SUMITOMO METAL MINING CO., LTD
Advanced materials Div.
Applied powder materials business Unit.
Website https://crossmining.smm-g.com/

Hereby are evaluation results for mold product obtained by our company.
Result stated may differ depends on shape, mold design and molding conditions of the mold product.

① Compound properties

(magnetic properties)

Type				S5P-13MF	S5P-12ME
Directional Property／Molding Process				an-isotropy/Injection Molding	
Component	Magnet power			$Sm_2Fe_{17}N_3$+$Nd_2Fe_{14}B$	
	Binder Resin			PPS	
	Specific Gravity			5.0-5.2	5.0-5.2
Magnetic Properties	Residual Induction	Br	T	0.73-0.78	0.71-0.76
			kG	7.3-7.8	7.1-7.6
	Coercive Force	H_{cB}	kA/m	475-555	475-555
			kOe	6.0-7.0	6.0-7.0
	Intrinsic Coercive Force	H_{cj}	kA/m	995-1075	1115-1195
			kOe	12.5-13.5	14.0-15.0
	Maximum Energy Product	(BH)max	kJ/m^3	99-107	91-99
			MGOe	12.5-13.5	11.5-12.5
	Recoil Permeability	μrec	-	1.1	1.1
	Reversible temperature coefficient	α	%/K	-0.10	-0.10
		β	%/K	-0.61	-0.55

Sample-Size：ϕ20mm×L13mm、BH curve tracer

Representative value for mechanical properties

Type			S5P-13MF / S5P-12ME
Mechanical Properties	Tensile strength	MPa	40.4
	Tensile elongation at break	%	0.17
	Tensile modulous of elasticity	MPa	29600
	Flexural strength	MPa	51.9
	Flexural modulous of elasticity	MPa	21800
	Poisson's ratio	-	0.27

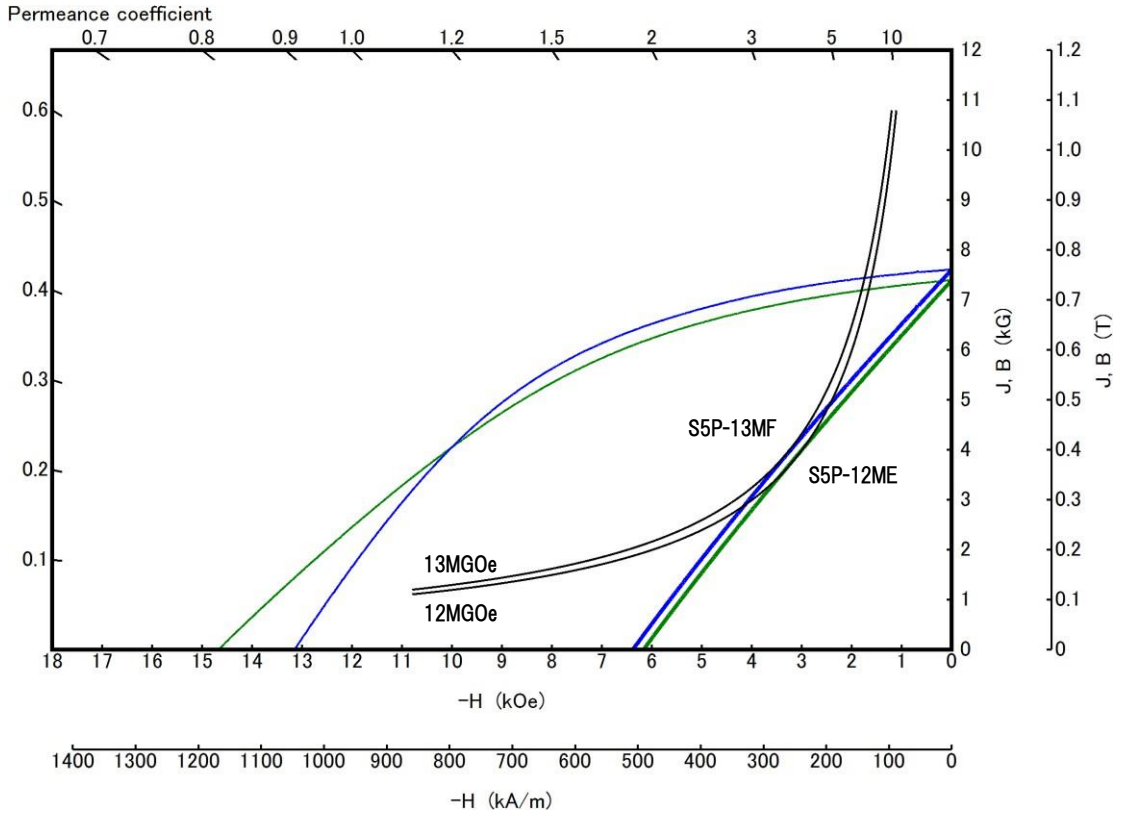
- Tensile test：ASTM D638 compliance (Test temperature 23℃)
- Flexural test：ASTM D790 compliance (Test temperature 23℃)

