

**ANOTEC INDUSTRIES LTD.**

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

REF / TITLE

**USER SAFETY BULLETIN, ANODES
(MSDS)**

BY / APPROVAL

J. B. Holloway

FORM NBR.: 085

Rev 1.1 - 02/15/01

Section 1: Product Identification and Use

- 1.1 Product Identifier: **Impressed Current Anodes, High Silicon Cast Iron (ASTM A518 Gr. 3).**
- 1.2 Product Use: Buried component of impressed current systems for cathodic protection of land and marine structures from corrosion, primarily for petroleum industry.
- 1.3 Manufacturer: Anotec Industries Limited
5701 Production Way
Langley, BC Canada V3A 4N5
- 1.4 Emergency Telephone: (604) 514-1544
- 1.5 Facsimile: (604) 514-1546

Section 2: Hazardous Ingredients

INGREDIENT	CAS NUMBER	%	TLV-TWA (mg/cuM)	PEL (mg/cuM)
Silicon)	7440-21-3	14.75 max	10	10 total dust 5 respirable
Manganese	7439-96-5	1.5 max	5 dust	C5
Nickel	7440-02-0	trace	1	1
Chromium hexavalent	7440-47-3	5.0 max	0.5 0.05A1	1
Molybdenum	7439-98-7	0.2 max	10	10 total dust 5 respirable
Sulphur	7704-34-9	trace	10 (PNOC)	15 total dust 5 respirable
Phosphorous	7723-14-0	trace	0.1	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)
 ACGIH = American Conference of Governmental Industrial Hygienists
 PEL = Permissible Exposure Limit (OSHA)
 OSHA = U.S. Occupational Safety and Health Administration

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Section 3: Physical Data

3.1	Description:	Solid, silver gray, no odor.
3.2	Boiling Point:	2750 C for iron.
3.3	Vapour Pressure:	Not Applicable
3.4	Vapour Density	Not Applicable
3.5	Solubility in Water:	Not Applicable
3.6	Specific Gravity:	7.0.
3.7	Percent Volatiles by Volume:	Not Applicable
3.8	Evaporation Rate:	Not Applicable
3.9	UN Number:	Not classified as Dangerous Goods or Product.

Section 4: Fire and Explosion Data: Will not burn, explode.

Section 5: Reactivity Data

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 6: 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 and analysis for chromium (total) would adequately define exposure and health hazard.
6.4	Carcinogenicity:	Water insoluble HEXAVALENT CHROMIUM is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Considering the small amount of chromium in the anodes, and that welding of anodes is abnormal and difficult, overexposure to hexavalent


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chromium is not likely. There is no hexavalent chromium in the alloy or its dust.

Section 7: Preventive Measures

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| 7.1 | Personal Protective Equipment: | 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. |
| 7.2 | Spill Containment: | Broken anodes may be stored in drums. |
| 7.3 | Waste Disposal: | Broken anodes may sent to a metal recycler, and are suitable for burial or disposal as non hazardous municipal waste. High Silicon Cast Iron is a very stable material in nature proven to be highly resistant to acids and naturally occurring electrolytes. |
| 7.4 | Other Special Requirements: | None. |

Section 8: First Aid

No specific special requirements.

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