



**DEFENSE LOGISTICS AGENCY**  
DEFENSE NATIONAL STOCKPILE CENTER  
8725 JOHN J. KINGMAN ROAD, SUITE 3229  
FT. BELVOIR, VIRGINIA 22060-6223

IN REPLY  
REFER TO  
**DNOSC-C**

**May 3, 2007**

**AMENDMENT NO. 001  
TO  
SOLICITATION OF OFFERS  
FOR ZINC UNDER  
DLA-ZINC-006**

The above referenced Solicitation for the sale of Zinc is hereby amended to add an additional offering and to update various sections of the solicitation, as follows:

**1. Section A.1 Introduction (SEP 02), Paragraph a.**

Delete this paragraph in its entirety and replace with the following:

- a.** The Defense Logistics Agency (DLA), Defense National Stockpile Center (DNOSC), is soliciting offers for the sale of 7,022,214 pounds (3,185.25 metric tons) in Fiscal Year 2007. The opening will be held on **Thursday, May 24, 2007 at 1:00 p.m.** local time, Ft. Belvoir, VA. Offers must be received at the address in Section B.2.a. by 1:00 p.m. local time, Ft. Belvoir, VA. In the event that DNOSC is closed at that time, offers for that day will be received at 1:00 p.m. on the next DNOSC business day.

**2. Section A.2 Description (NOV 05), Paragraphs a. and b.**

Delete these paragraphs in their entirety and replace with the following:

- a.** A description of the material offered for sale is listed in Section **I.2 Item Offer Page – DLA-ZINC-006 (MAY 07)** and Section **J.1 Analysis of Material (MAY 07)**, which are attached to this amendment. The material is located at the New Haven, IN depot. See Section **J.2 Storage Locations (NOV 05)**.
- b.** Government analyses indicate that the material conforms to the data listed in Paragraph **A.2.a.** above, Section **I.2**, and Section **J.1**; however, no warranty or guarantee is made that the material so conforms or that it will be suitable for any particular purpose.

3. Add the following as Section **A.5 Wood Packaging Materials Requirements (JUN 06)**.

**A.5 Wood Packaging Materials Requirements (JUN 06)**

Wood packaging materials utilized in the storage and shipment of National Defense Stockpile materials, including, but not limited to, pallets, boxes, kegs, and dunnage lumber, do not meet the requirements of U.S. Department of Agriculture Regulations at 7 CFR 319.40 or International Standards for Phytosanitary Measures (ISPM) 15, "Guidelines for Regulating Wood Packaging Materials in International Trade." Stockpile wood packaging materials have not been heat treated or fumigated with methyl bromide and are not marked to indicate that they meet the requirements of these regulations and standards. As a result, it may not be possible to export or import these wood packaging materials.

4. Section **B.1 Submittals (NOV 05), Paragraphs b., c., e., and h.**

Delete these paragraphs in their entirety and replace with the following:

- b. Section **I.2, Item Offer Page – DLA-ZINC-006 (MAY 07)**, with (1) offer quantity (lbs) column; (2) unit price per/lb column; (3) total offer price column; (4) company name; (5) name, title, and signature of person authorized to sign the offer; and (6) date completed.
- c. Section **I.3, Anticipated Removal Schedule (MAY 07)**.
- e. Section **I.5, Certification Regarding Debarment, Suspension, Proposed Debarment, and Other Responsibility Matters (FEB 07)**.
- h. Offerors shall submit the financial information requested in paragraph **g.** to the following address or facsimile number:

ATTN: DNSC-C, Procurement Analyst for Sales  
Defense National Stockpile Center  
8725 John J. Kingman Road, Suite 3229  
Fort Belvoir, VA 22060-6223  
Fax: 703-767-4074

5. Section **B.5 Reference Price and Monthly Declaration (NOV 05), Paragraph c.**

In the last sentence of this Paragraph **c.**, delete the words "15<sup>th</sup> working day of each month" and insert the words "15<sup>th</sup> calendar day of each month."

