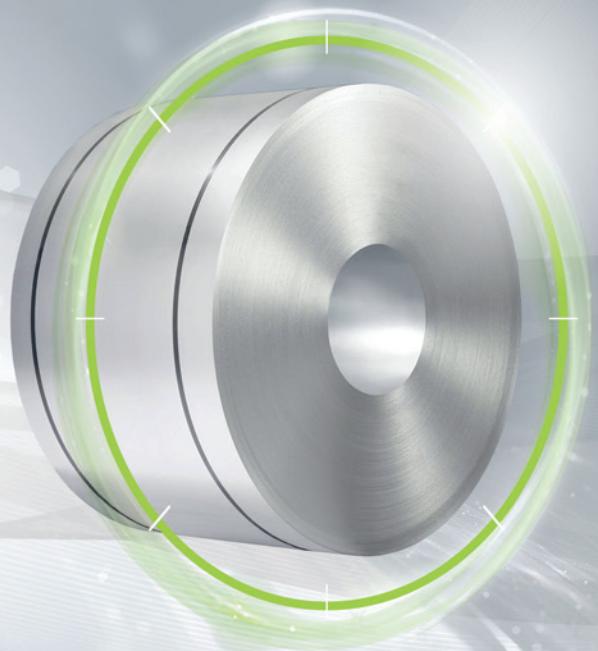


FULLY  
PROCESSED

## isovac 1000-65 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 1000-65 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 1000-65 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 1000-65 A	1.0829	M1000-65A	M1000-65A 5	65A1000	-	64F550	-	65C1000	65W1000

**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 <sub>eH</sub> [MPa]	R <sub>p0.2</sub> [MPa]	R <sub>m</sub> [MPa]	A <sub>80</sub> [%]	HV5 [-]
isovac 1000-65 A	380	275	355	40	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

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 <sub>r</sub>
	50 Hz [W/kg]	60 Hz [W/lb]	50 Hz [W/kg]	60 Hz [W/lb]	[T]	[T]	[T]	[-]
isovac 1000-65 A	3.90	2.30	8.60	5.07	1.68	1.77	1.88	2400

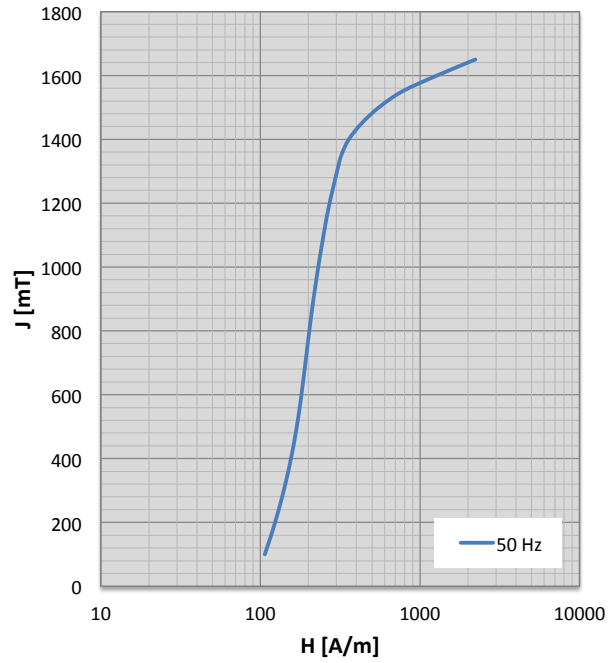
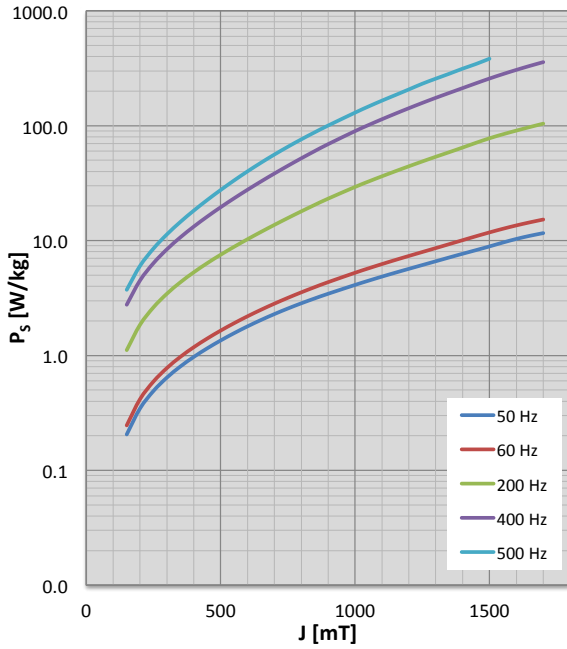
**Physical properties:**

