isovac®

isovac 700-50 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 700-50 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 700-50 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	JIS	GOST	ASTM	AISI	IS648	GB/T2521.1
	Material No.	Abbreviation	60404-8-4	C2552	21427.2	A677			
isovac 700-50 A	1.0815	M700-50A	M700-50A 5	50A700	2111	47F400	M-47	50C700	50W700

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 700-50 A	335	285	400	37	115

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

	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
Grade named according to isovac®	50 Hz [W/kg]	60 Hz [W/lb]	50 Hz [W/kg]	60 Hz [W/lb]	[T]	[T]	[T]	[-]
isovac 700-50 A	2.60	1.48	5.60	3.19	1.64	1.72	1.84	2100

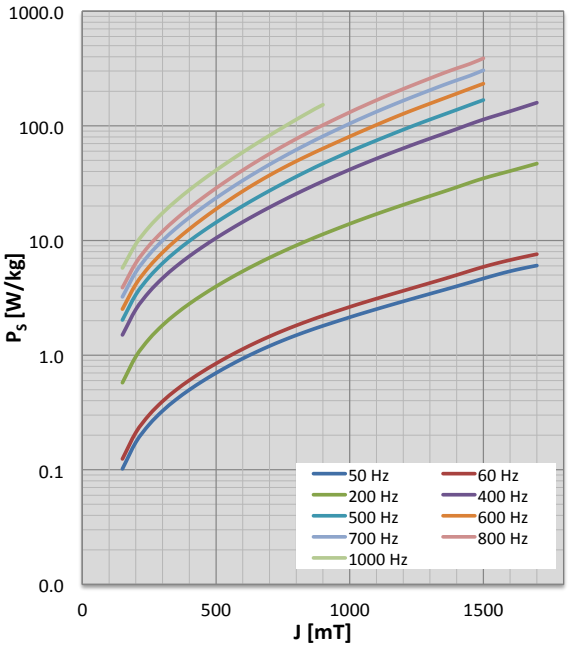
Physical properties:

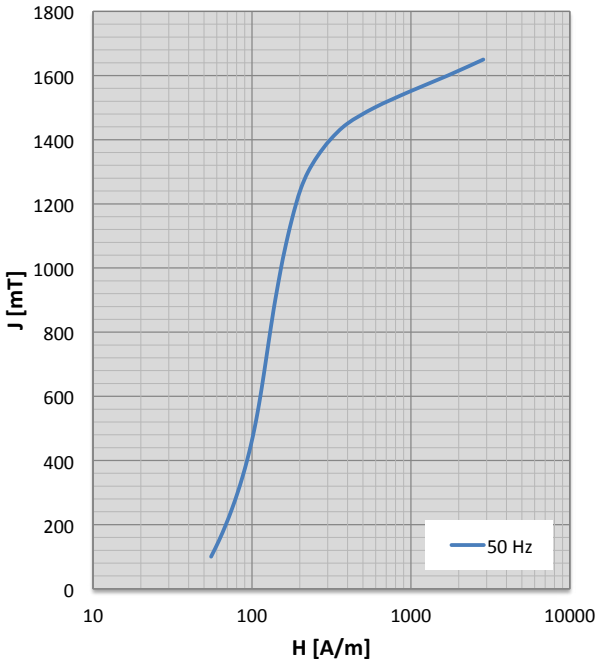
Typical values

Grade named according to isovac®	Density ρ [g/cm³]	Specific electrical resistance ρ_s [μΩcm]	Thermal conductivity λ [W/mK]
isovac 700-50 A	7.80	28.2	42

