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MSDS Number: **A2712** \* \* \* \* \* *Effective Date: 06/13/07* \* \* \* \* \* *Supersedes:*  
*05/07/07*

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From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. And Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

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# ALUMINUM POWDER

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## 1. Product Identification

**Synonyms:** Aluminum, aluminum metallic powder; CI 77000

**CAS No.:** 7429-90-5

**Molecular Weight:** 26.98

**Chemical Formula:** Al

**Product Codes:** 0446

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## 2. Composition/Information on Ingredients

| Ingredient     | CAS No    | Percent   |
|----------------|-----------|-----------|
| Hazardous      |           |           |
| -----          | -----     | -----     |
| -----          |           |           |
| Aluminum Metal | 7429-90-5 | 90 - 100% |
| Yes            |           |           |

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## 3. Hazards Identification

## Emergency Overview

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**WARNING! FLAMMABLE SOLID. DUST MAY FORM FLAMMABLE OR EXPLOSIVE MIXTURE WITH AIR, ESPECIALLY WHEN DAMP. HARMFUL IF INHALED. CAUSES IRRITATION TO EYES AND RESPIRATORY TRACT. MAY AFFECT LUNGS. MAY CAUSE SKIN IRRITATION.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

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Health Rating: 2 - Moderate (Life)

Flammability Rating: 3 - Severe (Flammable)

Reactivity Rating: 3 - Severe (Water Reactive)

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD;  
PROPER GLOVES; CLASS D EXTINGUISHER

Storage Color Code: Red Stripe (Store Separately)

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## Potential Health Effects

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### Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

### Ingestion:

Not considered toxic although aluminum chloride may form slowly in the digestive tract with nausea, vomiting, other gastrointestinal effects in extreme cases.

### Skin Contact:

May cause irritation with redness and pain.

### Eye Contact:

Causes irritation, redness, and pain.

### Chronic Exposure:

Pulmonary fibrosis from chronic inhalation has been reported. Chronic exposure has also produced numbness in fingers and (in one case) brain effects.

### Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance.

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## 4. First Aid Measures

### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

### Ingestion:

Give several glasses of water to drink to dilute. If large amounts were swallowed, get

medical advice.

**Skin Contact:**

Wash exposed area with soap and water. Get medical advice if irritation develops.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

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## 5. Fire Fighting Measures

**Fire:**

Autoignition temperature: 760C (1400F)

Explosive limits not determined. Aluminum powder is flammable and can burn violently in the presence of oxidizing substances and certain metal oxides. Bulk powder, when moistened with water, spontaneously heats. Hazard increases as fineness increases. Reactions with strong acids and alkalis causes the release of flammable hydrogen gas.

**Explosion:**

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Minimum explosible concentration: 0.04 oz/ft<sup>3</sup>. An explosion occurred after mixing sodium hydrosulfite, aluminum powder, potassium carbonate and benzaldehyde. Sensitive to static discharge.

**Fire Extinguishing Media:**

Smother with a suitable dry powder. Do not use water. Do not use halogenated extinguishing media. Pressure from the extinguishing media may cause severe dusting.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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## 6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8.

Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Avoid contact with water. Pick up spill for recovery or disposal and place in a closed container.

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## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Protect from moisture. Avoid dust formation and control ignition sources. Employ grounding, venting and explosion relief provisions in accord with accepted engineering practices in any process capable of generating dust and/or static electricity. Empty only into inert or non-flammable atmosphere. Emptying contents into a non-inert atmosphere where flammable vapors may be present could cause a flash fire or explosion due to electrostatic discharge. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

- OSHA Permissible Exposure Limit (PEL):  
15 mg/m<sup>3</sup> (TWA) total dust and 5 mg/m<sup>3</sup> (TWA)  
respirable fraction for Aluminum metal as Al
- ACGIH Threshold Limit Value (TLV):  
10 mg/m<sup>3</sup> (TWA) Aluminum metal dusts

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

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## 9. Physical and Chemical Properties

**Appearance:**

Fine, free-flowing, silvery powder.