Typical values

Grade named according to isovac®	Density ρ [g/cm³]	Specific electrical resistance ρ <sub>s</sub> [μΩcm]	Thermal conductivity λ [W/mK]
isovac 1000-65 A	7.83	19.0	54

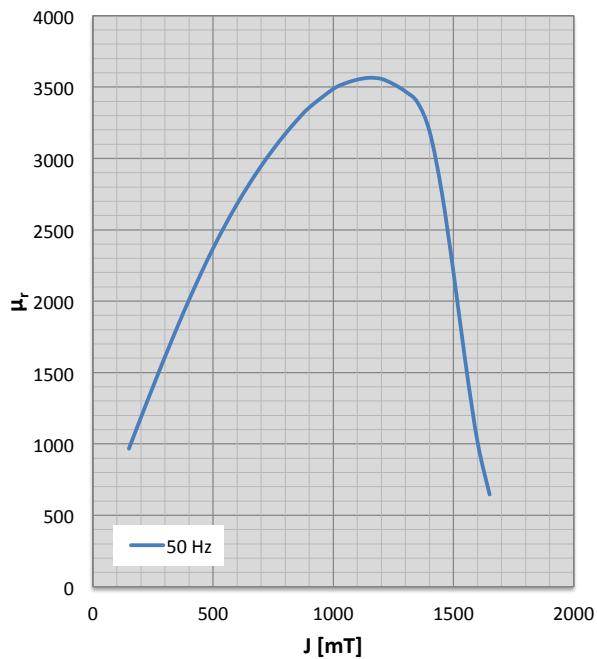
**Characteristics  $P_s/J$  loss curve and characteristics  $J/H$  magnetization curve**

