

MATERIAL DATA SHEET

Revision Date – 24.10.11

Revision Number – 3

Material/Trade Name – Samarium Cobalt / SamCo / SmCo

1 - Substance Identification

Material/Trade Name -	Samarium Cobalt / SamCo / SmCo
Material Type -	Sintered
Company -	Cermag Ltd
Address -	92/94 Holywell Road Sheffield S48AS
Telephone -	0114 2446136
Fax -	0114 2561769
Emergency Telephone -	As above

2a – Samarium Cobalt 1:5 – 18 MGO - Composition Weight %

Substance -	Sm	15%
	Pr	15%
	Co	70%

2b – Samarium Cobalt 1:5 – 20 MGO - Composition Weight %

Substance -	Sm	15%
	Pr	15%
	Co	70%

2c – Samarium Cobalt 2:17– 24 MGO - Composition Weight %

Substance -	Sm	26%
	Co	50%
	Fe	17%
	Cu	5%
	Zr	2%

2d – Samarium Cobalt 2:17 – 26MGO - Composition Weight %

Substance -	Sm	26%
	Co	50%
	Fe	17%
	Cu	5%
	Zr	2%

2e – Samarium Cobalt 2:17 – 28 MGO - Composition Weight %

Substance -	Sm	26%
	Co	50%
	Fe	17%
	Cu	5%
	Zr	2%

2f – Samarium Cobalt 2:17 – 30 MGO - Composition Weight %

Substance -	Sm	26%
	Co	50%
	Fe	17%
	Cu	5%
	Zr	2%

3 – REACH

Samarium Cobalt materials contain no SVHC (Substances of Very High Concern) either in ingredients or in preparation

4 – Hazard Identification

Samarium Cobalt is not listed in EH40 Occupational Exposure Limits or other listings of hazardous or toxic materials.

The handling of Alnico / Alcomax Magnets in the clean unmagnetised state causes no hazards to health. Hazards arise when they are ground or magnetised

Fine powders and grinding slurry may cause irritation to eyes, skin & respiratory systems.

Only trained personnel should handle magnetised magnets.

Food & drink should be prohibited in the vicinity of the machining and finishing operation.

Flash Point - None

5 – First Aid Measures

Inhalation -	Remove to fresh air area Inform first aider
Eyes -	Flush dust from eyes with water Inform first aider
Skin -	Wash with soap & water Inform first aider
Ingestion -	Give plenty of water to drink Do not induce vomiting Inform first aider

6 – Fire Prevention

Non Combustible

7 – Handling & Storage of Magnetised Products

Due care should be taken when handling fully magnetised material as physical injury may occur through entrapment of body parts caused by the inadvertent attraction of magnetised material to other similar or ferro-magnetic material.

Close proximity to the magnetic field from magnetised material may effect the operation of heart pacemakers.

8a – Properties (Magnetic)

	Br (Gauss)	bHc (Oersted)	iHc (Oersted)	BH Max (MGO)	Magnetising Force (Oersted)
SmCo5 - 18MGO	8,800	8,800	18,000	18	25,000
SmCo5 - 20MGO	9,100	8,800	15,000	20	25,000
Sm2Co17 - 24MGO	10,000	9,000	15,000	24	43,500
Sm2Co17 - 26MGO	10,400	9,500	15,000	26	43,500
Sm2Co17 - 28MGO	10,800	9,500	15,000	28	43,500
Sm2Co17 - 30MGO	11,000	9,500	15,000	30	43,000

8b – Properties (Thermal)

	Reversible Temperature Coefficient of Br (%change/°C)	Curie Temperature (°C)	Maximum Working Temp (°C)
SmCo5 - 18MGO	-0.04	750	250
SmCo5 - 20MGO	-0.04	750	250
Sm2Co17 - 24MGO	-0.035	825	350
Sm2Co17 - 26MGO	-0.035	825	350
Sm2Co17 - 28MGO	-0.035	825	350
Sm2Co17 - 30MGO	-0.035	825	350

8c – Properties (Physical)

	Density (g/cm ³)	Tensile Strength (PSI)	Modulus of elasticity (PSI)	Hardness (Rockwell)	Coefficient of thermal expansion (10 ⁻⁶ per °C) Perpendicular to orientation	Coefficient of thermal expansion (10 ⁻⁶ per °C) Parallel to orientation	Electrical Resistivity at 20°C (Ohm-cm x 10 ⁻⁶)
SmCo5 - 18MGO	8.4	6000	23 x 10 ⁶	53	13	6	53
SmCo5 - 20MGO	8.4	6000	23 x 10 ⁶	53	13	6	53
Sm2Co17 - 24MGO	8.4	5000	17 x 10 ⁶	56	11	8	86
Sm2Co17 - 26MGO	8.4	5000	17 x 10 ⁶	56	11	8	86
Sm2Co17 - 28MGO	8.4	5000	17 x 10 ⁶	56	11	8	86
Sm2Co17 - 30MGO	8.4	5000	17 x 10 ⁶	56	11	8	86

9 – Stability and Reactivity

Stable at all temperatures

10 – Disposal Considerations

Do not dispose into watercourses

Use only licensed contractors

Dispose in accordance with Special Waste Regulations 1996

11 – Transport Information

Not Classified as Hazardous for Transportation by air. Magnetic fields within 0.00525gauss at 15 feet, as legislation states.

This data sheet needed is to accompany our commercial invoice with freight.

12 – Regulatory Information

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|-------------------------|---|
| 1 – Risk & Safety - | Avoid Entrapment of Body Parts
Dispose of material in a safe way |
| 2 – Other Regulations - | Health & Safety at Work Act 1974
Environmental protection Act 1990
Special Waste Regulations 1996 |