Composition overview

Compositional summary

MO·6Fe2O3, where M represents barium, strontium or a combination of the two, according to grade.

Form	Other			
Material family	Ceramic (technical)			
Base material	Oxide			

Price

Price	*	0,929	-	1,02	CHF/kg
Price per unit volume	*	4,45e3	-	5,08e3	CHF/m^3

Physical properties

Density	4,79e3	-	4,99e3	kg/m^3

Mechanical properties

Compressive strength	*	690	-	710	MPa

Thermal properties

Thermal conductivity	4	-	6	W/m.°C

Magnetic properties

Magnetic type	Permanent magnet			
Maximum energy product BHmax	2,55e4	-	2,94e4	J/m^3
Remanent induction Br	0,37	-	0,41	T
Coercive force Hc	1,35e5	-	1,67e5	A/m
Recoil permeability	1	-	1,1	
Curie temperature	450	-	460	°C
Temperature coefficient of Br	-0,002	-	-0,0018	/°C
Temperature coefficient of Hci	0,002	-	0,005	/°C
Expansion parallel to orientation	1,4e-5	-	1,5e-5	strain/°C
Expansion perpendicular to orientation	9e-6	-	1e-5	strain/°C
Magnetic isotropy	Isotropic			

Magnetic properties information

Low cost, temperature-stable, corrosion-resistant magnets with good resistance to demagnetization. Require magnetizing fields of about 10,000 Oe thus allowing magnetization after assembly. Anisotropic grades must be magnetized in manufacturing direction; isotropic grades can be magnetized any direction but may have greater magnetic strength in pressing direction. May have thin film of fine magnet powder on surface, so coating may be required for clean, non-contaminated applications.

Safety information

No special handling precautions are required, except that large blocks of Ferrite magnets are powerful, and care should be taken to ensure that they do not snap towards each other.

Temperature information

Up to about 720K, changes in magnetization are largely reversible, while changes between 720K and 1250K are re-magnetizable. For all Ferrite magnets, the degradation of magnetic properties is essentially linear with temperature. At 450K, about 75% of room temperature magnetization is retained, and at 560K, about 50% is retained.

Optical, aesthetic and acoustic properties

Transparency	Opaque			

Critical materials risk

Contains >5wt% critical elements?	No			

Primary production energy, CO2 and water

Embodied energy, primary production	* 15,6	-	17,2	MJ/kg
CO2 footprint, primary production	* 0,84	-	0,929	kg/kg
Water usage	* 16,4	-	18,1	l/kg

Processing energy, CO2 footprint & water

Grinding energy (per unit wt removed)	* 27,7	-	30,6	MJ/kg
Grinding CO2 (per unit wt removed)	* 2,08	-	2,29	kg/kg

Recycling and end of life

Recycle	✗	
Recycle fraction in current supply	0,1	%
Downcycle	✓	
Combust for energy recovery	✗	
Landfill	✓	
Biodegrade	✗	

Liens

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