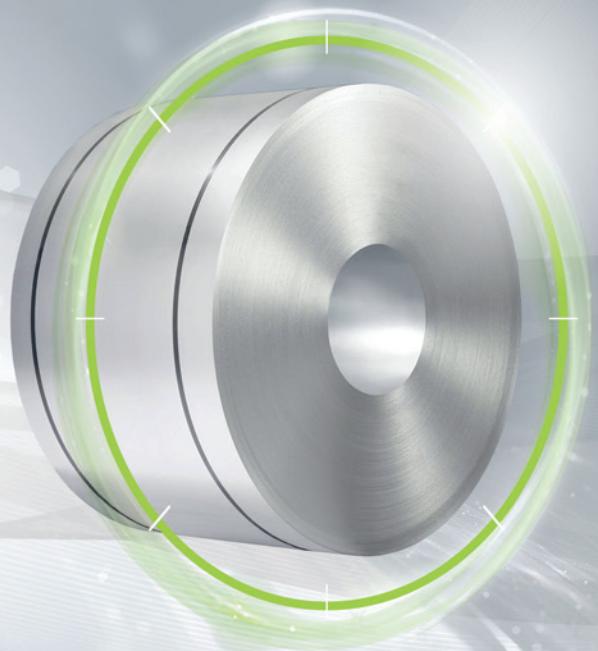


FULLY
PROCESSED

isovac 470-65 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 470-65 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 470-65 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 470-65 A	1.0823	M470-65A	M470-65A 5	65A470	-	64F275	M-43	65C470	65W470

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 470-65 A	350	330	490	33	170

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 470-65 A	1.60	0.94	3.90	2.30	1.60	1.69	1.80	1700

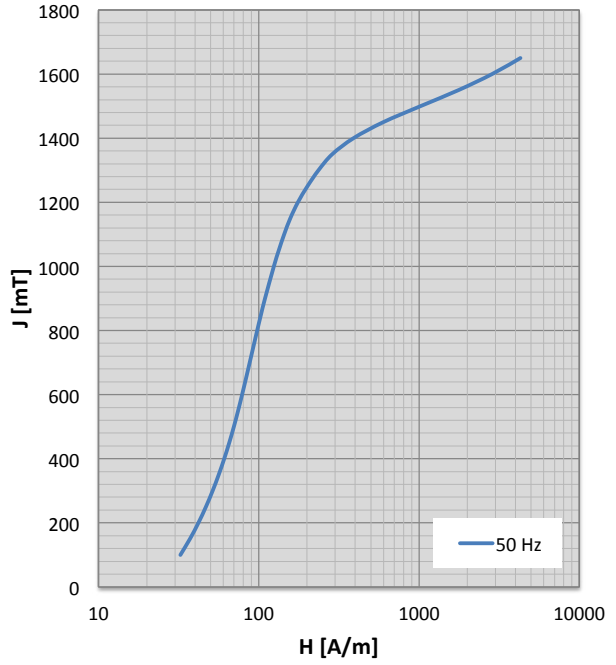
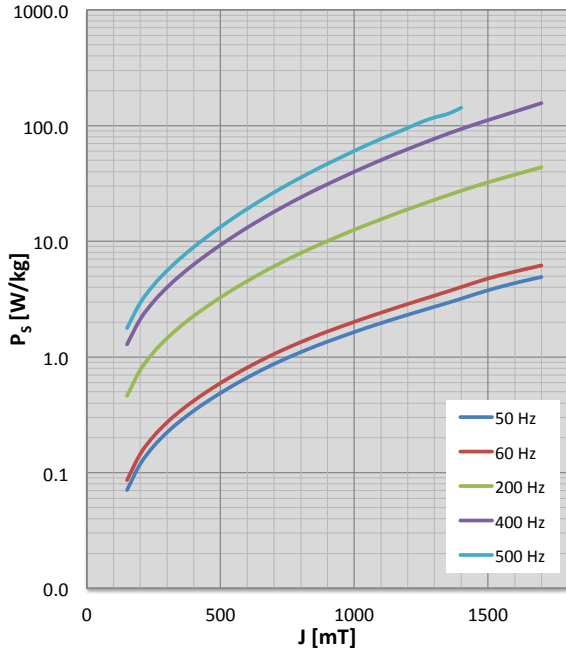
Physical properties:

Typical values

Grade named according to isovac®	Density ρ [g/cm³]	Specific electrical resistance ρ _s [μΩcm]	Thermal conductivity λ [W/mK]
isovac 470-65 A	7.71	45.0	28

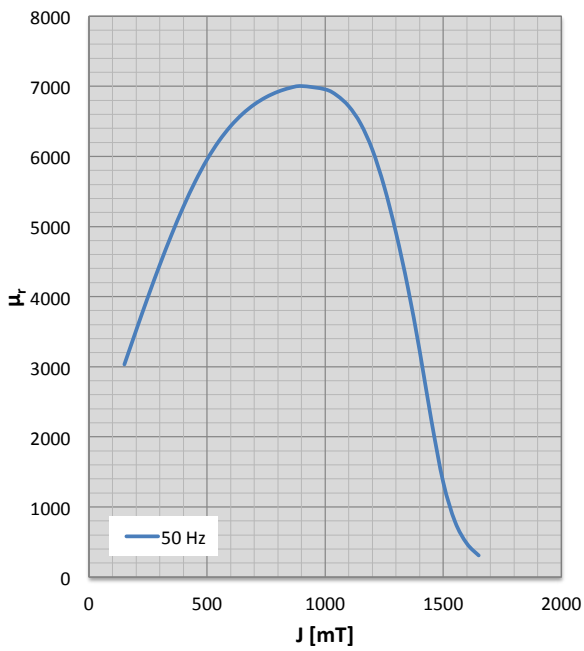
Characteristics P_s/J loss curve and characteristics J/H magnetization curve