6. Section **E.1 Removal of Material (JAN 02)**.

Delete this section in its entirety and replace with the following:

**E.1 Removal of Material (MAY 07)**

- a. The contract period is based on the quantity of material awarded and begins on the date of contract award. The contract periods are as follows:

<u>Quantity Awarded (pounds)</u>	<u>Contract Period in Calendar Days</u>
44,000 – 320,000	30 calendar days
320,001 – 640,000	90 calendar days
Over 640,000	180 calendar days

- b. For contracts with a performance period of 30 or 90 calendar days –

- (1) If the Contractor fails to pay for and remove the material on or before the last day of the contract period, Contractor will be considered delinquent and no material will be shipped until payment has been received.
- (2) The contract period includes Saturdays, Sundays, and holidays. If the last day of the contract period is a Saturday, Sunday, or holiday, or the storage location is otherwise closed that day, the period of contract performance will be extended to the next Government workday.

- c. For contracts with a performance period of 180 calendar days -

- (1) The contract period begins on the date of contract award and shall expire 180 calendar days from this date. No later than the fifteenth (15<sup>th</sup>) calendar day of each calendar month, the Contractor shall furnish the Contracting Officer, in writing, a declaration of the quantity of material to be priced for that month. This quantity declared shall be for at least a minimum of one-sixth of the contract award amount. Monthly minimum and maximum removal quantities shall be specified in Section **I.3 Anticipated Removal Schedule (MAY 07)**. The Contractor shall have 45 calendar days from the date the declaration is received by the Government to remove the declared quantity of material, except that all material under the contract must be removed within the 180-day contract period. The completed Section **I.3 Anticipated Removal Schedule (MAY 07)** shall form a part of this contract.

- (2) If the Contractor fails to: (1) submit the monthly declaration by the 15<sup>th</sup> calendar day of the calendar month and make payment in accordance with Section **D**; or (2) remove the minimum quantity in accordance with Section **I.3**, the Contractor shall be considered delinquent and no material will be shipped until payment has been received for either the minimum monthly quantity or the declared quantity, whichever is greater. If the Contractor has failed to complete removal of all of the material on or before the last day of the contract period, the Contractor will be considered delinquent and no material will be shipped until payment for all remaining material has been received.
- (3) The contract period and the 45-calendar day period following the submission of a declaration include Saturdays, Sundays, and holidays. If the last day of either period is a Saturday, Sunday, or holiday, or the storage location is otherwise closed on those days, the period of contract performance or the 45-calendar day period will be extended to the next Government workday.

8. In **SECTION G – CONTRACT ADMINISTRATION DATA**, add the following as Sections **G.13 Applicable Law for Breach of Contract Claim (JUL 06)** and **G.14 Bankruptcy (JAN 07)**:

**G.13 Applicable Law for Breach of Contract Claim (JUL 06)**

United States law will apply to resolve any claim of breach of this contract.

**G.14 Bankruptcy (JAN 07)**

In the event the contractor enters into proceedings relating to bankruptcy, whether voluntary or involuntary, the contractor agrees to furnish, by certified mail or electronic commerce method authorized by the contract, written notification of the bankruptcy to the contracting officer responsible for administering the contract. This notification shall be furnished within five days of the initiation of the proceedings relating to bankruptcy filing. This notification shall include the date on which the bankruptcy petition was filed and the identity of the court in which the bankruptcy petition was filed.

9. Section **I.2 Item Offer Page - DLA-ZINC-006 (NOV 05)**.

Delete this section in its entirety and replace with the attached Section **I.2 Item Offer Page - DLA-ZINC-006 (MAY 07)**.

**10. Section I.3 Anticipated Removal Schedule (NOV 05).**

Delete this section in its entirety and replace with the attached **Section I.3 Anticipated Removal Schedule (MAY 07)**.

