ANOTEC INDUSTRIES LTD

5701 Production Way
Langley, BC Canada V3A 4N5
Tel: (604) 514-1544 Fax: (604) 514-1546

USER SAFETY BULLETIN, ANODES (SDS)

Section 1: Product Identification and Use

1.1 Product Identifier: Impressed Current Anodes, High Silicon Cast Iron (ASTM A518 Gr. 3).

Anotec considers this product to be a "Manufactured Article" [1] as defined in Part 2 "Controlled Products" [2] of the "Hazardous Products Act (R.S., 1985, c. H-3) Canada". As such an MSDS is not required by Regulatory Agencies such as OSHA.

1.2 Product Use: Buried component of impressed current systems for cathodic protection of land and marine structures from corrosion.

1.3 Manufacturer: Anotec Industries Limited www.anotec.com
5701 Production Way
Langley, BC Canada V3A 4N5

1.4 Emergency Telephone: (604) 514-1544

1.5 Facsimile: (604) 514-1546

Section 2: Hazard Identification

No classifiable hazards exisit when transported,stored or installed.

Section 3: Composition/Ingredients

Exposure to these chemicals will not occur during intended use. GRINDING may expose a user to these chemicals.

INGREDIENT	CAS NUMBER	% by weight	TLV-TWA (mg/cuM)	PEL (mg/cuM)
Silicon	7440-21-3	14.75 max	3	10 total dust 5 respirable
Manganese	7439-96-5	1.5 max	5 dust	C5
Nickel	7440-02-0	trace	1	1
Chromium	7440-47-3	5.0 max	0.5	1
Molybdenum	7439-98-7	0.2 max	10	10 total dust 5 respirable
Sulphur	7704-34-9	trace	3	15 total dust 5 respirable
Phosphorous	7723-14-0	trace	3	0.1
Copper	7440-50-8	0.5 max	1 dust	1
Iron	7439-89-6	balance	5 fume	10 dust/fume
Carbon		0.7-1.1		
Virtually all the carbon in the anode is as iron carbide or interstitial, although a trace may be in the form of nodular or flake graphite.				
Graphite	7782-42-5		2.5 resp.	2.5 respirable

TLV-TWA = Threshold Limit Value-Time Weighted Average (ACGIH) 2006
ACGIH = American Conference of Governmental Industrial Hygienists
PEL = Permissible Exposure Limit (OSHA)
OSHA = U.S. Occupational Safety and Health Administration.

Section 4: First Aid
No specific special requirements.

Section 5: Fire and Explosion Data
Will not burn or explode.

Section 6: Accidental Release Measures
No specific special requirements.

Section 7: Handling and Storage
Handle with care, alloy composition makes product brittle and susceptible to breakage if dropped. No specific storage requirements.

Section 8: Exposure Controls/Persona Protective Equipment (PPE)

8.1	Route of Entry:	Inhalation of dust from grinding.
8.2	Effects:	Dust may cause respiratory tract irritation.
8.3	Exposure Limit:	Refer to Section 2 for TLV/PEL's of individual components. If required, collection of airborne dust would adequately define exposure and health hazard.
8.4	Carcinogenicity:	Not Applicable
8.5	Steel toe footwear required for anode handling. If grinding anodes, wear an approved dust respirator (fabric or cartridge with dust filter) and eye/hearing protection.	

Section 9: Physical and Chemical Properties

9.1	Description:	Solid, silver gray, no odor.
9.2	Boiling Point:	3000 C for iron.
9.3	Vapor Pressure:	Not Applicable
9.4	Vapor Density	Not Applicable
9.5	Solubility in Water:	Not Applicable
9.6	Specific Gravity:	7.0.
9.7	Percent Volatiles by Volume:	Not Applicable
9.8	Evaporation Rate:	Not Applicable
9.9	UN Number:	Not classified as Dangerous Goods or Product

Section 10: Stability and Reactivity

5.1	Hazardous Polymerization:	Will not occur.
5.2	Stability:	Stable.
5.3	Incompatibility with other Substances:	Anodes may be incompatible with strong oxidizers such as peroxides.

Section 11: Toxicological Properties

6.1	Route of Entry:	Inhalation of dust from grinding.
6.2	Effects:	Dust may cause respiratory tract irritation.
6.3	Exposure Limit:	Refer to Section 2 for TLV/PEL's of individual components. If required, collection of airborne dust would adequately define exposure and health hazard.
6.4	Carcinogenicity:	Not Applicable[3]

Section 12: Ecological Information

No specific special requirements.

Section 13: Disposal Considerations

Broken anodes may returned to the manufacturer, and are suitable for burial or disposal as non-hazardous municipal waste. In nature High Silicon Cast Iron is a very stable material proven to be highly resistant to acids and naturally occurring electrolytes.

Section 14: Transportation Information

No specific special requirements. Product is not classified under the Transportation of Dangerous Goods regulations or the International Maritime Dangerous goods code.

Section 15: Regulatory Information

None.

Section 16: Other Information

None.

This document is believed to be accurate and to comply with regulations, but it is not warranted to be or do so.

[1] "Manufactured Article"
means any article that is formed to a specific shape or design during manufacture, the intended use of which when in that form is dependent in whole or in part on its shape or design, and that, under normal conditions of use, will not release or otherwise cause a person to be exposed to a controlled product [2].

[2] *"Controlled Product"*
means a product, material or substance specified by regulations made pursuant to section 15(1)(a) of the *Hazardous Products Act* (Canada) as products, materials and substances included in any of the classes listed in Schedule II of that Act.

[3] *"Controlled Product"*
According to Dr. J. A. Jakobs (1)

"Theoretical considerations relating to formation of toxic chromium compounds, supported by a review of scientific studies and practical investigation reports, lead to better understanding of the formation mechanism of toxic chromium compounds as well as the chemistry of chromium immobilization within soils. No evidence was found supporting the expectation that chromium compounds diffuse unrestricted to soil or groundwater in the neighborhood of high-silicon chromium cast iron anode CP groundbeds. Chromium ions released to soil as corrosion products of this type of anodes are very unlikely to be oxidized to Cr(VI) due to Fe(II) ions presence, and all chromium compounds developed in the anodic process are expected, and in known cases were found, retained in the close vicinity of the groundbeds."

References

(1) Jakobs, J. A. "Probability of Soil Environment Contamination by Chromium compounds in Underground CP Systems Utilizing High Silicon Cromium Cast Iron Anodes" www.anotec.com Article # 40 "HSCI and the Environment".