Representative value for thermal properties

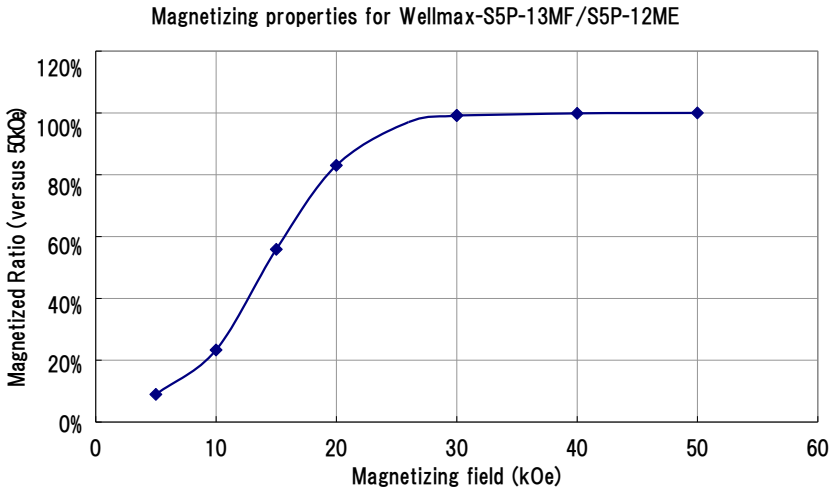
Type				S5P-13MF/S5P-12ME
Directional Property／Molding Process				an-isotropy/Injection Molding
Thermal Properties	Flowability	MFR	g/10min.	918
		Q-value	cm^3/s	0.3
	Temp. of deflection on load	Td	℃	227
	Linear thermal expansion coefficient		10^{-5}/℃	3.6
	Molding Srinkage		%	0.31

- Temperature for load deflection：ASTM D648 compliance

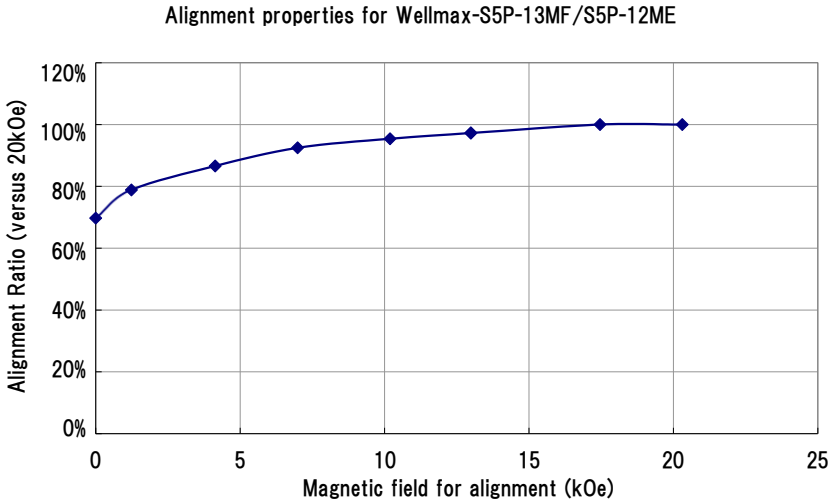
②. Demagnetizing curve（Sample Size：φ20mm×L13mm）



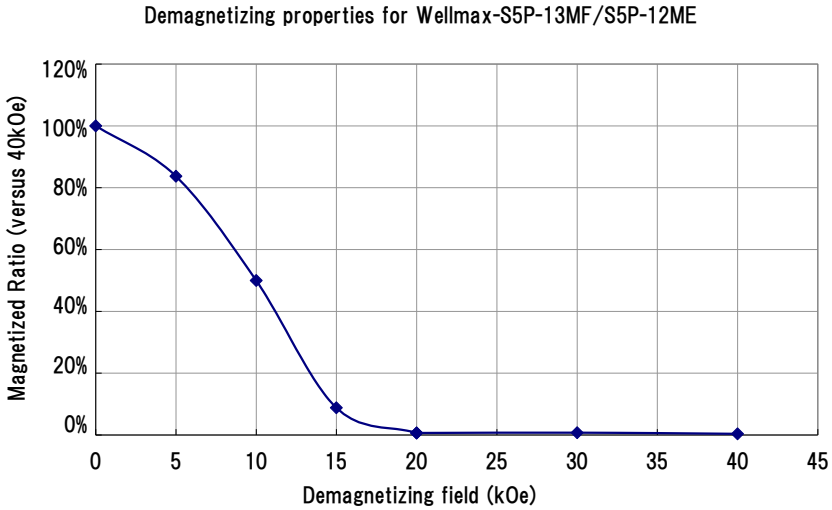
② Magnetizing properties (Sample Size: φ10mm×L7mm)



