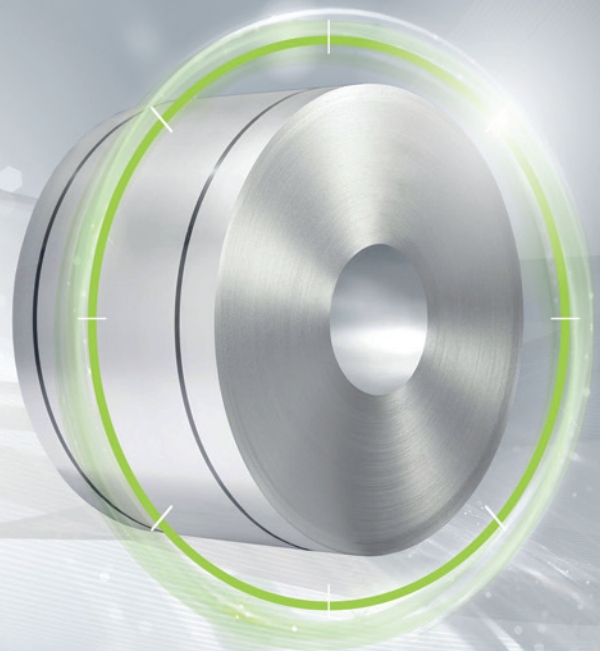


FULLY
PROCESSED

isovac 600-65 A HC

The specialist with high thermal conductivity

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 high thermal conductivity of isovac 600-65 A HC (high conductivity) ensures rapid heat dissipation in combination with higher polarization while maintaining low specific total losses. This makes innovative design strategies possible for electrical machinery.

Upon request, isovac 600-65 AHC can be supplied with an electrical steel insulation system and can be used directly in as-delivered condition.

Convincing advantages:

- » Potential cost savings in electric machinery based on lower component sizes and thus lower material usage based on higher polarization than that in standard isovac® grades
- » Lower cooling power necessary through higher thermal conductivity than that of standard isovac® grades (conductivity increased by up to 20%)
- » 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 600-65 A HC, an electrical steel of the highest quality. We offer you a customer-focused over-all 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 600-65 A HC	1.0825	M600-65A	M600-65A 5	65A600	2212	-	M-45	65C600	65W600

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 600-65 A HC	320	295	435	35	140

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 600-65 A HC	2.20	1.30	5.00	2.95	1.65	1.73	1.84	2800

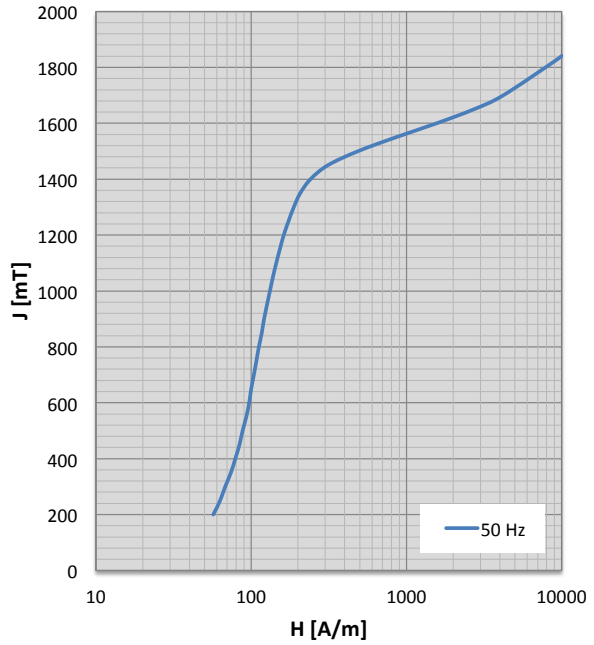
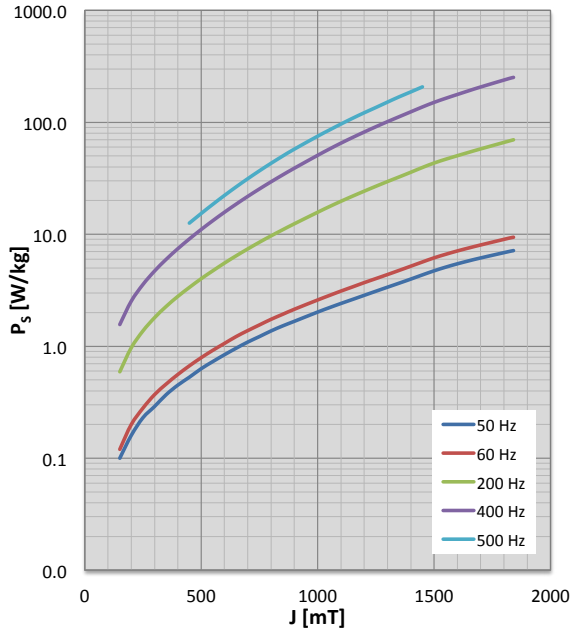
Physical properties:

Typical values

Grade named according to isovac®	Density ρ [g/cm³]	Specific electrical resistance ρ_s [$\mu\Omega\text{cm}$]	Thermal conductivity λ [W/mK]
isovac 600-65 A HC	7.78	31.1	36

