



(1) Product and Supplier Identification	
Product Name	Sintered Neodymium Iron Boron [NdFeB] Permanent Magnets
Supplier's Name	International Magnaproductions
Address	3100 Cascade Drive
Section in Charge	Technical Section
Person in Charge	Brian M. Coleman
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(2) Hazards Identification	
Classification Regulation No 1272/2008 CLP-Regulation	Not Applicable
Labeling Regulation No 1272/2008	Not Applicable
Additional Information In case of processing that creates dust or particulates, please observe following warnings:	Hazard statements result from the composition of the permanent magnets and coating
Hazard Statements	See "Other Hazards", causes skin irritation, eye irritation, may cause allergy or asthma or breathing difficulties if inhaled. Prolonged skin contact may cause may cause irritation or allergic skin reaction (dermatitis).
Precautionary Statements	Do not breathe dust/fume/gas/mist/vapors/spray. Wear adequate respiratory equipment and person protective equipment. Avoid release into environment. Do not eat, drink or smoke when using this product. If skin irritation occurs: get medical attention.
Other Hazards	<p>Dry Mechanical Processing of rare earth permanent magnet alloys is permitted only under special safety precautions because dusts which are capable of self-heating or pyrophoric dusts with a tendency to explode may be produced.</p> <p>Wet Mechanical Processing reacts with the magnet grinding and may form hydrogen already at room temperature. Attention – Formation of ex-atmospheres possible! Part of the resulting hydrogen is stored in the material. The resulting processing sludges must be kept under a protective liquid because dried out sludge are capable of self-heating or may react. In this case, stored hydrogen volume burns off with flames.</p> <p>Magnetized Parts generate magnetic fields and can attract magnetizable materials. This may result in injury during handling of magnets. Electronic devices and measuring tools may be changed in calibration or damaged by the high magnetic field strength. Please keep magnetized magnets away from computers, displays and magnetic storage devices.</p> <p>People with heart pacemakers must keep away from magnetic fields.</p>
PBT and vPvB Assessment:	Not applicable



(3) Composition/Information on Ingredients

Chemical Characterization	Description: Coated permanent magnet in compact (finished) form		
Dangerous Components	The classifications below reflect the classification of each pure substance respectively and are intended for information only		
CAS: 7439-89-6 EINICS: 231-096-4	Iron [Fe]	Balance %	Notes
CAS: 7440-00-8 EINICS: 231-109-3	Neodymium (powder) [Nd] Xi R36/38, F R11 R53 Flam. Sol. 2, H228; Skin Irrit. 2, Eye Irrit. 2A, H319	~23-33%	
CAS: 7429-91-6 EINICS: 231-073-9	Dysprosium (powder) [Dy] Xi R36/38, F R11 R53 Flam. Sol. 2, H228; Skin Irrit. 2, Eye Irrit. 2A, H319	~0-4%	Used in high temperature grades
CAS: 7440-10-0	Praseodymium (powder) [Pr] Xi R36/38, F R11 R53 Flam. Sol. 2, H228; Skin Irrit. 2, Eye Irrit. 2A, H319	~0-6%	
CAS: 7440-48-4 EINICS: 231-158-0 Index number: 027-001-00-9	Cobalt [Co] Xi R42/43, F R11 R53 Resp. Sens. 1, H334 Skin Sens. 1, H317	~0-5%	Used in high temperature grades
CAS: 7429-90-5 EINICS: 231-072-3 Index number: 013-001-00-6	Aluminum [Al] F R15-17 Pyr. Sol. 1, H250; Water-react. 1, H261	0.5 %	Material or Plating
CAS: 7440-42-8	Boron [B]	0.8-1.3%	
CAS: 7440-50-8	Copper [Cu]	0.01-0.2%	Plating
CAS: 7440-02-0	Nickel [Ni]	0.01-0.4%	Plating
Remarks	(*) Total maximum proportion of rare earths (Nd, Dy and/or Pr) is 33%. To improve corrosion resistance, chromium III and IV can be used.		
Additional Information (listed rare earths)	Classification as per CLP notification. Listed classifications refer exclusively to powder form. Specified rare earth are classified as NON-hazardous in solid form.		
Standard #	GB/T 13560		

(4) First Aid Measures

After Inhalation	If metal vapors or solid dusts have been inhaled. Get the affected person out in the fresh air and seek medical attention.
After Skin Contact	Brush off powders and wash well with soap and water. Foreign bodies which have penetrated the skin must be removed and the wound cleaned thoroughly.
After Eye Contact	Rinse opened eye for several minutes under running water until clear. If symptoms persist, seek medical attention.
After Swallowing	Seek medical attention if the symptoms persist.
Medical Information	Most important symptoms and effect, both acute and delayed. No further relevant information or indication of any immediate medical attention and special treatment available.