**11. Section I.5 Certification Regarding Debarment, Suspension, Proposed Debarment, Environmental Compliance and Other Responsibility Matters (JUL 97).**

Delete this section in its entirety and replace with the attached **Section I.5 Certification Regarding Debarment, Suspension, Proposed Debarment, and Other Responsibility Matters (FEB 07)**.

**12. Section I.9 Offeror's Billing Address (JUL 95).**

Delete this section in its entirety and replace with the attached **Section I.9 Offeror's Billing Address (JAN 07)**.

**13. Add the attached Section I.10 Disputes: Agreement to Use Alternative Dispute Resolution (JUL 06).**

**14. Section J.1 Analysis of Material (NOV 05).**

Delete this section in its entirety and replace with the attached **Section J.1 Analysis of Material (MAY 07)**.

**15. Section J.4 Material Safety Data Sheet (SEP 05).**

Delete this section in its entirety and replace with the attached **Section J.4 Material Safety Data Sheet (DEC 06)**.

**16. Except as provided herein, all other terms and conditions of Solicitation of Offers DLA-ZINC-006 remain unchanged and in full force and effect.**

17. Offerors shall acknowledge receipt of this Amendment by signing in the space provided below and returning a copy of this form along with their offer to:

ATTN: DNSC-BA/Bid Custodian  
Defense National Stockpile Center  
8725 John J. Kingman Road  
Suite 3229  
Fort Belvoir VA, 22060-6223  
Facsimile No: (703)-767-5541

Failure to acknowledge receipt of this Amendment may result in the Offeror being considered ineligible for award.

**NAME OF FIRM:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

**TELEPHONE:** \_\_\_\_\_

**FACSIMILE:** \_\_\_\_\_

**EMAIL ADDRESS:** \_\_\_\_\_

**BY:** \_\_\_\_\_

**SIGNATURE:** \_\_\_\_\_

**TITLE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

I.2 Item Offer Page – DLA-ZINC-006 (MAY 07)

ITEM	LOCATIO N	GRAD E	BRAND	METRIC TONS	POUNDS (LBS)	OFFER QUANTITY (LBS)	UNIT PRICE PER/LB	TOTAL OFFER PRICE
114	New Haven, IN	High Grade	Anacond a	3,185.25	7,022,214			

Company Name: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



**I.5 Certification Regarding Debarment, Suspension, Proposed Debarment, and Other Responsibility Matters (FEB 07)**

a.(1) The Offeror certifies, to the best of its knowledge and belief, that—

(i) The Offeror and/or any of its Principals—

(A) Are  are not  presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have  have not , within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(C) Are  are not  presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in paragraph a.(1)(i)(B) of this provision.

(ii) The Offeror has  has not , within a three-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(2) “Principals,” for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

**This Certification Concerns a Matter Within the Jurisdiction of an Agency of the United States and the Making of a False, Fictitious, or Fraudulent Certification May Render the Maker Subject to Prosecution Under Section 1001, Title 18, United States Code.**

b. The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

- c. A certification that any of the items in paragraph a. of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror nonresponsible.
- d. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph a. of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- e. The certification in paragraph a. of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

**I.9 Offeror's Billing Address (JAN 07)**

The Offeror shall provide its billing address, billing telephone and facsimile numbers, and email address below:

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Email Address: \_\_\_\_\_

**I.10 Disputes: Agreement to Use Alternative Dispute Resolution (JUL 06)**

- a. The parties agree to negotiate with each other to try to resolve any disputes that may arise. If unassisted negotiations are unsuccessful, the parties will use alternative dispute resolution (ADR) techniques to try to resolve the dispute. Litigation will only be considered as a last resort when ADR is unsuccessful or has been documented by the party rejecting ADR to be inappropriate for resolving the dispute.
- b. Before either party determines ADR inappropriate, that party must discuss the use of ADR with the other party. The documentation rejecting ADR must be signed by an official authorized to bind the contractor, or, for the Agency, by the contracting officer, and approved at a level above the contracting officer after consultation with the ADR Specialist and with legal counsel. Contractor personnel are also encouraged to include the ADR Specialist in their discussions with the contracting officer before determining ADR to be inappropriate.
- c. If you wish to opt out of this clause, check here (\_\_\_). Alternate wording may be negotiated with the contracting officer.