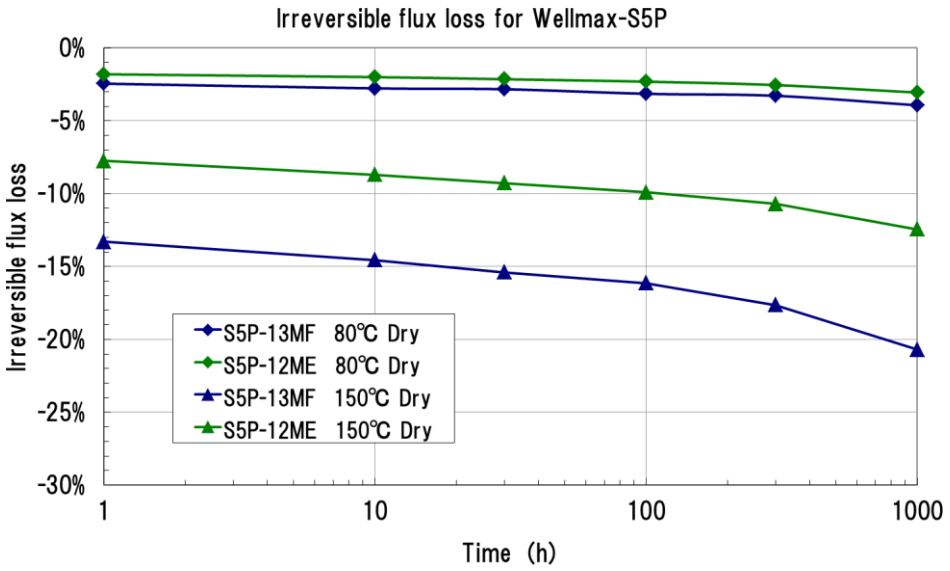
③ Alignment properties (Sample Size: φ10mm×L7mm)



④ Demagnetizing properties (Sample Size: φ10mm×L7mm)