(5) Firefighting Measures	
Suitable Extinguishing Agents	Extinguishing agents must be adapted to the environment. Non-combustible, dry chemicals without oxygen compounds or sand should be used.
Special Hazards arising from the Substance or Mixture	Do not use Halon agents or water on smoldering, burning powder. Dry powders or neodymium magnets will oxidize, smolder, and burn rapidly in the presences of air or oxygen. Maintain powders in water slurry or in inert atmospheres of nitrogen or argon to prevent spontaneous combustion. Magnets may spark on impact. Handle carefully in explosive atmospheres.
Advice for Firefighters (Protective Equipment)	No special measure required
Flashpoint, Flammable Limits, LEL, UEL	Not determined.

(6) Accidental Release Measures	
Personal Precautions, Protective Equipment, and Emergency Procedures	No special measures required.
Environmental Precautions	No special measures required.
Methods and Material for Containment and Clean Up	No special measures required.
Reference to Other Sections	Section 7 for Safe Handling Section 8 for Personal Protection Equipment Section 13 for Disposal Information

(7) Handling and Storage	
Precautions for Safe Handling	No protective measures are required in the provided form.
Dry Mechanical Processing	This processing of rare earth permanent magnet alloys is permitted only under special safety precautions because dusts which are capable of self-heating or pyrophoric dusts with a tendency to explode may be produced.
Wet Mechanical Processing	Watery processing medium can react with the magnet grinding and may form hydrogen already at room temperature. Attention – Formation of ex-atmospheres possible! Part of the resulting hydrogen is stored in the material. The resulting processing sludges must be kept under a protective liquid because dried out sludge are capable of self-heating or may react. In this case, stored hydrogen volume burns off with flames. Also, see Section 8.
Information about protection against Explosions/Fires	No particular measures are required in the provided form.
Conditions for Safe Storage, including Incompatibilities	Please keep magnetized magnets away from computers, displays and magnetic storage devices, like floppy discs, magnetic tapes or credit cards as it can destroy or alter the magnetic data. People with heart pacemakers must keep away from magnetic fields.
Storeroom and Receptacle Requirements	Store in dry location free of corrosive atmosphere. Keep away from magnetic objects such as iron, cobalt or nickel and high energy magnetic fields.
Common Storage Facility and Conditions	Not applicable
Storage Class and Specific End Uses	Not applicable



(8a) Exposure Controls/Personal Protection	
Additional Information about Design of Technical Systems	Provide filtered ventilation of working area for all processing steps. Suitable breathing apparatus must be used (<i>see personal safety equipment</i>) for repair and maintenance work on air handling systems, especially during filter changes.
Control Parameters	Components with limit values that require monitoring at the workplace
7439-89-6 Iron [Fe]	
EV (Canada)	1* 5** mg/m ³ as iron; *salts, water-soluble; **welding fume
7440-48-4 Cobalt [Co]	
EL (Canada)	0.02 mg/m ³ ; IARC 2B
EV (Canada)	0.1 mg/m ³
PEL (OSHA USA)	0.1 mg/m ³ as Co; *for metal dust and fume, as Co
REL (USA)	0.05 mg/m ³ inorg. cmpds.: *metal dust and fume, as Co
TLV (USA)	0.02 mg/m ³ as Co; BEI
7429-92-5 Aluminum [Al]	
EL (Canada)	1.0 mg/m ³ ; metal and insoluble compounds, respirable
EV (Canada)	5.0 mg/m ³ aluminum-containing (as aluminum)
PEL (OSHA USA)	15* 5** mg/m ³ *total dust ** respirable fraction
REL (USA)	10* 5** mg/m ³ metal, insol. cmpds.: *total dust ** resp. fraction
TLV (USA)	1* mg/m ³ *as respirable fraction
Control Parameters	Ingredients with biological limit values
7440-48-4 Cobalt [Co]	
BEI (USA)	15 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (background, semi-quantitative)
Additional Occupational Exposure Limit Values for possible hazards during processing: If the occurrence of chrome (VI) compounds cannot be ruled out, the appropriate workplace-related limit values must also be monitored. Additional Information: The lists that were valid during the creation were used as basis.	



