

isovac high-perm 290-50 K HE

The specialist with highest permeability and shorter final annealing

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. In addition to low losses and high magnetizability, isovac HP 290-50 K HE (high-perm high-efficiency) is highly decarbonized in as-delivered condition, which means that the final annealing time at the customer can be significantly shortened. 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:

- » Potential cost savings through smaller component sizes for machinery and thus lower material usage while maintaining the same performance.
- » Alternative increase in performance and efficiency as a result of high permeability and polarization (improved by up to 0.03 T at J25, J50, J100)
- » Shorter final annealing made possible by the low carbon content and thus reduced overall costs resulting from lower energy input
- » 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 HP 290-50 K HE, 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.

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 HP 290-50 K HE	420	470	22	185

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
	1.0 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 HP 290-50 K HE	1.10	0.63	2.85	1.62	1.60	1.68	1.80	1600

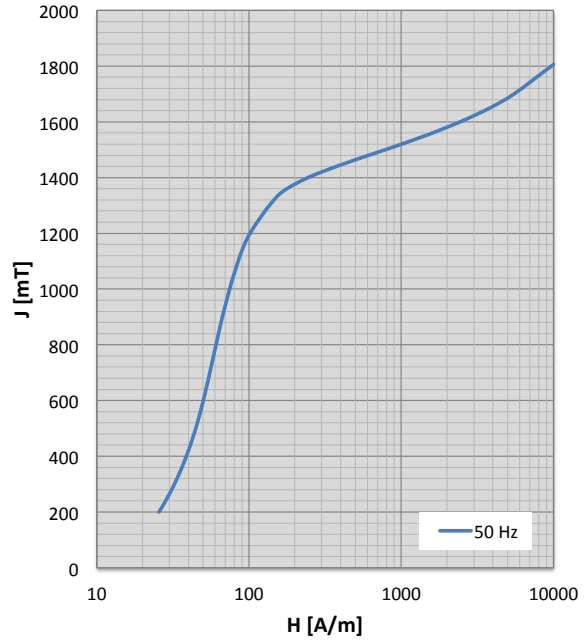
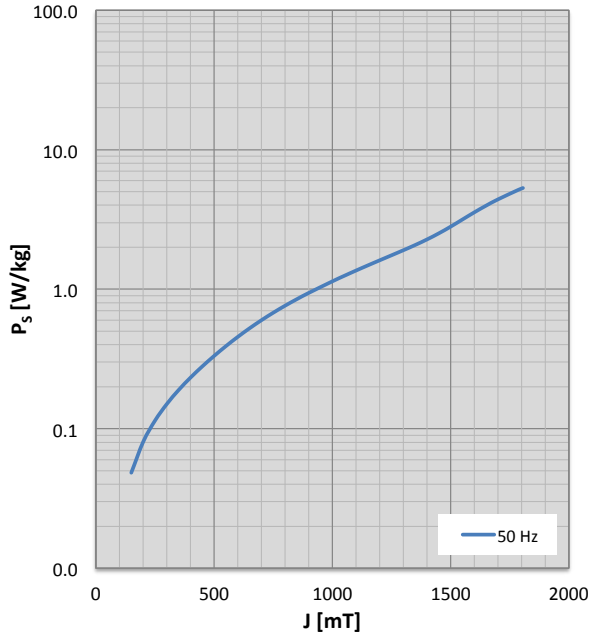
Physical properties:

Typical values

Grade named according to isovac®	Density ρ [g/cm ³]	Specific electrical resistance ρ_s [$\mu\Omega\text{cm}$]	Thermal conductivity λ [W/mK]
isovac HP 290-50 K HE	7.75	38.5	30

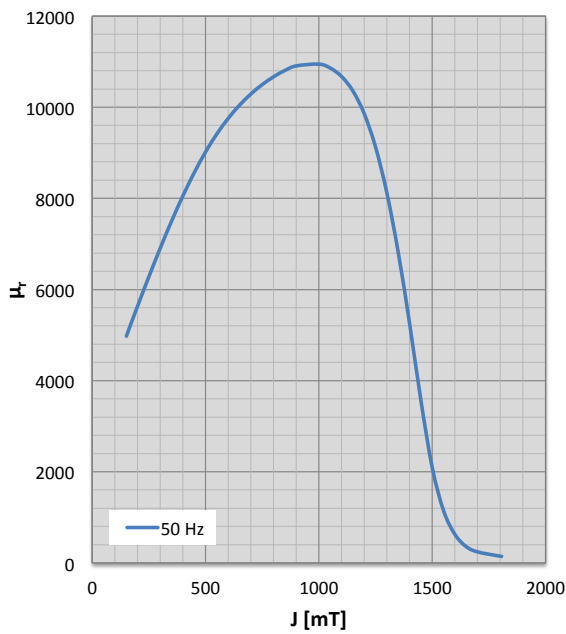
Characteristics P_s/J loss curve and characteristics J/H magnetization curve

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	22	0.05	4973
200	26	0.08	5636
250	29	0.11	6282
300	32	0.15	6906
350	36	0.19	7500
400	39	0.23	8055
450	42	0.28	8564
500	45	0.33	9019
550	47	0.39	9415
600	50	0.46	9756
650	53	0.53	10046
700	55	0.60	10291
750	58	0.68	10496
800	61	0.76	10667
850	64	0.85	10807
900	67	0.94	10907
1000	75	1.14	10945
1050	79	1.25	10858
1100	85	1.36	10673
1150	92	1.48	10355
1200	102	1.61	9855
1250	117	1.75	9121
1300	136	1.90	8112
1350	167	2.07	6808
1400	244	2.27	5250
1450	422	2.52	3558
1500	787	2.81	2087
1550	1432	3.16	1143
1600	2434	3.56	625
1650	3826	3.97	357
1700	5499	4.40	242
1787	9000	5.17	158
1806	10000	5.31	144

Available Dimensions

Grade named according to isovac®	Delivery form	Width [mm]	Length [mm]
isovac HP 290-50 K HE	Wide strip / Slit strip	19 – 1560	-
	Cut-to-length sheets	300 – 1560	300 – 5000

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

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

