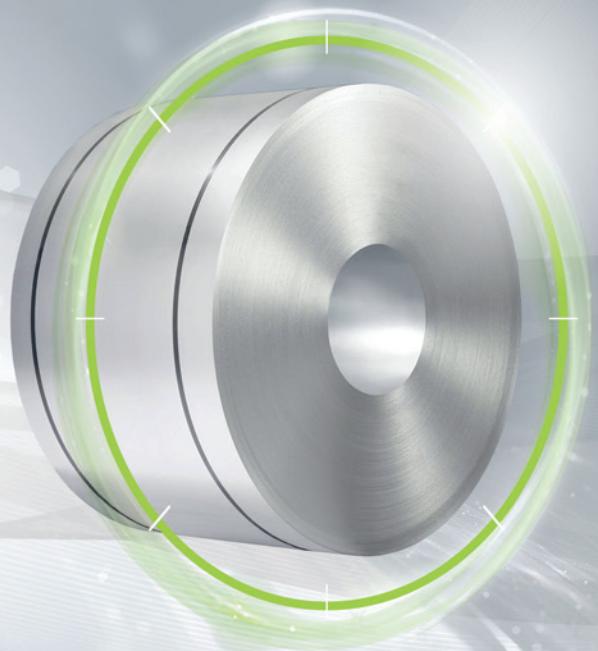


FULLY
PROCESSED

isovac 330-50 A

The perfect solution for direct application

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. Upon request, isovac 330-50 A can be supplied with an electrical steel insulation system and can be used directly in as-delivered condition.

Convincing advantages:

- » 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 330-50 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 330-50 A	1.0809	M330-50A	M330-50A 5	50A330	-	47F190	M-27	50C330	50W330

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	0.2 %-Yield strength	Tensile strength	Elongation	Hardness
	R _{eH} [MPa]	R _{p0.2} [MPa]	R _m [MPa]	A ₈₀ [%]	HV5 [-]
isovac 330-50 A	370	365	505	28	185

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
	1.0 T P10		1.5 T P15		2500 A/m J25	5000 A/m J50	10000 A/m J100	1.5 T μ _r
	50 Hz [W/kg]	60 Hz [W/lb]	50 Hz [W/kg]	60 Hz [W/lb]	[T]	[T]	[T]	[-]
isovac 330-50 A	1.15	0.66	2.90	1.65	1.58	1.67	1.79	1300

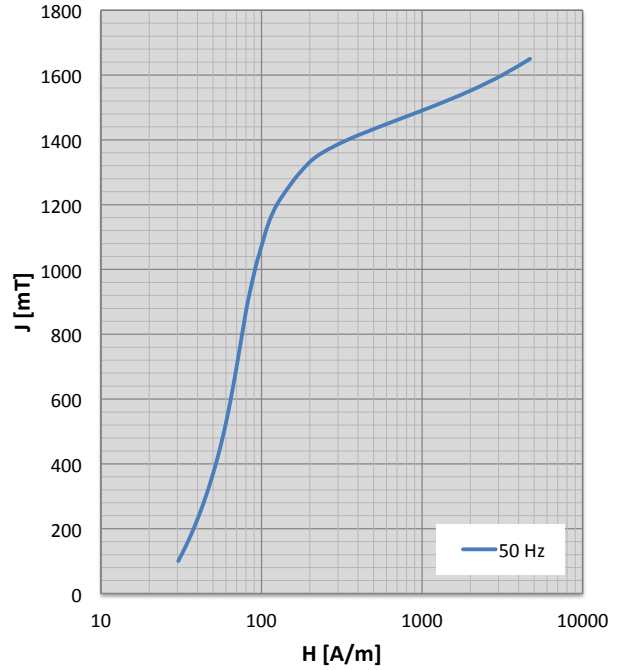
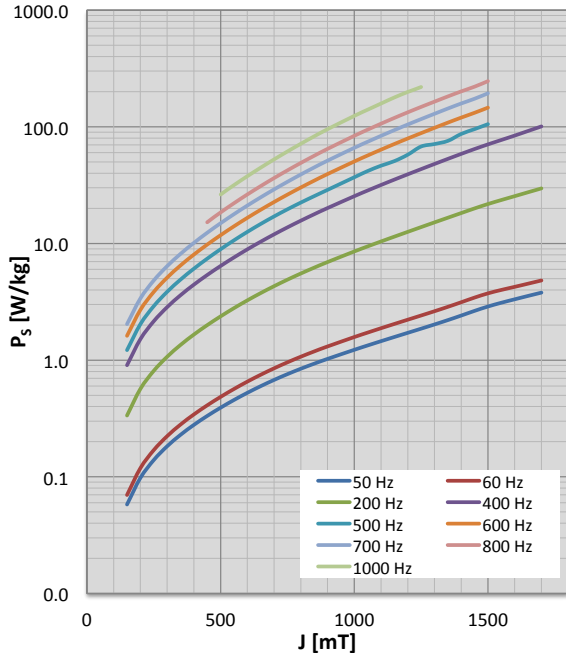
Physical properties:

Typical values

Grade named according to isovac®	Density ρ [g/cm³]	Specific electrical resistance ρ _s [μΩcm]	Thermal conductivity λ [W/mK]
isovac 330-50 A	7.68	52.0	25

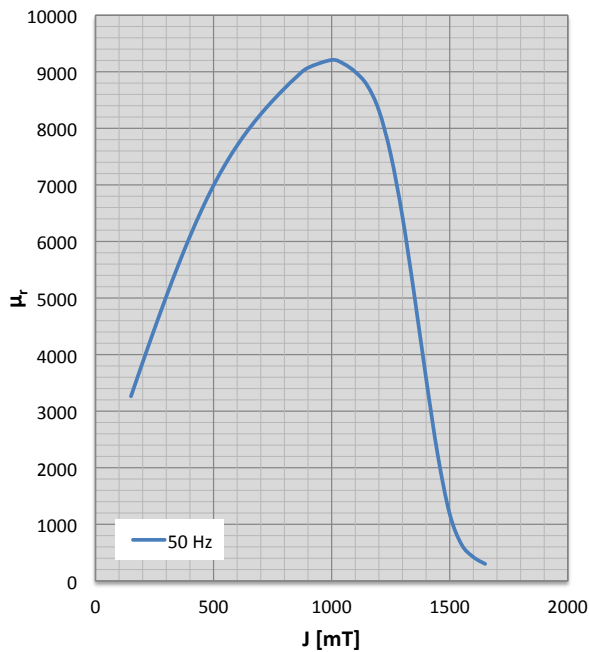
Characteristics P_s/J loss curve and characteristics J/H magnetization curve

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	30	0.02	2650	100	31	0.02	2667	100	32	0.11	2564
150	34	0.06	3262	150	35	0.07	3219	150	37	0.34	2979
200	38	0.10	3867	200	39	0.12	3768	200	43	0.57	3389
250	41	0.14	4459	250	43	0.17	4307	250	48	0.81	3789
300	45	0.18	5031	300	47	0.22	4832	300	54	1.07	4173
350	49	0.23	5577	350	51	0.28	5339	350	59	1.35	4538
400	52	0.28	6090	400	55	0.34	5823	400	64	1.66	4877
450	55	0.33	6563	450	58	0.41	6280	450	69	2.00	5187
500	58	0.39	6991	500	61	0.48	6705	500	74	2.37	5461
550	61	0.46	7368	550	64	0.57	7093	550	79	2.79	5697
600	64	0.52	7699	600	67	0.65	7446	600	83	3.25	5895
650	67	0.60	7992	650	70	0.75	7762	650	88	3.76	6056
700	70	0.68	8252	700	73	0.85	8042	700	93	4.31	6183
750	73	0.76	8488	750	76	0.96	8285	750	97	4.90	6278
800	76	0.84	8705	800	79	1.07	8493	800	102	5.53	6343
850	79	0.93	8905	850	82	1.19	8664	850	108	6.20	6379
900	82	1.03	9071	900	85	1.31	8802	900	114	6.93	6391
1000	91	1.23	9209	1000	94	1.58	8979	1000	127	8.54	6352
1050	97	1.34	9143	1050	100	1.72	9008	1050	134	9.44	6308
1100	104	1.45	8998	1100	106	1.88	8922	1100	142	10.40	6252
1150	112	1.58	8764	1150	114	2.04	8645	1150	149	11.44	6179
1200	125	1.71	8318	1200	127	2.22	8136	1200	159	12.58	6051
1250	146	1.86	7542	1250	149	2.41	7364	1250	176	13.81	5814
1300	174	2.02	6435	1300	177	2.63	6307	1300	197	15.16	5375
1350	222	2.20	5055	1350	224	2.86	4981	1350	232	16.62	4645
1400	343	2.41	3578	1400	345	3.14	3544	1400	342	18.23	3595
1450	610	2.64	2209	1450	615	3.44	2196	1450	606	19.98	2300
1500	1122	2.88	1181	1500	1128	3.74	1175	1500	1128	21.78	1181
1550	1966	3.10	644	1550	1974	4.00	639	1550	2002	23.57	614
1600	3166	3.32	421	1600	3182	4.25	418	1600	3238	25.43	414
1650	4705	3.55	300	1650	4746	4.52	299	1650	4808	27.47	307
1700	6480	3.79	223	1700	6560	4.82	222	1700	6613	29.65	229