(8b) Exposure Controls (Personal Protective Equipment)	
General Protective and Hygienic Measures	Use personal protection equipment when required. Use good personal hygiene practices. Keep magnetized parts away from mechanical/electrical instruments which may be damaged by high magnetic fields. Keep away from foodstuffs, beverages and feed. Wash hands before breaks and at the end of shift. Avoid contact with the eyes and skin.
Breathing Equipment	In the case of dust formation (limit value exceeded), breathing apparatus must be worn (NIOSH approved). Time limits for wearing must be observed.
Breathing Mask, (Apparatus w/ Particle Filter P2/P3)	Full face mask (EN 136) Breathing mask (EN149) FFP2 or FFP3 10 times the limit value (FFP2) 30 times the limit value (FFP3) Recommendation: P3
Ventilation	Use wet machining/grinding processes and adequate local ventilation to reduce dust levels.
Protection of Hands	Avoid repeated and prolonged contact with the skin, use protective gloves, especially when handling magnetized parts or parts which may have sharp edges. Preventive skin protection by use of skin-protecting agents is recommended.
Material of Gloves	Experience has shown glove materials polychloroprene, nitrile caoutchouc, butyl caoutchouc, fluoride caoutchouc and polyvinylchloride to offer sufficient protection.
Eye Protection	Safety goggles (EN166), with side shields if necessary, must be worn in dusty environments and when working with magnetized magnets (> 50 g).
Limitation & Supervision of Exposure into Environment	Please follow national, state and local regulations.

(9) Physical and chemical properties	
General information	The physical and chemical properties of this section refer to the un-plated permanent magnet alloy. No values are available for the coating itself.
Appearance	Form: parts Color: Metallic Odor: odorless
pH value:	Not applicable
Change in Condition (Melting point)	1180°C (2156°F)
Evaporation Rate	Not determined
Auto Igniting	Omitted (in the provided form). See Section 2 and/or 7.
Danger of Explosion	Omitted (in the provided form). See Section 2 and/or 7.
Vapor Pressure (mm Hg)	Not determined
Density (approx.) at 20°C	7.7 g/cm ³
Relative Density	Not determined
Solubility in/Miscibility with Water:	Insoluble
Solubility in Acid	Soluble



(10) Chemical Stability and Reactivity	
Thermal Decomposition/Conditions to be Avoided	No decomposition if used according to specifications.
Possibility of Hazardous Reactions	Hydrogen is released in contact with acid which can cause explosive gas mixtures.
Conditions to Avoid	Avoid exposure of powdered magnet material to air, oxygen or halogenated hydrocarbons and to elevated temperatures above 150° C. Do not use or store in conditions as follows: acidic, alkaline or electrically conductive liquids, corrosive gases.
Incompatible Materials	Fine powders are incompatible with air, oxygen, halogenated hydrocarbons with strong oxidizers. Avoid acids and other oxidizing agents.
Hazardous Decomposition Products	No dangerous decomposition products known

(11) Toxicological Information	
Acute toxicity LD/LC50 values	The following applies for the pure substance
7440-48-4 Cobalt	
Oral	LD50 6170 mg/kg (rat)
Primary irritant effect: Cobalt in the form of inhalable dust can lead to hypersensitization when inhaled. Also it is possible the sensitization develops if the surface is chromated and if repeated and extended skin contact with this chromated surface occurs.	<p><i>On the skin:</i> Irritant to skin and mucous membranes. Rare earths (section 2) cause skin irritation depending on grain size (powder) (Skin Irrit 2) see sensitization.</p> <p><i>On the eye:</i> Rare earths (section 2) cause eye irritation depending on grain size (powder) (Eye Irrit. 2)</p> <p><i>Sensitization:</i> in the case of repeated and prolonged contact with the skin with metallic cobalt there is a possibility of sensitization.</p>
Subacute to chronic toxicity	<p>In certain countries, cobalt is the form of inhalable dust is classified as category 3 carcinogenic. Chromium trioxide in the form of inhalable dusts is classified as category 2 carcinogenic. Definition/category 2: "Substances which can be considered as causing cancer in humans." Related to the pure substance there is enough evidence to assume that human exposure to the substance can cause cancer. This assumption is based generally on the following:</p> <ul style="list-style-type: none"> • Suitable long-term experiments with animals • Other relevant information
Additional toxicological information	When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.
Carcinogenic categories	IARC (International Agency for Research on Cancer)
7440-48-4	Cobalt 2B
NTP (National Toxicity Program)	None of the ingredients is listed