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

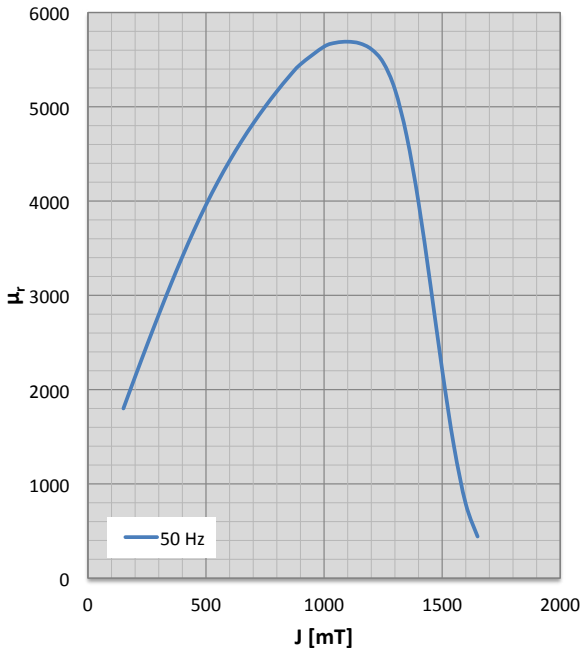
Test direction: Mean value from longitudinal and transverse measurements at indicated frequencies, single-sheet test





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	55	0.03	1458					100	58	0.18	1384
150	62	0.10	1800	150	64	0.12	1738	150	67	0.57	1646
200	69	0.17	2138	200	71	0.21	2062	200	76	0.97	1905
250	75	0.25	2471	250	78	0.30	2381	250	85	1.39	2159
300	81	0.33	2796	300	84	0.40	2695	300	94	1.82	2406
350	87	0.41	3110	350	91	0.50	3000	350	102	2.29	2642
400	93	0.50	3411	400	97	0.60	3296	400	110	2.80	2864
450	99	0.59	3695	450	102	0.72	3580	450	118	3.36	3072
500	104	0.70	3960	500	107	0.84	3851	500	125	3.97	3261
550	109	0.81	4204	550	112	0.98	4106	550	132	4.65	3429
600	113	0.93	4428	600	116	1.13	4345	600	139	5.39	3576
650	117	1.06	4634	650	120	1.29	4566	650	145	6.20	3699
700	121	1.20	4824	700	123	1.46	4769	700	152	7.07	3799
750	126	1.34	5000	750	127	1.63	4954	750	159	8.02	3872
800	130	1.49	5164	800	132	1.81	5119	800	167	9.05	3920
850	135	1.64	5316	850	136	2.01	5264	850	177	10.15	3941
900	140	1.80	5451	900	141	2.20	5387	900	186	11.33	3940
1000	152	2.14	5639	1000	153	2.63	5568	1000	208	13.97	3897
1050	160	2.32	5680	1050	160	2.86	5623	1050	220	15.43	3864
1100	168	2.52	5691	1100	168	3.11	5652	1100	232	17.00	3826
1150	178	2.72	5674	1150	177	3.36	5653	1150	245	18.67	3781
1200	190	2.94	5611	1200	187	3.64	5633	1200	258	20.45	3739
1250	204	3.18	5472	1250	200	3.94	5577	1250	270	22.34	3699
1300	226	3.42	5184	1300	218	4.26	5390	1300	287	24.39	3623
1350	260	3.69	4688	1350	248	4.60	4968	1350	316	26.62	3471
1400	311	3.98	3986	1400	297	4.99	4264	1400	353	29.12	3220
1450	398	4.31	3119	1450	384	5.43	3291	1450	410	31.93	2844
1500	590	4.66	2212	1500	581	5.89	2261	1500	579	34.81	2273
1550	981	5.03	1400	1550	982	6.33	1397	1550	976	37.53	1496
1600	1706	5.39	788	1600	1731	6.75	780	1600	1734	40.33	779
1650	2856	5.73	442	1650	2929	7.17	434	1650	2942	43.44	378
1700	4319	6.04	292	1700	4463	7.59	283	1700	4482	46.81	239