**J.1 Analysis of Material (MAY 07)**

Brand / Grade	Sample ID	Location	<u>Percent</u>							
			Pb	Fe	Cd	Al	Cu	Sn	Total Non-Zn	Zn
Anaconda HG	NH-01	New Haven, IN	0.021	0.003	0.014	<0.002	0.003	<0.001	0.041	99.96

**The analysis results shown are for informational purposes only. See Section A.2.**

## Section J.4 Material Safety Data Sheet (DEC 06)

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### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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DEFENSE LOGISTICS AGENCY  
DEFENSE NATIONAL STOCKPILE CENTER  
8725 JOHN J. KINGMAN ROAD  
SUITE 3339  
FORT BELVOIR, VA 22060-6223

EMERGENCY TELEPHONE NUMBER:  
1-800-424-9300 (NORTH AMERICA)  
1-703-527-3887 (INTERNATIONAL)

#### SUBSTANCE: ZINC

TRADE NAMES/SYNONYMS:  
ZINC ELEMENT; ZINC METAL; UN 1436; Zn; DLA25228; RTECS ZG8600000

CHEMICAL FAMILY: metal

CREATION DATE: Mar 17 1995  
REVISION DATE: Dec 07 2006

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### 2. COMPOSITION, INFORMATION ON INGREDIENTS

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COMPONENT: ZINC  
CAS NUMBER: 7440-66-6  
EC NUMBER (EINECS): 231-175-3  
EC INDEX NUMBER: 030-001-00-1  
PERCENTAGE: 100.0

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### 3. HAZARDS IDENTIFICATION

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NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=0 REACTIVITY=0

#### EMERGENCY OVERVIEW:

**PHYSICAL DESCRIPTION:** Odorless, bluish-white metal in pig, ingot or tub form which may develop a white carbonate coating on exposure to moist air.

**MAJOR HEALTH HAZARDS:** No significant target effects reported.

**PHYSICAL HAZARDS:** Dust/air mixtures may ignite or explode.

#### POTENTIAL HEALTH EFFECTS:

##### INHALATION:

**SHORT TERM EXPOSURE:** irritation, nausea, vomiting, diarrhea, difficulty breathing, headache

**LONG TERM EXPOSURE:** digestive disorders

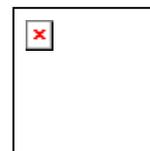
##### SKIN CONTACT:

**SHORT TERM EXPOSURE:** irritation (possibly severe)

**LONG TERM EXPOSURE:** no information on significant adverse effects

##### EYE CONTACT:

**SHORT TERM EXPOSURE:** irritation (possibly severe), tearing



**LONG TERM EXPOSURE:** no information is available

**INGESTION:**

**SHORT TERM EXPOSURE:** nausea, diarrhea, stomach pain, dizziness, hyperactivity or drowsiness, kidney damage

**LONG TERM EXPOSURE:** hair loss, headache, hyperactivity, lung damage, kidney damage, liver damage

**CARCINOGEN STATUS:**

**OSHA:** No

**NTP:** No

**IARC:** No

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#### 4. FIRST AID MEASURES

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**INHALATION:** If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

**SKIN CONTACT:** Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

**EYE CONTACT:** Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

**INGESTION:** If a large amount is swallowed, get medical attention.

**ANTIDOTE:** calcium disodium edetate/dextrose, intravenous; calcium disodium edetate/procaine, intramuscular.

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#### 5. FIRE FIGHTING MEASURES

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**FIRE AND EXPLOSION HAZARDS:** Negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode.

