

isovac 660-50 K

The perfect solution for individually customized subsequent annealing and highest polarization

Production in modern continuous annealing lines ensures that this semi-processed isovac® grade exhibits homogeneous mechanical and magnetic properties. High dimensional accuracy and defined degrees of roughness guarantee best punchability and further processing. As a result of its optimized alloy design, isovac 660-50 K is magnetically characterized by high polarization and high saturation polarization. Additionally the thermal conductivity is excellent.

Subsequent annealing at the customer for the purpose of adjusting optimum magnetic properties completely eliminates any mechanical damage introduced to the material during the punching process.

Convincing advantages:

- » High motor performance resulting from high polarization
- » Best processability through consistent mechanical properties and homogeneous, clean surfaces with defined roughness
- » Excellent stackability resulting from high dimensional accuracy (thickness tolerance)

voestalpine supplies isovac 660-50 K, 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 10341		DIN EN 10126 DIN EN 10165	IEC/CEI 60404-8-3	ASTM A 683 M	ASTM A 683	AISI	IS15391
	Material No.	Abbreviation						
isovac 660-50 K	1.0361	M 660-50 K	M 660-50 D	660-50 K5	-	-	-	50-SP-660 E5

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®	0.2 %-Yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m [MPa]	Elongation A_{80} [%]	Hardness HV5 [-]
isovac 660-50 K	410	455	23	165

Magnetic properties:

after final annealing according to EN 10341 (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 660-50 K	2.10	1.20	4.90	2.79	1.65	1.73	1.85	2400

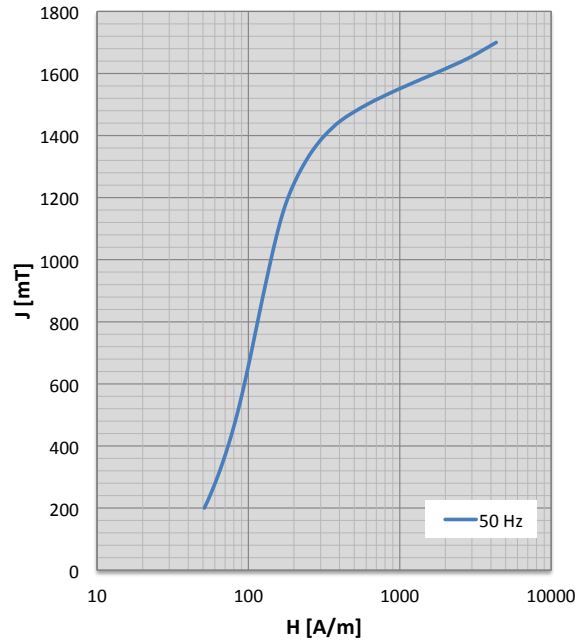
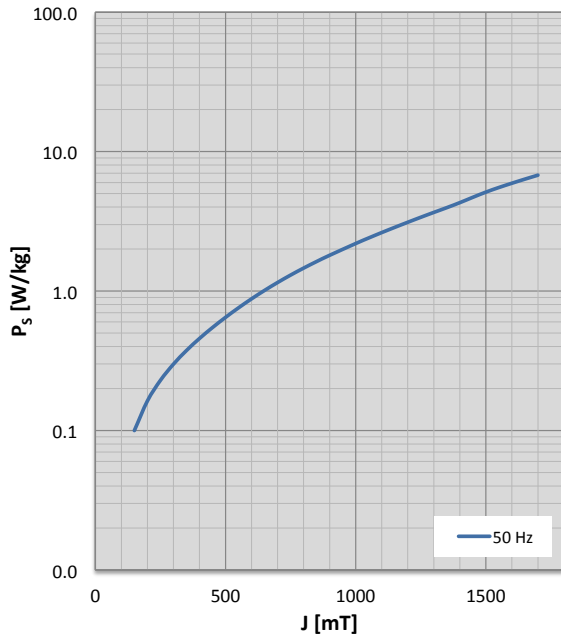
Physical properties:

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 660-50 K	7.84	18.5	60

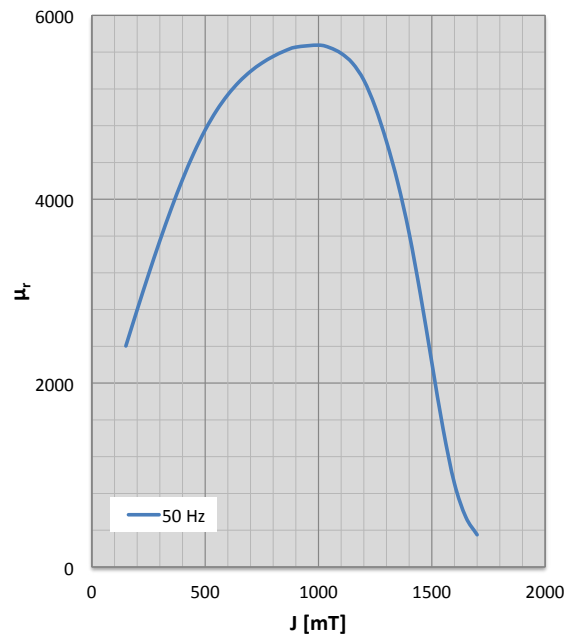
Characteristics P_s/J loss curve and characteristics J/H magnetization curve

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			
J [mT]	H [A/m]	P _s [W/kg]	μ _r [-]
150	45	0.10	2404
200	51	0.16	2798
250	57	0.23	3181
300	62	0.30	3548
350	68	0.37	3895
400	73	0.46	4214
450	79	0.55	4503
500	84	0.65	4754
550	89	0.76	4964
600	94	0.88	5137
650	99	1.01	5278
700	104	1.15	5391
750	109	1.30	5481
800	115	1.46	5554
850	121	1.63	5613
900	127	1.81	5655
1000	141	2.19	5677
1050	149	2.40	5649
1100	158	2.63	5587
1150	169	2.86	5481
1200	183	3.11	5296
1250	202	3.38	5006
1300	228	3.66	4628
1350	264	3.96	4179
1400	319	4.30	3631
1450	413	4.70	2962
1500	607	5.12	2225
1550	987	5.53	1500
1600	1702	5.93	908
1650	2858	6.35	543
1700	4338	6.77	350

Available Dimensions

Grade named according to isovac®	Delivery form	Width [mm]	Length [mm]
isovac 660-50 K	Wide strip / Slit strip	19 – 1600	-
	Cut-to-length sheets	300 – 1600	300 – 5000

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