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	65	0.71	1238	100	68	0.95	1184
150	74	1.50	1504	150	76	2.02	1451	150	79	2.52	1384
200	85	2.50	1714	200	87	3.37	1660	200	91	4.15	1579
250	96	3.56	1917	250	98	4.79	1860	250	102	5.91	1764
300	107	4.69	2109	300	110	6.33	2045	300	115	7.86	1933
350	118	5.92	2286	350	122	8.02	2213	350	128	10.06	2083
400	129	7.29	2445	400	134	9.89	2357	400	142	12.57	2208
450	140	8.80	2581	450	146	11.99	2474	450	156	15.45	2303
500	151	10.49	2692	500	159	14.35	2559	500	172	18.78	2363
550	163	12.38	2773	550	173	17.02	2609	550	189	22.59	2385
600	174	14.49	2828	600	187	20.02	2627	600	207	26.90	2376
650	186	16.85	2858	650	203	23.38	2619	650	227	31.71	2343
700	199	19.46	2865	700	220	27.15	2591	700	247	37.01	2295
750	213	22.34	2852	750	238	31.35	2547	750	269	42.80	2239
800	229	25.52	2822	800	258	36.02	2493	800	293	49.09	2184
850	247	29.01	2776	850	280	41.19	2434	850	317	55.91	2133
900	266	32.83	2720	900	304	46.85	2373	900	344	63.37	2085
1000	308	41.52	2597	1000	354	59.63	2255	1000	401	80.65	1988
1050	330	46.43	2539	1050	380	66.77	2202	1050	433	90.70	1935
1100	354	51.73	2482	1100	408	74.56	2148	1100	467	101.80	1878
1150	378	57.44	2427	1150	439	83.13	2090	1150	503	113.99	1820
1200	403	63.60	2372	1200	470	92.47	2033	1200	542	127.13	1765
1250	429	70.26	2317	1250	502	102.55	1981	1250	580	141.13	1716
1300	458	77.41	2263	1300	538	113.38	1925	1300	620	156.18	1669
1350	492	85.10	2209	1350	580	125.01	1862	1350	663	172.57	1622
1400	518	93.69	2151	1400	613	137.84	1819	1400	709	190.73	1572
1450	545	103.39	2060	1450	636	152.21	1794	1450	759	210.99	1520
1500	673	113.48	1803	1500	724	167.88	1651	1500	814	233.06	1467
1550	1028	123.38	1301								
1600	1757	133.88	771								
1650	2956	145.87	443								
1700	4502	159.04	292								

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	70	1.20	1149	100	72	1.48	1111				
150	82	3.22	1329	150	85	3.87	1280	150	96	5.75	1140
200	95	5.31	1505	200	98	6.36	1445	200	111	9.31	1285
250	108	7.54	1672	250	112	9.04	1600	250	126	13.14	1422
300	121	10.00	1825	300	126	12.00	1742	300	143	17.37	1547
350	135	12.74	1960	350	141	15.34	1866	350	160	22.13	1654
400	150	15.85	2072	400	157	19.15	1968	400	179	27.56	1740
450	166	19.39	2157	450	175	23.53	2042	450	199	33.80	1801
500	183	23.45	2210	500	194	28.58	2084	500	222	40.97	1832
550	202	28.08	2229	550	215	34.37	2092	550	246	49.22	1831
600	221	33.34	2218	600	237	40.99	2071	600	273	58.74	1803
650	243	39.29	2184	650	262	48.49	2028	650	302	69.72	1754
700	266	45.97	2134	700	288	56.93	1971	700	335	82.36	1691
750	291	53.44	2073	750	317	66.38	1905	750	372	96.86	1620
800	318	61.75	2010	800	348	76.89	1838	800	412	113.41	1548
850	348	70.94	1949	850	381	88.54	1777	850	457	132.11	1482
900	379	81.10	1891	900	416	101.42	1720	900	504	152.67	1422
1000	448	104.56	1779	1000	494	131.24	1613	1000	597	197.79	1335
1050	485	118.00	1725	1050	536	148.37	1561				
1100	524	132.64	1672	1100	580	167.10	1510				
1150	565	148.51	1622	1150	626	187.48	1463				
1200	607	165.64	1574	1200	674	209.46	1417				
1250	652	184.12	1527	1250	724	233.12	1374				
1300	698	204.32	1482	1300	776	259.07	1333				
1350	747	226.39	1438	1350	831	287.54	1293				
1400	798	249.42	1397	1400	888	316.88	1254				
1450	851	273.66	1356	1450	951	347.25	1213				
1500	917	304.98	1302	1500	1031	387.76	1158				

Available Dimensions

Grade named according to isovac®	Delivery form	Width [mm]	Length [mm]
isovac 700-50 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 700-50 A	✓	✓	○	✓	✓

✓ Available ○ On request

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

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ONE STEP AHEAD.