

**MATERIAL SAFETY DATA SHEET**

**SECTION 1: CHEMICAL PRODUCT**

**CAST & SINTERED  
 PERMANENT MAGNETS**

GRADE	NOMINAL PERCENT COMPOSITION					
	AL	NI	CO	CU	TI	FE
ALNICO 1	12	21	5	3	--	BAL.
ALNICO 2	10	19	13	3	--	BAL.
ALNICO 3	12	25	--	3	--	BAL.
ALNICO 4	12	27	5	--	--	BAL.
ALNICO 5, 5DG, 5COL.	8	14	24	3	--	BAL.
ALNICO 6	8	16	24	3	1	BAL.
ALNICO 8, 9	7	15	35	4	5	BAL.
ALNICO 8HC	8	14	38	5	9	BAL.

The product as supplied presents no health hazard unless it is abrasive ground, cut machined or melted. These procedures may produce hazardous amounts of metallic dusts or fumes. Such operations should be evaluated to determine if a health hazard exists.

**SECTION 2: COMPOSITION, INFORMATION OR INGREDIENTS**

CAS NO.	ELEMENT	SYMBOL	ACGIH TLV* (mg/m <sup>3</sup> )	AIR CONTAMINATION
7429-90-5	Aluminum	Al	10.0	Metal dust, gas/oxide
	Aluminum	Al	5.0	Welding fumes
7440-02-0	Nickel	Ni	0.05**	Elem., insoluble & soluble compounds
7440-48-4	Cobalt	Co	0.02	Intended change for 93-94
7440-50-8	Copper	Cu	0.2	As fume
	Copper	Cu	1.0	As dusts/mists
1309-37-1	Iron	Fe	***	***
13463-67-1	Titanium	Ti (as TiO <sub>2</sub> )	10.0	Total Dust

\* American Conference of Governmental Industrial Hygienists, 1993-1994.

Threshold Limit Values (TLV) based on an 8-hour day, 40-hour week.

\*\* Listed human carcinogen by National Toxicology Program, 3<sup>rd</sup> ann. rep.

\*\*\* Not listed or no information available.

While the information and recommendations set forth herein are believed to be accurate, we make no warranty with respect hereto and disclaim all liability from reliance thereon.

**SECTION 3: HAZARD IDENTIFICATION**

PRIMARY ROUTE OF ENTRY	
Inhalation of generated airborne dust or fumes. Any long-term exposure to dusts exceeding recommended TLV levels may result in irritation to upper respiratory tract. Nickel is a suspected carcinogen and airborne dusts must be controlled to not exceed recommended threshold limit values.	
EYES	SKIN
Dusts in eyes may cause irritation. Flush with water.	Prolonged skin contact with nickel and cobalt may cause allergic reaction in sensitive individuals.

**SECTION 4: FIRST AID MEASURES**

EYES
Flush with water if dust gets in eyes.

**SECTION 5: FIRE FIGHTING MEASURES**

Product is not combustible. Fine metal powders produced by dry grinding or machining may cause an explosive hazard. Control dust levels by utilizing wet machining or grinding processes, local exhaust ventilation, and good housekeeping. Keep dusts from ignition sources. If dusts should combust, use dry chemical extinguishing media, wear protective breathing apparatus and heat resistant clothing.

**SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION**

Use good personal hygiene. Avoid ingestion of dusts by not eating, drinking or smoking in areas where dusts or fumes are generated. Grinding or machining should be performed using coolants to reduce dusts. Adequate ventilation should be used when dry grinding or machining alloy. When operations create exposure levels exceeding TLV's, provide local exhaust ventilation. Use NIOSH-approved respirator as required. Use safety glasses or goggles when handling, grinding or machining product. Magnetized product may create personal hazards due to chipping, shattering, or pinching on impact. Use protective gloves, as required.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

SPECIFIC GRAVITY	APPEARANCE & ODOR	MELTING RANGE	SOLUBILITY
7.0 to 7.35 g./cc.	Metallic silver/gray in color; no odor	2,300 F – 2,550 F	Not soluble

**SECTION 10: STABILITY AND REACTIVITY**

Product is not reactive. Powders from product are incompatible with strong oxidizing agents such as concentrated nitric acid. Avoid generation of airborne dusts that could create fire and explosive hazard. (See Section 4)

**SECTION 13: DISPOSAL CONSIDERATIONS**

Dusts or fine scrap may be vacuumed or swept wet to keep airborne dusts concentrations to a minimum. Recycling of product recommended. Dispose in accordance with federal, state, and local regulations.

**SECTION 16: OTHER INFORMATION**

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Use good manufacturing practices and good housekeeping practices that will keep generated dusts to a minimum. Use personal protection equipment when required. Use good personal hygiene practices.