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	32	0.02	2534	100	33	0.03	2581	100	36	0.16	2285
150	37	0.07	3030	150	38	0.09	3058	150	44	0.46	2592
200	42	0.12	3520	200	43	0.15	3530	200	51	0.77	2894
250	47	0.17	3997	250	48	0.21	3990	250	59	1.10	3186
300	52	0.22	4455	300	53	0.27	4435	300	66	1.45	3461
350	56	0.28	4886	350	57	0.34	4858	350	74	1.84	3715
400	61	0.34	5284	400	62	0.42	5254	400	81	2.26	3941
450	65	0.41	5643	450	67	0.50	5617	450	89	2.74	4135
500	70	0.49	5955	500	71	0.60	5942	500	96	3.27	4291
550	74	0.57	6218	550	75	0.70	6225	550	104	3.87	4405
600	79	0.66	6433	600	79	0.81	6467	600	111	4.53	4481
650	83	0.76	6606	650	83	0.93	6671	650	119	5.27	4524
700	88	0.87	6741	700	87	1.06	6838	700	127	6.07	4539
750	93	0.98	6845	750	91	1.20	6973	750	136	6.95	4531
800	98	1.10	6923	800	96	1.34	7076	800	145	7.91	4504
850	103	1.23	6976	850	101	1.50	7150	850	155	8.94	4464
900	109	1.36	7003	900	106	1.66	7192	900	165	10.06	4414
1000	124	1.64	6956	1000	119	2.01	7167	1000	188	12.57	4290
1050	133	1.80	6869	1050	127	2.21	7097	1050	200	13.98	4220
1100	144	1.96	6715	1100	136	2.41	6995	1100	213	15.50	4145
1150	157	2.13	6467	1150	146	2.63	6862	1150	226	17.13	4064
1200	175	2.32	6093	1200	160	2.87	6648	1200	241	18.89	3986
1250	201	2.51	5568	1250	180	3.12	6286	1250	255	20.79	3908
1300	236	2.71	4909	1300	210	3.39	5659	1300	275	22.83	3774
1350	287	2.94	4132	1350	260	3.69	4693	1350	310	25.01	3505
1400	390	3.19	3228	1400	364	4.02	3524	1400	397	27.34	2989
1450	598	3.47	2228	1450	577	4.39	2345	1450	595	29.79	2187
1500	1022	3.77	1350	1500	1014	4.76	1375	1500	1021	32.32	1365
1550	1765	4.06	788	1550	1791	5.12	778	1550	1787	34.89	797
1600	2858	4.35	477	1600	2937	5.46	462	1600	2929	37.61	466
1650	4292	4.63	308	1650	4439	5.82	295	1650	4436	40.55	288
1700	5967	4.91	225	1700	6190	6.18	214	1700	6202	43.67	208

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	43	0.47	1915	100	45	0.66	1803
150	53	1.29	2128	150	57	1.78	1978
200	63	2.12	2337	200	68	2.94	2148
250	73	3.02	2534	250	80	4.19	2308
300	84	3.99	2717	300	92	5.57	2454
350	94	5.08	2878	350	105	7.13	2581
400	106	6.31	3014	400	118	8.91	2683
450	117	7.70	3118	450	132	10.95	2756
500	129	9.28	3186	500	146	13.30	2795
550	141	11.09	3215	550	162	16.00	2797
600	154	13.13	3210	600	179	19.07	2768
650	168	15.42	3177	650	197	22.54	2715
700	183	17.97	3123	700	216	26.44	2645
750	199	20.81	3057	750	237	30.77	2567
800	216	23.94	2983	800	259	35.57	2486
850	234	27.39	2910	850	282	40.87	2409
900	254	31.17	2836	900	308	46.73	2336
1000	298	39.89	2684	1000	364	60.40	2194
1050	322	44.88	2605	1050	396	68.28	2123
1100	347	50.32	2529	1100	427	76.66	2058
1150	373	56.23	2458	1150	457	85.48	2002
1200	401	62.63	2382	1200	493	95.51	1940
1250	434	69.53	2300	1250	538	107.01	1867
1300	461	76.97	2244	1300	566	117.49	1829
1350	482	84.97	2224	1350	573	126.33	1840
1400	526	93.43	2117	1400	646	142.81	1727
1450	655	102.29	1810	1450	852	169.44	1398
1500	1026	111.53	1359				
1550	1789	121.26	867				
1600	2951	131.86	462				
1650	4470	143.65	244				
1700	6239	156.32	173				

Available Dimensions

Grade named according to isovac®	Delivery form	Width [mm]	Length [mm]
isovac 470-65 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 470-65 A	✔	✔	☰	✔	✔

✔ Available ☰ On request

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