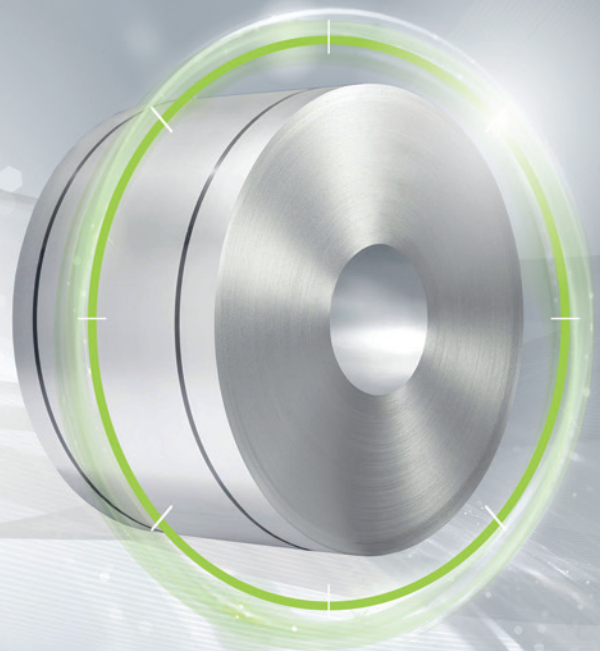


FULLY
PROCESSED

isovac high-perm 330-35 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 330-35 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 330-35 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 330-35 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 330-35 A	1.0804	M330-35A	M330-35A 5	35A330	-	36F185	M-36	35C330	35W330

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 330-35 A	300	280	440	32	130

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 330-35 A	1.30	0.73	2.85	1.60	1.68	1.76	1.87	4000

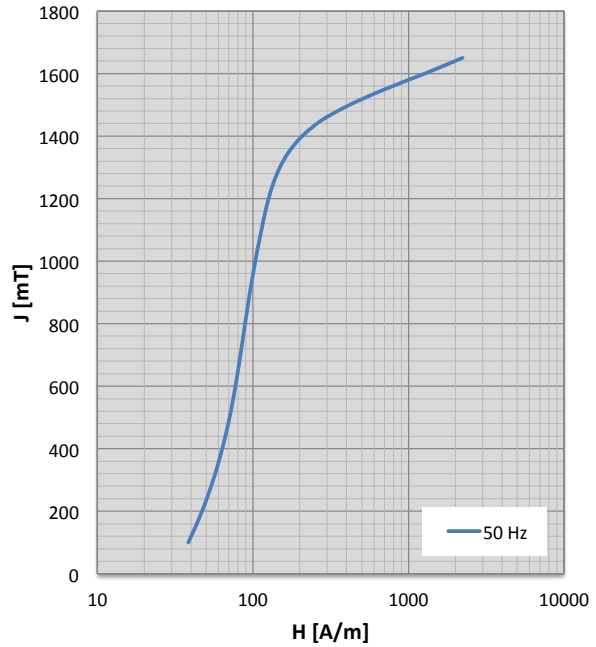
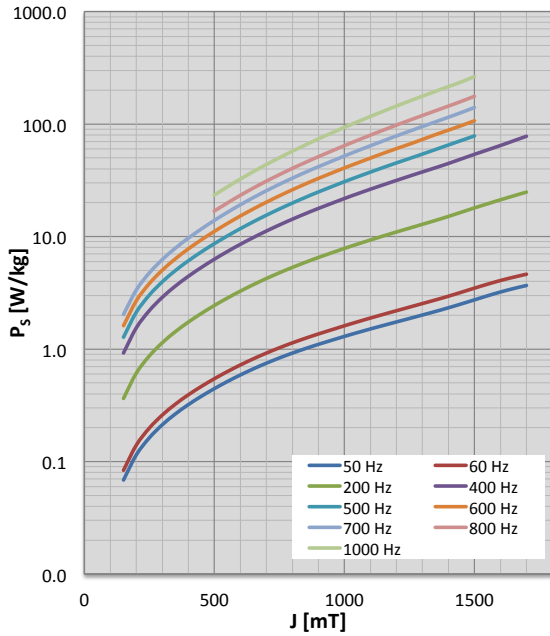
Physical properties:

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 330-35 A	7.76	35.8	33

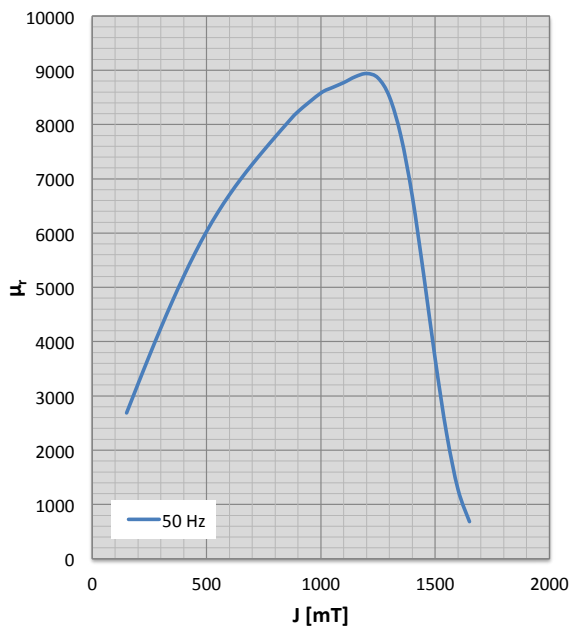
Characteristics P_s/J loss curve and characteristics J/H magnetization curve

