MPa]	0.2 %-Yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m [MPa]	Elongation A_{80} [%]	Hardness HV5 [-]
isovac HP 250-50 A	445	440	560	18	220

Magnetic properties:

in as-delivered condition (Typical values)

Test direction: Mean value from longitudinal and transverse measurements at 50 Hz (60 Hz), single-sheet test

Grade named according to isovac®	Specific total loss				Magnetic polarization			Relative permeability 1.5 T μ_r [-]
	1.0 T P10		1.5 T P15		2500 A/m J25	5000 A/m J50	10000 A/m J100	
	50 Hz [W/kg]	60 Hz [W/lb]	50 Hz [W/kg]	60 Hz [W/lb]	[T]	[T]	[T]	
isovac HP 250-50 A	0.95	0.54	2.25	1.28	1.56	1.65	1.77	1000

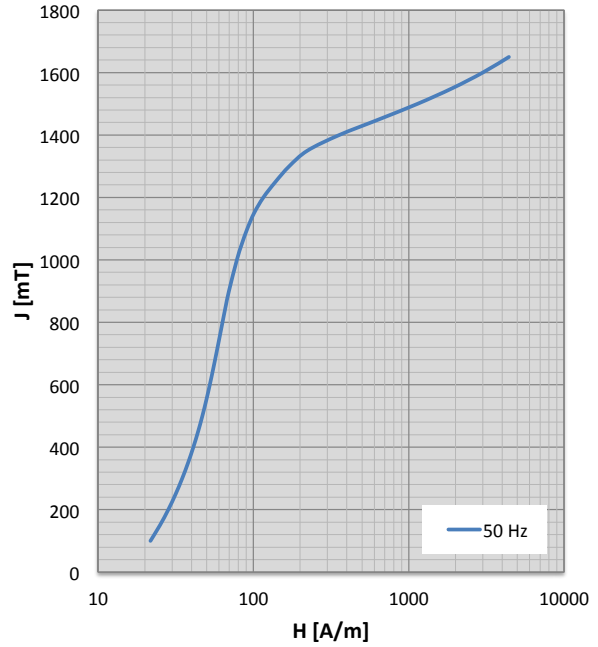
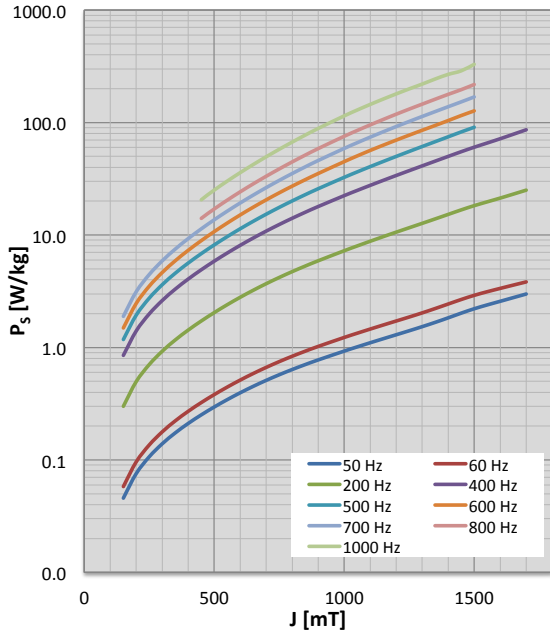
Physical properties:

Typical values

Grade named according to isovac®	Density ρ [g/cm ³]	Specific electrical resistance ρ_s [$\mu\Omega\text{cm}$]	Thermal conductivity λ [W/mK]
isovac HP 250-50 A	7.60	64.5	22

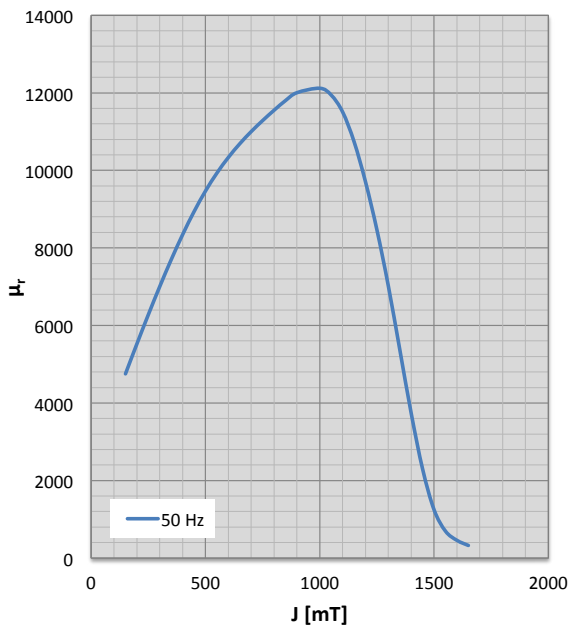
Characteristics P_s/J loss curve and characteristics J/H magnetization curve