**EXTINGUISHING MEDIA:** dolomite, dry powder for metal fires, dry sand, graphite, soda ash, sodium chloride

Do not get water directly on material.

**FIRE FIGHTING:** Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products.

**LOWER FLAMMABLE LIMIT:** 0.5 oz/ft<sup>3</sup>

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#### 6. ACCIDENTAL RELEASE MEASURES

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**OCCUPATIONAL RELEASE:**

Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

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## 7. HANDLING AND STORAGE

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**STORAGE:** Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store in a cool, dry place. Store in a well-ventilated area. Keep separated from incompatible substances. Keep dry. Keep separated from incompatible substances.

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## 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

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**EXPOSURE LIMITS:**

**ZINC:**

**ZINC OXIDE:**

5 mg/m<sup>3</sup> OSHA TWA (respirable dust fraction)

15 mg/m<sup>3</sup> OSHA TWA (total dust)

10 mg/m<sup>3</sup> OSHA TWA (total particulate) (vacated by 58 FR 35338, June 30, 1993)

5 mg/m<sup>3</sup> OSHA TWA (fume)

10 mg/m<sup>3</sup> OSHA STEL (fume) (vacated by 58 FR 35338, June 30, 1993)

2 mg/m<sup>3</sup> ACGIH TWA (respirable fraction)

10 mg/m<sup>3</sup> ACGIH STEL (respirable fraction)

5 mg/m<sup>3</sup> NIOSH recommended TWA 10 hour(s) (fume) (dust)

15 mg/m<sup>3</sup> NIOSH recommended ceiling (dust)

10 mg/m<sup>3</sup> NIOSH recommended STEL (fume)

1 mg/m<sup>3</sup> DFG MAK (peak limitation category - I, with excursion factor of 1) (respirable fraction) (fume)

**MEASUREMENT METHOD:** NIOSH IV # 7303, 7502; OSHA # ID121, ID143

**VENTILATION:** Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

**EYE PROTECTION:** Eye protection not required under normal conditions.

**CLOTHING:** Protective clothing is not required under normal conditions.

**GLOVES:** Protective gloves are not required under normal conditions.

**RESPIRATOR:** The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

**50 mg/m<sup>3</sup>**

Any dust, mist, and fume respirator.

Any supplied-air respirator.

**125 mg/m<sup>3</sup>**

Any supplied-air respirator operated in a continuous-flow mode.

Any powered, air-purifying respirator with a dust, mist, and fume filter.

**250 mg/m<sup>3</sup>**

Any air-purifying respirator with a full facepiece and a high-efficiency particulate filter.

Any supplied-air respirator with a tight-fitting facepiece that is operated in a continuous-flow mode.

Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter.

Any self-contained breathing apparatus with a full facepiece.

Any supplied-air respirator with a full facepiece.

**500 mg/m<sup>3</sup>**

Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode.

**Escape -**

Any air-purifying respirator with a full facepiece and a high-efficiency particulate filter.

Any appropriate escape-type, self-contained breathing apparatus.

**For Unknown Concentrations or Immediately Dangerous to Life or Health -**

Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full facepiece.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**PHYSICAL DESCRIPTION:** Odorless, bluish-white metal in pig, ingot or tub form which may develop a white carbonate coating on exposure to moist air.

**MOLECULAR WEIGHT:** 65.39

**MOLECULAR FORMULA:** Zn

**BOILING POINT:** 1665 F (907 C)

**MELTING POINT:** 788 F (420 C)

**VAPOR PRESSURE:** 1 mmHg @ 487 C

**VAPOR DENSITY:** Not applicable

**SPECIFIC GRAVITY (water=1):** 7.14

**WATER SOLUBILITY:** reacts

**PH:** Not applicable

**VOLATILITY:** Not applicable

**ODOR THRESHOLD:** Not available

**EVAPORATION RATE:** Not applicable

**COEFFICIENT OF WATER/OIL DISTRIBUTION:** Not available

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## 10. STABILITY AND REACTIVITY

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**REACTIVITY:** Stable at normal temperatures and pressure.