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



**Characteristics  $\mu_r/J$  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 <sub>s</sub> [W/kg]	μ <sub>r</sub> [-]	J [mT]	H [A/m]	P <sub>s</sub> [W/kg]	μ <sub>r</sub> [-]	J [mT]	H [A/m]	P <sub>s</sub> [W/kg]	μ <sub>r</sub> [-]
100	107	0.07	747	100	102	0.08	783	100	107	0.38	744
150	115	0.21	967	150	113	0.25	984	150	121	1.11	909
200	124	0.35	1185	200	123	0.42	1183	200	135	1.85	1071
250	132	0.49	1400	250	133	0.59	1379	250	148	2.63	1228
300	140	0.64	1610	300	143	0.78	1570	300	162	3.45	1377
350	148	0.80	1814	350	152	0.97	1756	350	176	4.33	1516
400	155	0.97	2010	400	161	1.18	1934	400	189	5.30	1641
450	163	1.15	2195	450	169	1.40	2103	450	203	6.36	1750
500	169	1.35	2370	500	177	1.65	2262	500	217	7.53	1841
550	175	1.56	2532	550	184	1.91	2410	550	232	8.83	1911
600	181	1.79	2681	600	191	2.19	2546	600	246	10.28	1962
650	186	2.04	2820	650	197	2.50	2669	650	262	11.90	1994
700	192	2.29	2947	700	203	2.83	2781	700	279	13.71	2010
750	197	2.56	3064	750	209	3.17	2881	750	299	15.72	2010
800	203	2.85	3171	800	216	3.54	2968	800	320	17.97	1996
850	209	3.14	3270	850	224	3.94	3044	850	344	20.46	1971
900	215	3.45	3357	900	232	4.35	3107	900	371	23.20	1937
1000	230	4.11	3487	1000	250	5.25	3200	1000	427	29.31	1865
1050	239	4.48	3526	1050	260	5.73	3230	1050	456	32.68	1834
1100	249	4.86	3552	1100	271	6.25	3252	1100	485	36.29	1805
1150	259	5.26	3565	1150	281	6.78	3267	1150	516	40.17	1773
1200	271	5.68	3557	1200	294	7.35	3265	1200	549	44.35	1741
1250	286	6.12	3521	1250	309	7.95	3239	1250	582	48.85	1710
1300	302	6.61	3469	1300	325	8.60	3199	1300	618	53.66	1674
1350	321	7.13	3392	1350	344	9.31	3139	1350	655	58.81	1631
1400	358	7.68	3190	1400	379	10.08	2980	1400	695	64.55	1604
1450	431	8.26	2773	1450	447	10.91	2645	1450	737	71.01	1598
1500	553	8.90	2198	1500	566	11.78	2145	1500	785	77.73	1519
1550	774	9.61	1565	1550	792	12.67	1540	1550	893	84.23	1289
1600	1281	10.34	1011	1600	1311	13.56	986	1600	1308	90.68	989
1650	2224	11.00	645	1650	2276	14.42	621	1650	2245	97.35	719
1700	3496	11.62	427	1700	3581	15.25	410	1700	3584	104.22	485

**Frequency dependence of magnetic properties**

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

400 Hz				500 Hz			
J [mT]	H [A/m]	P <sub>s</sub> [W/kg]	μ <sub>r</sub> [-]	J [mT]	H [A/m]	P <sub>s</sub> [W/kg]	μ <sub>r</sub> [-]
				100	132	1.53	604
150	133	2.76	817	150	148	3.73	730
200	149	4.50	951	200	164	6.03	851
250	166	6.36	1077	250	181	8.53	966
300	183	8.40	1194	300	200	11.33	1071
350	202	10.67	1297	350	221	14.53	1163
400	222	13.25	1383	400	245	18.24	1237
450	244	16.18	1448	450	271	22.56	1291
500	269	19.52	1490	500	301	27.58	1322
550	295	23.35	1506	550	335	33.40	1327
600	324	27.72	1499	600	373	40.07	1310
650	356	32.70	1476	650	414	47.63	1278
700	391	38.37	1440	700	458	56.13	1236
750	430	44.79	1397	750	505	65.60	1191
800	472	52.04	1351	800	555	76.10	1147
850	517	60.16	1306	850	607	87.67	1109
900	565	69.16	1265	900	662	100.43	1077
1000	669	89.77	1189	1000	780	130.03	1020
1050	724	101.36	1155	1050	844	147.05	991
1100	779	113.87	1123	1100	911	165.34	960
1150	836	127.38	1093	1150	985	184.89	929
1200	899	142.02	1062	1200	1065	206.92	897
1250	970	157.88	1029	1250	1149	231.97	866
1300	1037	174.83	997	1300	1228	256.73	843
1350	1098	192.85	972	1350	1310	283.24	821
1400	1180	212.49	944	1400	1402	313.81	794
1450	1295	234.21	911	1450	1493	344.81	772
1500	1343	257.43	888	1500	1609	383.05	742
1550	1299	281.47	882				
1600	1521	306.24	839				
1650	2344	331.72	707				
1700	3642	357.71	505				

### Available Dimensions

Grade named according to isovac®	Delivery form	Width [mm]	Length [mm]
isovac 1000-65 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 1000-65 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](http://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](http://www.voestalpine.com/isovac)

