

VACODYM 642 AP/TP

New, Cost Optimized Magnet Alloy for Applications up to 120°C

Following the introduction of the VACODYM® alloys of the type 6-series (VACODYM 633, 655, 677, 688) at the beginning of the year 2000 we have decided to shut down production of VACODYM 370 and 383. As an alternative for the many applications where the alloys have proven so successful or for new applications, e.g. in the field of motors up to 120°C, we are now offering permanent magnets of the cost optimized, new developed VACODYM 642.

Like all alloys of the 6-series, VACODYM 642 contains additions to improve the temperature and corrosion resistance. In comparison to the alloys VACODYM 633

and 655 which feature similar coercivity values, in this case we have focused on the use of low cost base materials with the effect that the remanence is slightly reduced.

The table below gives the provisional data for the characteristic properties of magnets pressed in an axial field (AP) or a transverse field (TP) – see also the demagnetization curves overleaf.

With respect to corrosion resistance under HAST test conditions (cf. Fig. 7 of our company leaflet PD-002) the values for magnets of VACODYM 642 are below those of the 6-series but substantially above those of the conventional Nd-Fe-B alloys like VACODYM 370.

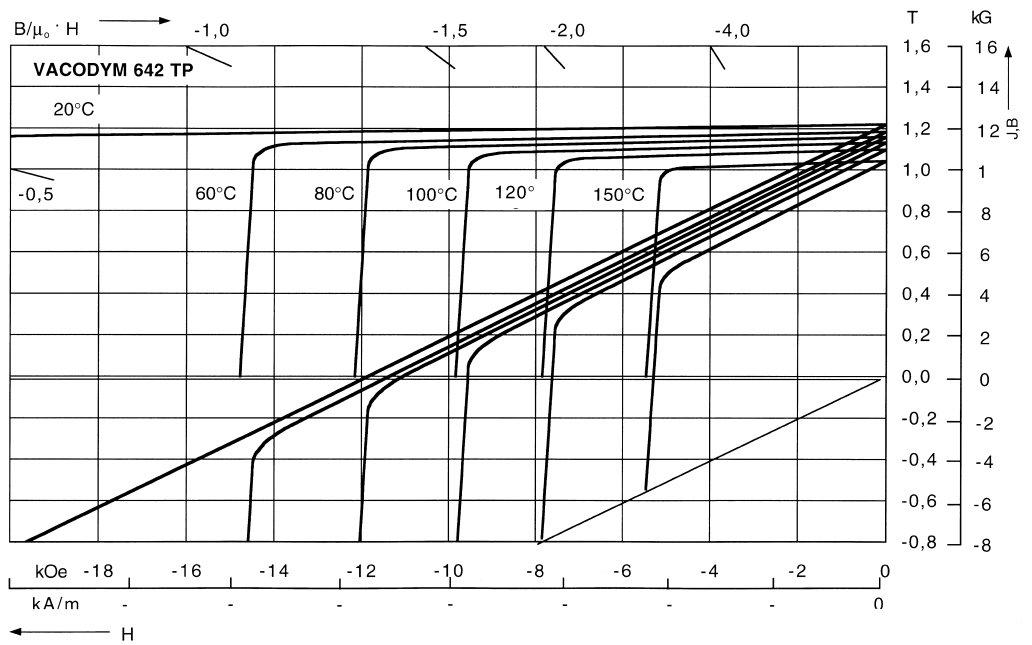
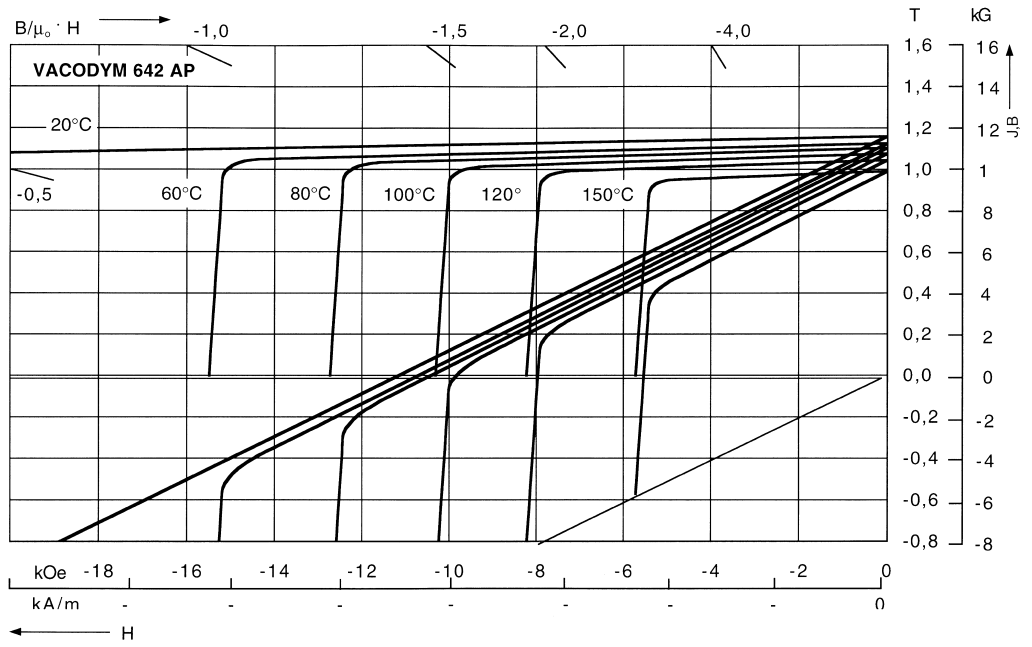
Just contact VAC for further information on this magnet grade or our product range¹⁾. Our staff are readily available to assist you with your individual application.