**Odor:**

Odorless.

**Solubility:**

Insoluble in water.

**Density:**

2.70

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

2327C (4221F)

**Melting Point:**

660C (1220F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

1 @ 1284C (2343F)

**Evaporation Rate (BuAc=1):**

No information found.

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## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Reacts with some acids and caustic solutions to produce hydrogen.

**Hazardous Decomposition Products:**

Toxic metal fumes may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Mercury, halocarbons, halogens, water (with bulk aluminum powder) strong oxidizing agents, some acids, bases and many other materials. An explosion occurred after mixing sodium hydrosulfite, aluminum powder, potassium carbonate and benzaldehyde.

**Conditions to Avoid:**

Moisture, heat, flames, ignition sources and incompatibles.

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## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

| -----\Cancer Lists\-----           |                      |             |      |
|------------------------------------|----------------------|-------------|------|
| Ingredient<br>Category             | ---NTP Carcinogen--- |             | IARC |
|                                    | Known                | Anticipated |      |
| Aluminum Metal (7429-90-5)<br>None | No                   | No          |      |

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## 12. Ecological Information

### Environmental Fate:

No information found.

### Environmental Toxicity:

No information found.

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## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

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## 14. Transport Information

### Domestic (Land, D.O.T.)

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**Proper Shipping Name:** ALUMINUM, POWDER UNCOATED, (NON-PYROPHORIC)

**Hazard Class:** 4.3

**UN/NA:** UN1396

**Packing Group:** II

**Information reported for product/size:** 500G

### International (Water, I.M.O.)

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**Proper Shipping Name:** ALUMINUM, POWDER UNCOATED, (NON-

PYROPHORIC)  
**Hazard Class:** 4.3  
**UN/NA:** UN1396  
Packing Group: II  
**Information reported for product/size:** 500G

**International (Air, I.C.A.O.)**

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**Proper Shipping Name:** ALUMINUM, POWDER UNCOATED, (NON-PYROPHORIC)  
**Hazard Class:** 4.3  
**UN/NA:** UN1396  
Packing Group: II  
**Information reported for product/size:** 500G

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----  
-----  
Ingredient TSCA EC Japan  
Australia  
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Aluminum Metal (7429-90-5) Yes Yes No  
Yes

-----\Chemical Inventory Status - Part 2\-----  
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Ingredient Korea --Canada--  
Phil. DSL NDSL  
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Aluminum Metal (7429-90-5) Yes Yes No  
Yes

-----\Federal, State & International Regulations - Part 1\-----  
-----  
313-----  
Ingredient -SARA 302- -----SARA  
Chemical Catg. RQ TPQ List  
-----  
Aluminum Metal (7429-90-5) No No Yes  
No

-----\Federal, State & International Regulations - Part 2\-----  
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TSCA- -RCRA- -

| Ingredient                 | CERCLA | 261.33 | 8 (d) |
|----------------------------|--------|--------|-------|
| Aluminum Metal (7429-90-5) | No     | No     | No    |

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No  
 Reactivity: Yes (Pure / Solid)

**Australian Hazchem Code:** 4Y

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 3 Reactivity: 1

**Label Hazard Warning:**

WARNING! FLAMMABLE SOLID. DUST MAY FORM FLAMMABLE OR EXPLOSIVE MIXTURE WITH AIR, ESPECIALLY WHEN DAMP. HARMFUL IF INHALED. CAUSES IRRITATION TO EYES AND RESPIRATORY TRACT. MAY AFFECT LUNGS. MAY CAUSE SKIN IRRITATION.

**Label Precautions:**

- Keep away from heat, sparks and flame.
- Avoid breathing dust.
- Keep container closed.
- Wash thoroughly after handling.
- Do not contact with water.
- Use only with adequate ventilation.

**Label First Aid:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. In case of skin contact, flush skin with plenty of water for at least 15 minutes. Call a physician if irritation develops.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

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