**CONDITIONS TO AVOID:** None reported.

**INCOMPATIBILITIES:** acids, bases, metals, oxidizing materials, reducing agents, halo carbons, metal salts, halogens, combustible materials, amines, metal oxides

ZINC:

ACIDS: Evolves hydrogen gas which may be ignited by the heat of the reaction

ALKALIES: Evolves hydrogen gas which may be ignited by the heat of the reaction.

ALUMINUM (POWDER): Possible ignition.

ALUMINUM-MAGNESIUM ALLOY + RUSTED STEEL: May spark on impact.

AMMONIUM NITRATE: Violent reaction or formation of explosive mixture.

AMMONIUM SULFIDE: May explode in a closed container.

ARSENIC: Incandescent reaction when heated.

ARSENIC TRIOXIDE: Explosive reaction on heating.

BROMOMETHANE: Forms flammable compounds.

CADMIUM: Incandescent reaction.

CALCIUM CHLORIDE: Evolves hydrogen gas which may be ignited by the heat of the reaction.

CARBON DISULFIDE: Incandescent reaction.

CARBON TETRACHLORIDE + METHANOL: Extremely vigorous reaction.

CHLORATES: Forms shock-sensitive mixtures.

CHLORINATED RUBBER: Violent or explosive reaction at elevated temperatures.

CHROMIC ANHYDRIDE: Violent reaction and possible ignition.  
COBALT HALIDE (METHANOLIC SOLUTION) + IRON PENTACARBONYL: Violent reaction.  
ETHYL ACETOACETATE + TRIBROMONEOPENTYL ALCOHOL: May react explosively.  
HALOCARBONS: Possible violent reaction with ignition.  
HALOGENS: Possible ignition.  
HYDRAZINE NITRATE: Ignites on warming.  
HYDROXYLAMINE: May ignite or explode when heated.  
INTERHALOGENS: Violent reaction and possible ignition.  
LEAD AZIDE: Increased sensitivity to explosive decomposition.  
MANGANESE DICHLORIDE: Explosive reaction when heated.  
METAL OXIDES: Possible ignition or incandescent reaction.  
NITRIC ACID: Incandescent reaction.  
2-NITROANISOLE + SODIUM HYDROXIDE: Exothermic reaction.  
NITROBENZENE: May form pyrophoric residue.  
NITRYL FLUORIDE: Incandesces when warmed.  
OXIDIZERS (STRONG): Fire and explosion hazard.  
PEROXYFORMIC ACID: Violent explosion on contact.  
POTASSIUM NITRATE: Explosive reaction on heating.  
POTASSIUM PEROXIDE: Incandescent reaction.  
RHODIUM HALIDES (METHANOLIC SOLUTION) + IRON PENTACARBONYL: Violent reaction.  
RUTHENIUM HALIDES (METHANOLIC SOLUTION) + IRON PENTACARBONYL: Violent reaction.  
SELENIUM: Incandescent reaction.  
SELENINYL BROMIDE: Ignition.  
SILVER + ELECTROLYTES (BATTERIES): May spontaneously combust.  
SODIUM PEROXIDE: Incandescent reaction.  
SULFUR: Violent reaction.  
TELLURIUM: Incandescent reaction.  
ZINC CHLORIDE: May increase flammability.