(12) Ecological Information	
Toxicity	
Aquatic Toxicity	No further relevant information available
Persistence and Degradability	No further relevant information available
Behavior in Environmental Systems	
Bioaccumulative Potential	No further relevant information available
Mobility in Soil	No further relevant information available
Results of PBT and vPvB Assessment	Not applicable
Other Adverse Effects	No further relevant information available

(13) Disposal Considerations	
Waste Treatment Methods	
Recommendation	Observe official regulations. Disposal must be in accordance with applicable federal, state and local law and regulations, if any.
Uncleaned packaging	Not applicable
Spill Procedure	Sweep up dust and store in water slurry or sealed containers utilizing inert atmosphere such as argon or nitrogen to prevent spontaneous combustion.

(14) Transport Information	
Transport/Additional Information	
Land transport DOT/TDG Remarks	Non-hazardous goods from the standpoint of the specified regulations. ATTENTION: Packing boxes with magnetized parts inside generate magnetic fields and are able to attract magnetizable materials.
Maritime transport IMDG Remarks	Non-hazardous goods from the standpoint of the specified regulations. ATTENTION: Packing boxes with magnetized parts inside generate magnetic fields and are able to attract magnetizable materials.
Air transport ICAO-TI and IATA-DGR	<p>Non magnetized parts: Not classified as hazardous goods as understood in the ordinance given.</p> <p>Magnetized parts in packaging units: Conduct test for classification as per IATA regulations (see Class 9/Packing Instruction 902)</p> <p>If test is positive, the following apply: ICAO/IATA class: Class 9/Page 172 UN/ID number: 2807 Correct technical name: Magnetized materials</p>



(15) Regulatory Information			
Safety, health and environmental regulations/legislation specific for the substance or mixture			
SARA Section 355 (extremely hazardous substances):	None of the ingredients is listed		
Section 313 (Specific toxic chemical listings)	7440-48-4	Cobalt	
	7429-90-5	Aluminum	
TSCA (Toxic Substances Control Act):	All ingredients are listed		
Proposition 65 (chemicals known to cause cancer)	7440-48-4	Cobalt	
Chemicals known to cause reproductive toxicity	Females: None of the ingredients is listed Males: None of the ingredients is listed		
Chemicals known to cause developmental toxicity	None of the ingredients is listed		
Carcinogen categories			
EPA (Environmental Protection Agency)	None of the ingredients is listed		
TLV (Threshold Limit Value established by ACGIH)	7440-48-4	Cobalt	A3
	7429-90-5	Aluminum	A4
MAK (German Maximum Workplace Concentration)	7440-48-4	Cobalt	2
NIOSH-Ca (National Institute for Occupational Safety and Health)	None of the ingredients is listed		
OSHA-Ca (Occupational Safety & Health Administration)	None of the ingredients is listed		
National regulations:			
Other regulations, limitations and prohibitive regulations	Guidelines 67/548/ECC, 1999/45/EC 1272/2008/EG (CLP) 1907/2006/EG (REACH) German Hazardous Substances		
PLEASE NOTE:	Magnetized parts generate magnetic fields and are able to attract magnetizable materials. This may result in injury during handling of magnets. Electronic devices and measure tools may be changed in calibration or damaged by the high magnetic field strength. Please keep magnetized magnets away from computers, displays and magnetic storage devices. Especially people with heart pacemakers must keep away from magnetic fields.		
Chemical Safety Assessment	VOID (for articles)		



(16) Other Information		
The information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.		
Relevant phrases (Wording of safety instructions quoted <section 3> concerning pure substances (powder)).	H228 H250 H261 H315 H317 H319 H334	Flammable solid Catches fire spontaneously if exposed to air In contact with water releases flammable gas Cause skin irritation May cause an allergic skin reaction Cause serious eye irritation May cause allergy or asthma symptoms or breathing difficulties
	R11 R15 R17 R36/38 R42/43 R53	Highly flammable Contact with water liberates extremely flammable gases Spontaneously flammable in air Irritating to eyes and skin May cause sensitization by inhalation and skin contact May cause long-term adverse effects in aquatic environment.
Department issuing MSDS		
Contact		
Abbreviations and acronyms		IMDG: International Maritime Code for Dangerous Goods IATA : International Air Transport Association ACGIH : American Conference of Governmental Industrial Hygienists LC60: Lethal Concentration, 50% LD50: Lethal Dose, 50 %
Sources		