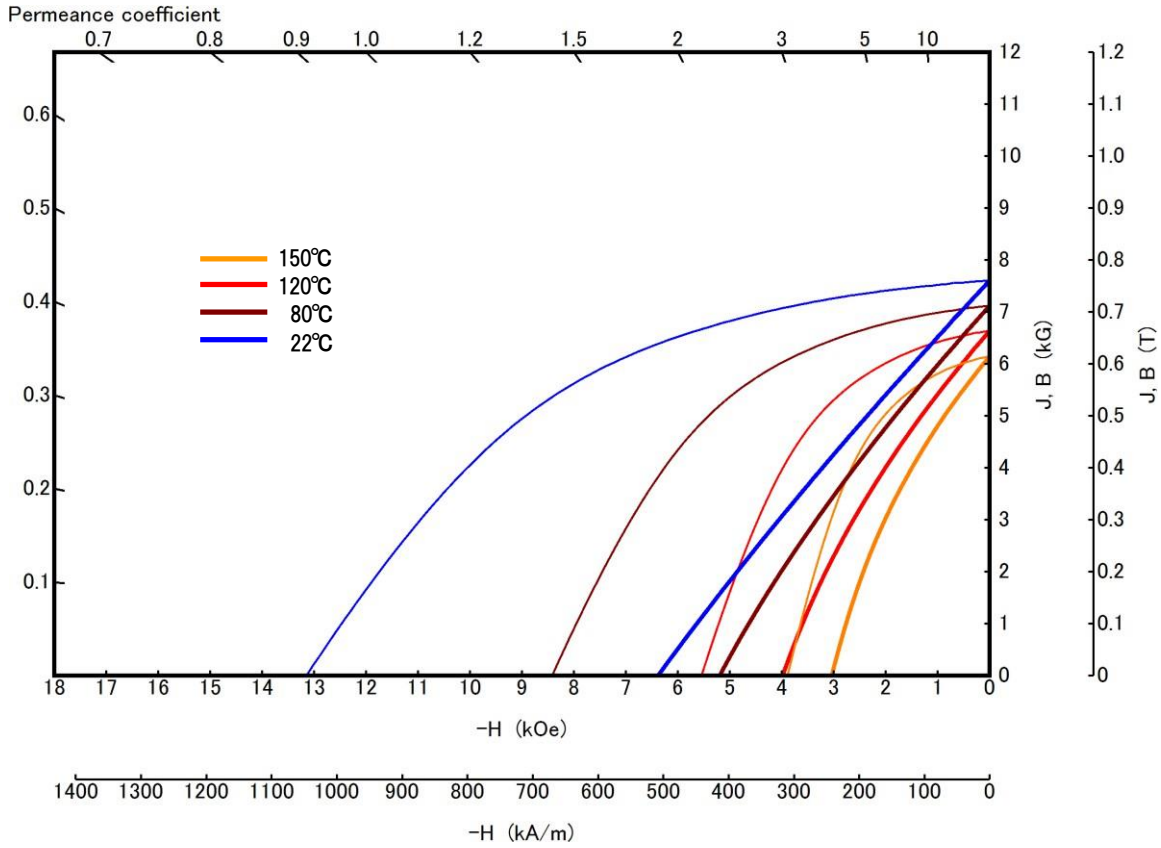


⑥ Irreversible flux loss (Sample Size: ϕ10mm×L7mm)

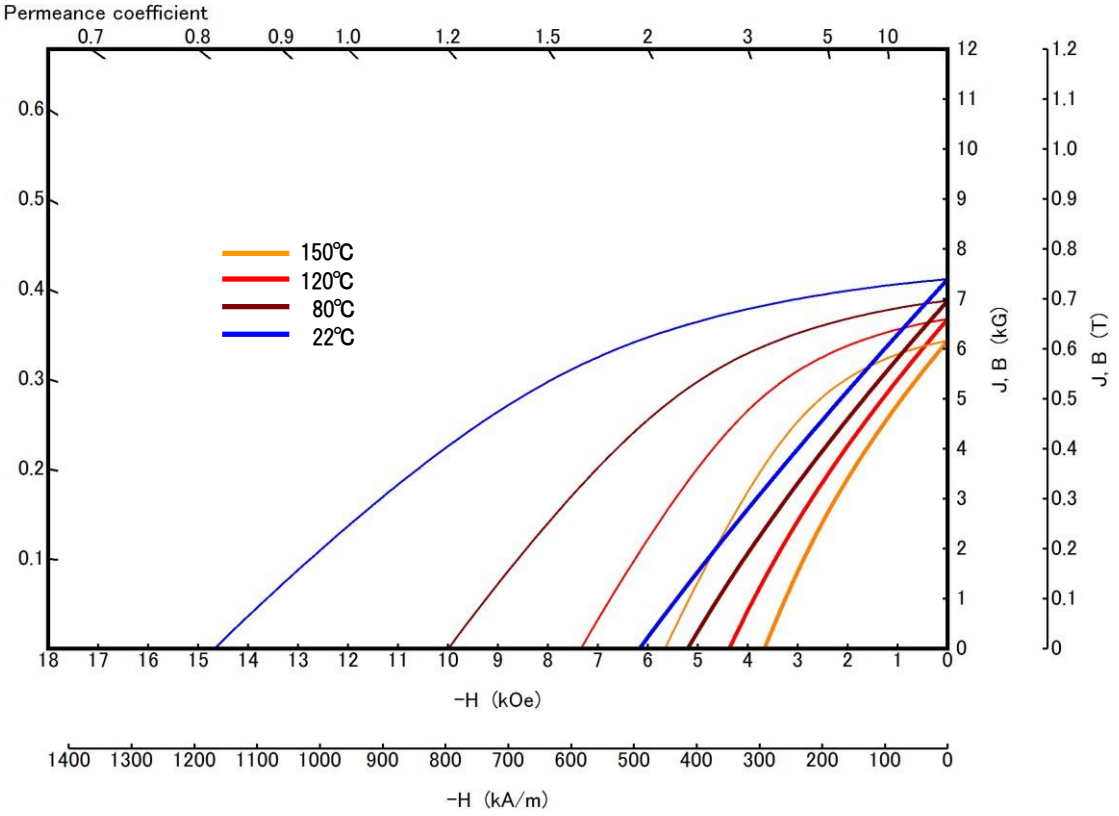


⑦ Variations of temperature for demagnetization curve

S5P-13MF



S5P-12ME



⑧ Recommended molding conditions

Conditions	Wellmax-S5P-13MF/S5P-12ME
Cylinder temperature	280～300℃
Mold temperature	130℃
Magnetic field for alignment	≧10 kOe ／ ≧796 kA/m