**HAZARDOUS DECOMPOSITION:**

Thermal decomposition products: oxides of zinc

**POLYMERIZATION:** Will not polymerize.

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## 11. TOXICOLOGICAL INFORMATION

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**ZINC:**

**IRRITATION DATA:** 300 ug/3 day(s)-intermittent skin-human mild

**TOXICITY DATA:** 124 mg/m<sup>3</sup>/50 minute(s) inhalation-human TCLo; 388 mg/kg oral-duck LDLo; 25 mg/kg intratracheal-rat TDLo; 23 gm/m<sup>3</sup>/24 hour(s) multiple-non-mammalian species LC50; 5 gm/kg oral-mouse LDLo; 5 gm/kg oral-mouse TDLo; 2.4 mg/m<sup>3</sup>/5 year(s) intermittent inhalation-woman TCLo; 70 mg/kg/10 week(s) intermittent oral-woman TDLo

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** respiratory disorders, skin disorders and allergies

**TUMORIGENIC DATA:** 12.600 mg/kg oral-mouse TDLo/46 week(s) continuous

**ADDITIONAL DATA:** Excessive zinc intake has been associated with a copper-deficiency anemia.

**HEALTH EFFECTS:**

**INHALATION:**

**ACUTE EXPOSURE:**

ZINC: Inhalation of dust may cause irritation with difficulty in breathing and sneezing. Neurological and psychiatric

symptomology including irritability, upper extremity coarse intention tremor, incoordination, and ataxia have also been reported. Metal fume fever, an influenza-like illness, may occur due to the inhalation of freshly formed metal oxide particles sized below 1.5 microns and usually between 0.02-0.05 microns. Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic, or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude, and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea, and prostration may also occur. Tolerance to fumes develops rapidly, but it is quickly lost. All symptoms usually subside within 24-36 hours.

**CHRONIC EXPOSURE:**

ZINC: Severe gastrointestinal disturbances and hypochromic anemia have been reported, but other chemicals may have contributed to the effects.

**SKIN CONTACT:**

**ACUTE EXPOSURE:**

ZINC: Dust may cause mechanical irritation and mild dermatitis in intertriginous areas. Reaction with moisture on skin may result in serious burns.

**CHRONIC EXPOSURE:**

ZINC: 300 ug applied to human skin intermittently for 3 days caused mild irritation. Allergic reactions are rare, but have been reported.

**EYE CONTACT:**

**ACUTE EXPOSURE:**

ZINC: Dust may cause mechanical irritation or injury to the surface of the eye, with discomfort, reddening, and tearing. Direct contact may cause serious corneal burns.

**CHRONIC EXPOSURE:**

ZINC: No data available.

**INGESTION:**

**ACUTE EXPOSURE:**

ZINC: Large oral doses may cause gastrointestinal distress with stomach cramps, dehydration, electrolyte imbalance, abdominal pain, nausea, vomiting, hematemesis, diarrhea, lethargy, immune system effects, fever, dizziness, tightness in the throat, shock, collapse, renal failure, and death. Survivors may have residual nephritis and strictures of the esophagus and pyloric end of the stomach.

**CHRONIC EXPOSURE:**

ZINC: Patients taking zinc in amounts 10 times the RDA for months and years have not shown any adverse reactions. Excessive absorption may cause copper-deficiency anemia. Ingestion of approximately 85.7 mg/kg/day for 2 days caused lethargy, lightheadedness, staggering, and difficulty in writing clearly. 2 people who ingested 40 ppm in drinking water for several months experienced lack of concentration, drowsiness, mental and physical fatigue, pain in the arms and legs, headache, stiffness, muscle pains, loss of appetite, nausea, weight loss, and lassitude. 90 ppm in the diet for 5 weeks has resulted in a decrease in the HDL cholesterol level. Pancreatic abnormalities have also been observed. A diet of 0.25% in rats caused no injury; above 0.25% there was breakdown of the homeostatic mechanism, growth retardation, hypochromic anemia, and defective mineralization of the bones. Mice fed 500 ppm for 14 months exhibited hypertrophy of the adrenal cortex and changes indicating hyperactivity of the pancreatic islets and pituitary gland; 30,000 ppm for 13 weeks caused liver and kidney damage and some deaths. Cows fed 2% for 2 days developed severe enteritis, with 7 of 40 dying. Severe pulmonary emphysema and changes in the myocardium, kidneys, and liver were observed. Pigs fed >1000 ppm had reduced food intake and weight gain; at >2000 ppm, death occurred after 2 weeks. Bone changes were observed in foals fed 5400 ppm. High dietary levels of zinc have been associated with reduced fetal weights, altered concentrations of fetal iron and copper, and alopecia and reduced growth of offspring in animals.