Test direction: Mean value from longitudinal and transverse measurements at indicated frequencies, single-sheet test



Characteristics μ_r/J permeability curve

Test direction: Mean value from longitudinal and transverse measurements at 50 Hz, single-sheet test



Frequency dependence of magnetic properties

Test direction: Mean value longitudinal and transverse at indicated frequencies and polarizations, single-sheet test

50 Hz				60 Hz				200 Hz			
J [mT]	H [A/m]	P _s [W/kg]	μ _r [-]	J [mT]	H [A/m]	P _s [W/kg]	μ _r [-]	J [mT]	H [A/m]	P _s [W/kg]	μ _r [-]
100	22	0.02	3975	100	23	0.02	3995	100	25	0.11	3519
150	25	0.05	4755	150	26	0.06	4726	150	30	0.30	3979
200	28	0.08	5526	200	30	0.10	5450	200	35	0.50	4432
250	32	0.11	6279	250	34	0.14	6159	250	40	0.70	4874
300	35	0.14	7006	300	37	0.18	6843	300	46	0.93	5296
350	38	0.17	7697	350	41	0.22	7497	350	51	1.17	5694
400	41	0.21	8343	400	44	0.27	8110	400	55	1.43	6061
450	44	0.25	8937	450	47	0.32	8677	450	60	1.72	6392
500	47	0.30	9468	500	51	0.38	9189	500	65	2.04	6679
550	50	0.34	9931	550	53	0.44	9641	550	69	2.40	6918
600	52	0.40	10334	600	56	0.51	10034	600	73	2.79	7112
650	55	0.45	10687	650	59	0.59	10374	650	77	3.23	7262
700	58	0.51	11001	700	62	0.67	10666	700	82	3.69	7373
750	60	0.57	11285	750	65	0.75	10915	750	86	4.19	7446
800	63	0.64	11551	800	68	0.84	11125	800	91	4.73	7486
850	66	0.70	11801	850	71	0.93	11298	850	96	5.29	7495
900	70	0.78	12004	900	75	1.02	11420	900	101	5.90	7478
1000	78	0.93	12118	1000	84	1.23	11449	1000	113	7.25	7382
1050	84	1.01	11942	1050	89	1.34	11304	1050	119	7.99	7306
1100	91	1.10	11505	1100	96	1.46	10940	1100	126	8.80	7186
1150	101	1.20	10740	1150	106	1.58	10271	1150	134	9.67	7004
1200	116	1.30	9704	1200	121	1.72	9336	1200	146	10.60	6785
1250	139	1.41	8464	1250	143	1.87	8193	1250	163	11.60	6517
1300	170	1.53	7015	1300	174	2.03	6835	1300	187	12.70	5984
1350	223	1.67	5376	1350	226	2.22	5280	1350	231	13.90	5004
1400	357	1.83	3731	1400	360	2.43	3696	1400	360	15.25	3708
1450	643	2.02	2291	1450	646	2.67	2284	1450	647	16.72	2337
1500	1142	2.21	1244	1500	1146	2.91	1242	1500	1150	18.23	1237
1550	1911	2.39	694	1550	1921	3.13	690	1550	1923	19.72	672
1600	2998	2.57	457	1600	3020	3.35	452	1600	3019	21.29	454
1650	4415	2.77	326	1650	4461	3.58	320	1650	4463	23.09	333
1700	6069	2.99	242	1700	6148	3.83	237	1700	6157	25.05	247

Frequency dependence of magnetic properties

Test direction: Mean value longitudinal and transverse at indicated frequencies and polarizations, single-sheet test