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	38	0.02	2144					100	40	0.12	2046
150	43	0.07	2685	150	44	0.08	2600	150	46	0.36	2460
200	47	0.12	3220	200	49	0.14	3120	200	52	0.61	2871
250	51	0.16	3745	250	53	0.20	3632	250	57	0.87	3276
300	55	0.21	4254	300	57	0.26	4134	300	63	1.14	3673
350	60	0.27	4743	350	61	0.32	4620	350	68	1.43	4059
400	63	0.32	5205	400	65	0.39	5087	400	73	1.74	4431
450	67	0.38	5636	450	69	0.47	5532	450	77	2.07	4787
500	71	0.45	6031	500	72	0.55	5950	500	82	2.44	5124
550	74	0.51	6386	550	76	0.63	6339	550	86	2.84	5438
600	77	0.59	6706	600	78	0.72	6704	600	89	3.27	5729
650	80	0.67	6998	650	81	0.82	7047	650	92	3.74	5994
700	83	0.75	7269	700	84	0.92	7375	700	96	4.24	6232
750	86	0.83	7524	750	86	1.03	7691	750	99	4.77	6441
800	89	0.92	7771	800	89	1.14	8002	800	103	5.32	6619
850	92	1.01	8013	850	92	1.25	8307	850	107	5.91	6764
900	96	1.10	8238	900	94	1.36	8590	900	111	6.52	6875
1000	104	1.30	8581	1000	102	1.61	9015	1000	121	7.85	6986
1050	108	1.40	8681	1050	106	1.75	9129	1050	127	8.57	6984
1100	113	1.51	8772	1100	111	1.89	9218	1100	133	9.32	6956
1150	119	1.62	8880	1150	117	2.04	9305	1150	140	10.13	6908
1200	126	1.74	8940	1200	124	2.19	9296	1200	148	10.98	6820
1250	135	1.87	8857	1250	134	2.36	9078	1250	158	11.88	6678
1300	149	2.01	8509	1300	148	2.54	8593	1300	171	12.85	6521
1350	170	2.16	7787	1350	169	2.73	7799	1350	188	13.91	6338
1400	207	2.33	6674	1400	205	2.95	6673	1400	218	15.11	5885
1450	276	2.52	5223	1450	273	3.20	5242	1450	279	16.48	4954
1500	419	2.74	3678	1500	413	3.48	3719	1500	420	17.97	3693
1550	705	2.97	2304	1550	694	3.77	2349	1550	713	19.55	2358
1600	1274	3.22	1275	1600	1259	4.07	1307	1600	1300	21.22	1259
1650	2225	3.45	684	1650	2217	4.35	702	1650	2287	22.99	632
1700	3461	3.67	416	1700	3472	4.63	424	1700	3574	24.84	375

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	41	0.31	1969								
150	49	0.92	2306	150	51	1.27	2197	150	53	1.61	2104
200	56	1.55	2639	200	58	2.13	2506	200	60	2.69	2423
250	63	2.20	2966	250	66	3.02	2809	250	68	3.83	2731
300	70	2.89	3284	300	74	3.97	3101	300	75	5.04	3023
350	76	3.63	3590	350	81	4.99	3381	350	83	6.34	3294
400	83	4.44	3880	400	88	6.10	3643	400	90	7.78	3538
450	89	5.32	4152	450	95	7.31	3885	450	98	9.36	3751
500	94	6.29	4402	500	101	8.65	4103	500	105	11.12	3927
550	99	7.36	4628	550	107	10.13	4294	550	112	13.08	4062
600	104	8.54	4826	600	113	11.76	4458	600	120	15.24	4159
650	109	9.82	4995	650	119	13.55	4592	650	127	17.62	4224
700	114	11.20	5131	700	125	15.49	4695	700	135	20.21	4259
750	120	12.69	5233	750	131	17.59	4767	750	144	23.03	4271
800	126	14.28	5297	800	138	19.86	4806	800	153	26.07	4264
850	133	15.98	5323	850	146	22.31	4812	850	163	29.36	4242
900	140	17.79	5317	900	155	24.93	4789	900	173	32.88	4212
1000	156	21.79	5235	1000	174	30.74	4674	1000	194	40.73	4152
1050	165	24.01	5175	1050	185	33.96	4593	1050	205	45.08	4129
1100	174	26.36	5112	1100	197	37.42	4510	1100	217	49.84	4085
1150	184	28.87	5052	1150	209	41.16	4435	1150	231	55.03	4005
1200	193	31.55	5000	1200	221	45.15	4357	1200	245	60.51	3925
1250	203	34.46	4952	1250	235	49.41	4271	1250	258	66.27	3870
1300	214	37.56	4873	1300	247	54.11	4207	1300	277	73.03	3754
1350	230	40.89	4719	1350	258	59.38	4173	1350	296	80.54	3654
1400	257	44.66	4453	1400	278	65.19	4044	1400	315	88.28	3545
1450	309	49.03	4018	1450	328	71.54	3652	1450	363	96.98	3200
1500	435	53.83	3297	1500	455	78.46	2970	1500	475	106.96	2724
1550	713	58.88	2257	1550	731	86.02	2084				
1600	1297	64.47	1261	1600	1303	94.54	1261				
1650	2308	70.90	663	1650	2284	104.28	735				
1700	3637	77.94	397	1700	3571	114.93	456				
				1750	5012	126.03	299				

Available Dimensions

Grade named according to isovac®	Delivery form	Width [mm]	Length [mm]
isovac HP 330-35 A	Wide strip / Slit strip	19 – 1420	-
	Cut-to-length sheets	300 – 1420	300 – 5000

Deliverable coating systems

Grade named according to isovac®	Uncoated	C-3	Backlack	C-5	C-6
isovac HP 330-35 A	✔	✔	☰	✔	✔

✔ Available ☰ On request

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