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## 12. ECOLOGICAL INFORMATION

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**ECOTOXICITY DATA:**

**FISH TOXICITY:** 840 ug/L 96 hour(s) LC50 (Mortality) Banded killifish (*Fundulus diaphanus*)

**INVERTEBRATE TOXICITY:** 45.8 ug/L 72 hour(s) EC50 (Shell Valve Closure) Swan mussel (*Anodonta cygnea*)

**ALGAL TOXICITY:** 65 ug/L 4 hour(s) IC50 (Population Growth) Diatom (*Nitzschia closterium*)

**PHYTOTOXICITY:** 10000 ug/L 4 hour(s) EC50 (Growth) Duckweed (*Lemna minor*)

**FATE AND TRANSPORT:**

**BIOCONCENTRATION:** 7100 uM 2 hour(s) BCFD (Residue) Duckweed (*Lemna trisulca*) 3.06 uM

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## 13. DISPOSAL CONSIDERATIONS

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Dispose in accordance with all applicable regulations.

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## 14. TRANSPORT INFORMATION

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**U.S. DEPARTMENT OF TRANSPORTATION:** No classification assigned.

**CANADIAN TRANSPORTATION OF DANGEROUS GOODS:** No classification assigned.

**LAND TRANSPORT ADR:** No classification assigned.

**LAND TRANSPORT RID:** No classification assigned.

**AIR TRANSPORT IATA:** No classification assigned.

**AIR TRANSPORT ICAO:** No classification assigned.

**MARITIME TRANSPORT IMDG:** No classification assigned.

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## 15. REGULATORY INFORMATION

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**U.S. REGULATIONS:**

**CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):**

**ZINC:** 1000 LBS RQ

**SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):** Not regulated.

**SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):** Not regulated.

**SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):**

ACUTE: No  
CHRONIC: No  
FIRE: No  
REACTIVE: No  
SUDDEN RELEASE: No

**SARA TITLE III SECTION 313 (40 CFR 372.65):**  
**ZINC**

**OSHA PROCESS SAFETY (29CFR1910.119):** Not regulated.

**STATE REGULATIONS:**

**California Proposition 65:** Not regulated.

**CANADIAN REGULATIONS:**

**WHMIS CLASSIFICATION:** Not determined.

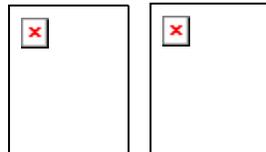
**EUROPEAN REGULATIONS:**

**EC CLASSIFICATION (ASSIGNED):**

F	Highly Flammable
N	Dangerous for the Environment

EC Classification may be inconsistent with independently-researched data.

**DANGER/HAZARD SYMBOL:**



**EC RISK AND SAFETY PHRASES:**

R 15	Contact with water liberates extremely flammable gases.
R 17	Spontaneously flammable in air.
R 50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S 2	Keep out of the reach of children.
S 43	In case of fire, use dry chemical, carbon dioxide, water or regular foam.
S 46	If swallowed, seek medical advice immediately and show this container or label.
S 60	This material and its container must be disposed of as hazardous waste.
S 61	Avoid release to the environment. Refer to special instructions/Safety data sheets.

**GERMAN REGULATIONS:**

**WATER HAZARD CLASS (WGK):**

**STATE OF CLASSIFICATION:** VwVwS

**CLASSIFICATION UNDER HAZARD TO WATER:** 0

**NATIONAL INVENTORY STATUS:**

**U.S. INVENTORY (TSCA):** Listed on inventory.

**TSCA 12(b) EXPORT NOTIFICATION:** Not listed.

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## 16. OTHER INFORMATION

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