400 Hz				500 Hz				600 Hz			
J [mT]	H [A/m]	P _s [W/kg]	μ _r [-]	J [mT]	H [A/m]	P _s [W/kg]	μ _r [-]	J [mT]	H [A/m]	P _s [W/kg]	μ _r [-]
100	29	0.31	2940	100	31	0.44	2723	100	30	0.54	2769
150	36	0.85	3256	150	38	1.18	3018	150	38	1.49	3008
200	44	1.40	3566	200	46	1.94	3307	200	46	2.47	3242
250	51	1.99	3865	250	53	2.75	3583	250	55	3.51	3464
300	58	2.62	4147	300	61	3.62	3842	300	63	4.64	3668
350	65	3.30	4405	350	69	4.57	4075	350	72	5.90	3850
400	72	4.06	4634	400	76	5.63	4278	400	80	7.31	4004
450	78	4.91	4829	450	84	6.82	4444	450	89	8.90	4123
500	85	5.85	4983	500	92	8.16	4568	500	98	10.72	4203
550	92	6.91	5093	550	100	9.67	4644	550	107	12.77	4239
600	99	8.10	5162	600	108	11.36	4679	600	117	15.08	4237
650	106	9.40	5195	650	116	13.24	4678	650	127	17.67	4203
700	113	10.83	5198	700	125	15.32	4648	700	138	20.54	4146
750	120	12.39	5176	750	134	17.60	4597	750	150	23.71	4072
800	128	14.09	5135	800	144	20.10	4531	800	162	27.20	3989
850	137	15.93	5080	850	155	22.83	4455	850	175	31.02	3902
900	146	17.92	5014	900	166	25.80	4373	900	189	35.21	3813
1000	167	22.39	4861	1000	192	32.56	4199	1000	221	44.91	3627
1050	177	24.91	4779	1050	205	36.39	4109	1050	238	50.48	3531
1100	189	27.64	4686	1100	220	40.55	4014	1100	256	56.49	3436
1150	201	30.60	4579	1150	234	45.06	3912	1150	274	62.89	3346
1200	214	33.83	4488	1200	251	49.97	3818	1200	294	69.78	3258
1250	228	37.33	4420	1250	272	55.34	3735	1250	314	77.27	3170
1300	243	41.17	4267	1300	287	61.20	3611	1300	336	85.38	3086
1350	274	45.37	3899	1350	305	67.59	3365	1350	351	94.20	2962
1400	387	50.00	3209	1400	413	74.68	2854	1400	442	104.14	2591
1450	659	55.04	2195	1450	704	82.51	2022	1450	727	115.38	1872
1500	1152	60.33	1239	1500	1206	90.75	1202	1500	1159	127.00	1209
1550	1921	65.77	695	1550	1953	99.19	704				
1600	3020	71.76	453	1600	3023	108.59	453				
1650	4469	78.65	320	1650	4464	119.65	311				
1700	6169	86.22	236	1700	6177	132.00	229				

Available Dimensions

Grade named according to isovac®	Delivery form	Width [mm]	Length [mm]
isovac HP 250-50 A	Wide strip / Slit strip	19 – 1410	-
	Cut-to-length sheets	300 – 1410	300 – 5000

Deliverable coating systems

Grade named according to isovac®	Uncoated	C-3	Backlack	C-5	C-6
isovac HP 250-50 A	✔	✔	☰	✔	✔

✔ Available ☰ On request

The information and product properties contained in this printed material are non-binding and serve the sole purpose of technical orientation. They do not replace individual advisory services provided by our sales and customer service teams. The product information and characteristics set forth herein shall not be considered as guaranteed properties unless explicitly stipulated in a separate contractual agreement. For this reason, voestalpine shall not grant any warranty nor be held liable for properties and/or specifications other than those subject to explicit agreement. This also applies to the suitability and applicability of products for certain applications as well as to the further processing of materials into final products. All application risks and suitability risks shall be borne by the customer. The General Terms of Sale for Goods and Services of the voestalpine Steel Division shall apply to all materials supplied by the voestalpine Steel Division and can be accessed using the following link: www.voestalpine.com/stahl/en/The-Steel-Division/General-Terms-of-Sale

Technical changes are reserved. Errors and misprints are excepted. No part of this publication may be reprinted without explicit written permission by voestalpine Stahl GmbH.

Please find further information
and downloadable files at
www.voestalpine.com/isovac