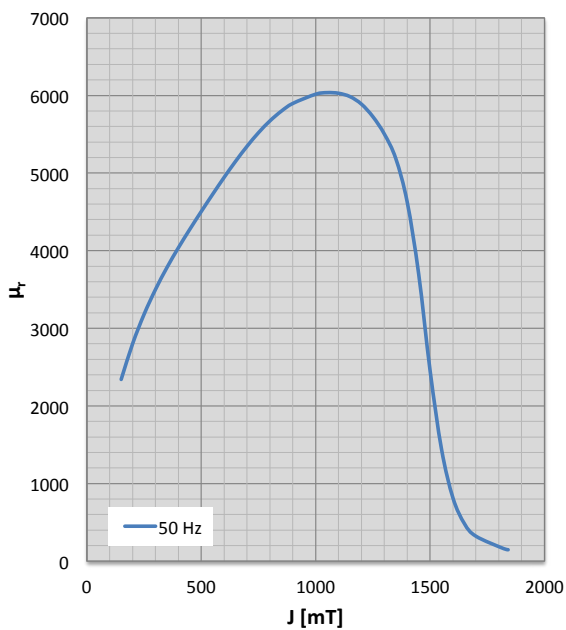
Characteristics P_s/J loss curve and characteristics J/H magnetization curve

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 [-]
150	51	0.10	2343	150	51	0.12	2323	150	59	0.59	2038
200	57	0.16	2802	200	57	0.20	2771	200	67	0.97	2375
250	63	0.23	3180	250	63	0.28	3138	250	75	1.37	2636
300	68	0.29	3501	300	69	0.37	3449	300	84	1.80	2843
350	74	0.37	3783	350	75	0.46	3720	350	92	2.27	3011
400	79	0.45	4038	400	80	0.56	3964	400	101	2.79	3149
450	84	0.53	4276	450	85	0.67	4190	450	110	3.36	3262
500	88	0.63	4505	500	90	0.79	4405	500	119	4.01	3357
550	93	0.73	4728	550	95	0.92	4615	550	127	4.72	3436
600	97	0.84	4945	600	99	1.06	4816	600	137	5.53	3497
650	100	0.96	5152	650	103	1.22	5007	650	146	6.42	3541
700	104	1.09	5345	700	108	1.38	5182	700	156	7.40	3565
750	108	1.22	5520	750	112	1.55	5337	750	167	8.49	3571
800	112	1.37	5672	800	116	1.74	5469	800	179	9.68	3557
850	117	1.52	5798	850	121	1.93	5575	850	192	10.98	3526
900	121	1.67	5897	900	127	2.14	5656	900	206	12.41	3479
1000	132	2.02	6016	1000	138	2.59	5748	1000	237	15.73	3351
1050	138	2.21	6036	1050	145	2.84	5763	1050	255	17.65	3277
1100	145	2.41	6028	1100	152	3.11	5755	1100	273	19.71	3203
1150	153	2.62	5985	1150	160	3.39	5717	1150	292	21.91	3133
1200	162	2.85	5888	1200	170	3.70	5629	1200	311	24.27	3070
1250	174	3.10	5726	1250	182	4.02	5479	1250	331	26.84	3009
1300	188	3.37	5503	1300	196	4.37	5278	1300	352	29.59	2936
1350	207	3.66	5187	1350	215	4.76	4999	1350	377	32.53	2851
1400	241	3.98	4626	1400	247	5.19	4508	1400	398	35.82	2798
1450	312	4.34	3701	1450	315	5.66	3662	1450	428	39.52	2698
1500	487	4.72	2453	1500	486	6.16	2457	1500	552	43.30	2163
1550	856	5.09	1441	1550	852	6.63	1448	1550	884	46.84	1395
1600	1566	5.45	813	1600	1558	7.10	817	1600	1576	50.34	808
1650	2719	5.80	483	1650	2709	7.56	485	1650	2730	54.04	481
1700	4203	6.15	322	1700	4190	8.03	323	1700	4229	57.91	320
1822	9000	7.02	161	1821	9000	9.24	161	1820	9000	68.12	161
1841	10000	7.15	147	1841	10000	9.41	147	1840	10000	69.82	146

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 _s [W/kg]	μ _r [-]	J [mT]	H [A/m]	P _s [W/kg]	μ _r [-]
100	58	0.63	1363				
150	69	1.56	1729				
200	80	2.53	1993				
250	91	3.56	2187				
300	102	4.70	2330				
350	115	5.98	2431				
400	127	7.44	2499	400	138	10.04	2308
450	141	9.11	2539	450	153	12.56	2335
500	156	11.03	2556	500	170	15.33	2338
550	171	13.23	2553	550	189	18.52	2312
600	188	15.74	2533	600	211	22.23	2265
650	207	18.58	2500	650	235	26.50	2204
700	227	21.80	2455	700	261	31.36	2136
750	249	25.40	2402	750	289	36.87	2066
800	272	29.43	2341	800	319	43.06	1996
850	297	33.92	2276	850	351	49.97	1928
900	325	38.92	2207	900	385	57.62	1862
1000	386	50.73	2064	1000	459	75.17	1734
1050	419	57.65	1992	1050	499	85.26	1674
1100	455	65.17	1924	1100	541	96.48	1617
1150	492	73.23	1862	1150	586	108.69	1563
1200	529	81.91	1807	1200	631	121.73	1512
1250	566	91.32	1757	1250	679	135.67	1465
1300	609	101.42	1700	1300	731	151.63	1415
1350	657	112.22	1635	1350	785	168.98	1369
1400	696	124.09	1600	1400	841	186.95	1324
1450	724	137.19	1594	1450	907	207.26	1272
1500	796	150.72	1499	1500	974	228.70	1226
1550	1015	163.92	1215				
1600	1595	177.36	798				
1650	2703	191.74	486				
1700	4213	206.88	321				
1820	9000	246.15	161				
1839	10000	251.90	146				

Available Dimensions

Grade named according to isovac®	Delivery form	Width [mm]	Length [mm]
isovac 600-65 A HC	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 600-65 A HC	✔	✔	☰	✔	✔

✔ Available ☰ On request

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