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	35	0.31	2294	100	36	0.43	2236	100	37	0.57	2149
150	42	0.91	2613	150	43	1.22	2525	150	46	1.62	2409
200	49	1.51	2926	200	51	2.04	2809	200	54	2.70	2663
250	57	2.16	3228	250	59	2.90	3080	250	62	3.85	2905
300	64	2.85	3514	300	67	3.85	3334	300	71	5.10	3130
350	71	3.60	3778	350	74	4.90	3564	350	80	6.48	3331
400	78	4.44	4014	400	83	6.08	3763	400	89	8.03	3503
450	85	5.37	4217	450	91	7.41	3927	450	98	9.79	3639
500	92	6.42	4382	500	99	8.93	4048	500	107	11.78	3734
550	99	7.59	4504	550	108	10.64	4125	550	118	14.03	3784
600	107	8.90	4587	600	117	12.57	4160	600	128	16.58	3795
650	114	10.36	4634	650	127	14.70	4161	650	139	19.45	3772
700	122	11.97	4649	700	137	17.05	4134	700	152	22.65	3724
750	131	13.74	4637	750	148	19.62	4087	750	165	26.22	3656
800	140	15.68	4601	800	159	22.41	4025	800	179	30.18	3577
850	150	17.80	4546	850	172	25.44	3955	850	194	34.54	3493
900	161	20.11	4476	900	185	28.80	3876	900	211	39.35	3404
1000	186	25.41	4305	1000	217	36.93	3687	1000	248	50.43	3222
1050	200	28.43	4212	1050	234	41.75	3580	1050	267	56.76	3131
1100	214	31.72	4115	1100	251	46.41	3494	1100	289	63.68	3039
1150	228	35.27	4014	1150	266	50.79	3434	1150	311	71.22	2948
1200	245	39.15	3912	1200	290	57.66	3298	1200	334	79.39	2860
1250	265	43.38	3808	1250	326	67.77	3058	1250	358	88.23	2776
1300	280	48.01	3694	1300	334	71.13	3095	1300	385	97.93	2686
1350	294	53.09	3512	1350	351	75.72	3140	1350	393	108.57	2667
1400	378	58.59	3033	1400	409	86.84	2739	1400	442	119.88	2521
1450	619	64.50	2122	1450	546	95.49	1988	1450	672	131.85	1903
1500	1121	70.67	1191	1500	1131	105.31	1177	1500	1121	145.94	1192
1550	1971	77.07	655								
1600	3192	84.08	419								
1650	4766	92.05	292								
1700	6591	100.74	216								

Frequency dependence of magnetic properties

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

700 Hz				800 Hz				1000 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	39	0.73	2049								
150	48	2.03	2284								
200	57	3.38	2513								
250	66	4.82	2731								
300	75	6.39	2931								
350	85	8.14	3109								
400	95	10.12	3259	400	104	12.15	3087				
450	105	12.36	3374	450	114	15.19	3148	450	128	21.53	2812
500	116	14.91	3449	500	125	18.45	3191	500	142	26.28	2825
550	128	17.82	3480	550	138	22.13	3201	550	157	31.63	2812
600	140	21.13	3473	600	151	26.30	3180	600	174	37.72	2774
650	153	24.86	3436	650	166	31.03	3134	650	192	44.65	2717
700	167	29.06	3374	700	183	36.35	3068	700	212	52.53	2645
750	183	33.77	3296	750	201	42.33	2989	750	234	61.45	2564
800	199	39.01	3209	800	220	49.01	2902	800	258	71.53	2478
850	217	44.84	3119	850	241	56.44	2812	850	283	82.83	2392
900	237	51.26	3028	900	264	64.67	2723	900	311	95.35	2309
1000	280	66.02	2849	1000	313	83.65	2550	1000	371	123.97	2151
1050	303	74.43	2762	1050	339	94.49	2471	1050	402	140.14	2078
1100	327	83.62	2678	1100	366	106.30	2394	1100	436	158.22	2010
1150	353	93.67	2596	1150	395	119.14	2319	1150	471	178.42	1945
1200	380	104.59	2516	1200	425	133.05	2247	1200	507	198.86	1886
1250	408	116.40	2439	1250	456	148.05	2181	1250	542	219.19	1834
1300	438	129.22	2361	1300	490	164.22	2112	1300	585	246.96	1769
1350	457	143.37	2329	1350	517	182.06	2074				
1400	503	158.39	2215	1400	562	201.06	1983				
1450	682	173.96	1785	1450	710	220.76	1671				
1500	1115	193.58	1197	1500	1104	246.12	1187				

Available Dimensions

Grade named according to isovac®	Delivery form	Width [mm]	Length [mm]
isovac 330-50 A	Wide strip / Slit strip	19 – 1590	-
	Cut-to-length sheets	300 – 1590	300 – 5000

Deliverable coating systems

Grade named according to isovac®	Uncoated	C-3	Backlack	C-5	C-6
isovac 330-50 A	✔	✔	☰	✔	✔

✔ Available ☰ On request

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