Characteristic properties (preliminary data)

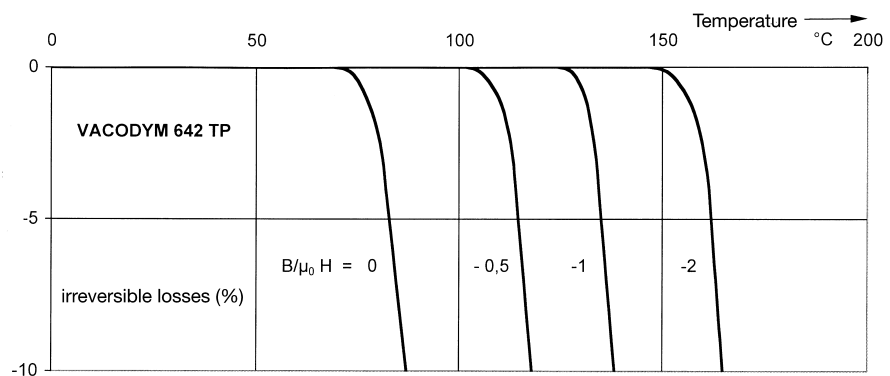
Material Code ²⁾	Remanence		Coercivity				Energy density		temperature coefficient			
	B _r typ. Tesla kG	B _r min. Tesla kG	H _{cB} typ. kA/m kOe	H _{cB} min. kA/m kOe	H _{cJ} typ. kA/m kOe	H _{cJ} min. kA/m kOe	(BH) _{max} typ. kJ/m ³ MGOe	(BH) _{max} min. kJ/m ³ MGOe	TK(B _r) typ. %/°C	TK(H _{cJ}) typ. %/°C	TK(B _r) typ. %/°C	TK(H _{cJ}) typ. %/°C
VACODYM 642 TP 315/127	1.22 12.2	1.16 11.6	930 11.7	860 10.8	1670 21	1430 18	290 36	255 32	-0.100	-0.66	-0.115	-0.57
VACODYM 642 AP 280/135	1.16 11.6	1.10 11.0	875 11.0	805 10.1	1750 22	1510 19	255 32	225 28	-0.100	-0.66	-0.115	-0.57

¹⁾ For the handling of VACODYM magnets please see the safety guidelines (chapter 10 of our leaflet PD-002) resp. the EG-Safety Data Specifications.

²⁾ Coding based on IEC 60404-8-1, the magnetic values usually exceed the IEC values.



Typical demagnetization curves $B(H)$ and $J(H)$ at different temperatures



Typical irreversible losses at different working points as a function of temperature