



Effective Date: July 1, 2006

## Material Safety Data Sheet

**FOR EMERGENCY CALL CHEMTREC – (800) 424-9300**

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Diammonium Phosphate (DAP)

**CAS Number:** 7783-28-0

**Product Uses**

**Agricultural Industry:** Fertilizer  
**Industrial Applications:** Flame retardant agent.  
Corrosion inhibitors.

**Chemical Name:** Ammonium phosphate, dibasic

**Chemical Family:** Ammonium phosphates

**Synonyms and Common Trade Names:** Ammonium phosphate  
Diammonium hydrogen phosphate  
Dibasic ammonium phosphate  
Secondary ammonium phosphate  
DAP

**Company Identification**

**Manufacturer:** CF Industries, Inc.  
**Address:** 4 Parkway North, Suite 400  
Deerfield, Illinois 60015-2590  
**Telephone:** 847-405-2400



Effective Date: July 1, 2006

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	Weight Percentage	CAS Number
Diammonium phosphate	60-85	7783-28-0
Aluminum ammonium phosphates	4-10	Not applicable
Iron ammonium phosphates	3-5	Not applicable
Ammonium sulfate	4-5	7783-20-2
Fluorides, as F	2-3	Not applicable
Calcium ammonium phosphates	1-2	Not applicable
Water	1-3	7732-18-5
Ammonium Nitrate	<1	6484-52-2
Urea	<1	57-13-6
Miscellaneous metal, ammonium and other compounds	<1 each	Not applicable



Effective Date: July 1, 2006

### 3. HAZARDS IDENTIFICATION

#### Emergency Overview

**Caution!** When heated to decomposition diammonium phosphate may emit toxic fumes of phosphorous oxides, nitrogen oxides and ammonia. Do not taste or swallow. Wash thoroughly after handling. Wear appropriate personal protection equipment. Slippery when wet.

Brown to black granules that are odorless or give off a slight ammonia odor.

#### Potential Health Effects

**Eyes:** Contact may cause mild eye irritation including stinging, watering, and redness.

**Skin:** Contact may cause mild irritation including redness and a burning sensation. No harmful effects from skin absorption have been reported.

**Inhalation:** No information available. Studies by other exposure routes suggest a low degree of hazard by skin irritation.

**Ingestion:** Low degree of toxicity by ingestion.

**Pre-Existing Medical Conditions:** None known.

**Signs and Symptoms:** Effects of overexposure may include irritation of the nose, throat and digestive tract, nausea, vomiting, diarrhea, coughing and shortness of breath.

#### **Late Toxicities:**

**Cancer:** No data available.

**Target Organs:** Inadequate data available.

**Developmental and Reproductive System Effects:** Inadequate data available.

**Other Comments:** Prolonged or repeated overexposure to fluoride compounds may cause fluorosis. Fluorosis is characterized by skeletal changes, consisting of osteosclerosis (hardening or abnormal density of bone) and osteomalacia (softening of bones) and by mottled discoloration of the enamel of teeth (if exposure occurs during enamel formation.) Symptoms may include bone and joint pain and limited range of motion.

This material contains iron compound(s) of unknown composition. Effects of overexposure to dusts can include irritation of the eyes and respiratory tract, pneumoconiosis (dust congested lungs), pneumonitis (lung inflammation), coughing, vomiting, diarrhea, abdominal pain and jaundice.



Effective Date: July 1, 2006

## 4. FIRST AID

**Eyes:** Hold eyelids open and flush eyes immediately with water for at least 15 minutes. Seek medical attention if necessary.

**Skin:** Wash affected areas with soap and water. Remove contaminated clothing and shoes. Seek medical attention if necessary. Wash clothing and shoes before reuse..

**Inhalation:** If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

**Ingestion:** If person is conscious, immediately give water or milk (about 4 oz. for adults; too much may cause vomiting). Do not induce vomiting. Seek medical attention immediately. If person is unconscious, do not give anything by mouth.

Notes to Physician: If person has been exposed to concentrated decomposition products, treat symptomatically and watch for delayed symptoms of pulmonary edema. Intubation or tracheostomy may be necessary following severe exposure.

**Notes to Physician:** None.



Effective Date: July 1, 2006

## 5. FIRE FIGHTING MEASURES

<b>Flammability:</b>	Diammonium phosphate is not flammable or combustible.		
<b>Flash Point (test method):</b>	Not applicable.		
<b>Flammable Limits:</b>	Not applicable.		
<b>Explosive Limits:</b>	Not applicable.		
<b>Autoignition Temperature:</b>	Not applicable.		
<b>Extinguishing Media:</b>	Not applicable.		
<b>NFPA Fire Rating:</b>	Flammability	0	
	Health Hazard	1	
	Reactivity	0	
	Specific Hazard	Not applicable	

**KEY:** Least=0 Slight=1 Moderate=2 High=3 Extreme=4

**Special Firefighting Procedures:** Firefighters should wear appropriate protective clothing and self-contained breathing apparatus with full-face piece operated in positive pressure mode because toxic gases (ammonia and, possibly, small amounts of phosphorus oxides and nitrogen oxides) can be emitted in fires.

**Unusual Fire and Explosive Hazards:** DAP can release toxic and/or irritating ammonia and fluorides when subject to temperatures above 310°F in the presence of water or steam. When dry and heated rapidly, above 310°F, DAP will release ammonia.

**Hazardous Combustion Products:** Phosphorous oxides. Nitrogen oxides. Ammonia



Effective Date: July 1, 2006

## 6. ACCIDENTAL RELEASE MEASURES

Recover any reusable product, taking care not to generate excess dust. Dispose of in accordance with federal, state and local regulations.

Neutralizing Chemicals: Not applicable

## 7. HANDLING AND STORAGE

**Handling:** The use of respiratory protection is advised when concentrations exceed any established exposure limits (see Section 8). Wash thoroughly after handling. Do not wear contaminated clothing or shoes. Use good personal hygiene practice.

**Storage:** Store in a cool, dry, ventilated area. Isolate from incompatible substances, particularly alkaline materials, as ammonia gas will be released.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Ventilation:** Use process enclosure, general dilution ventilation or local exhaust systems, where necessary, to maintain airborne ammonia and dust concentrations below the OSHA standard or in accordance with applicable regulations.

### Preventative Measures / Specific Personal Protective Equipment

**Eyes:** Safety glasses with side shields are recommended. Maintain eye wash fountain in work area.

**Skin:** The use of gloves impermeable to the specific material handled (including cotton, etc.) is advised to prevent excessive skin contact.

**Respiratory:** Protection is not required where adequate ventilation conditions exist. Use dust mask or other appropriate respiratory protection when engineering controls are not feasible or during operations that generate airborne concentrations exceeding the relevant standards. In closed areas, wear appropriate respiratory equipment, when necessary, to protect against ammonia fumes. A respiratory protection program that meets OSHA's 29 CFR 1910.134 requirements must be followed whenever workplace conditions warrant a respirator's use.



Effective Date: July 1, 2006

### **Exposure Guidelines\***

Although standards for diammonium phosphate (DAP) have not been established, the following nuisance dust standards are applicable. The following standards for ammonia are also applicable since DAP gradually emits ammonia when exposed to air or when in contact with high pH or alkaline materials.

ACGIH TLV:	(PNOC): 10 mg/m <sup>3</sup> TWA
	Ammonia: 25 ppm (17 mg/m <sup>3</sup> ) TWA
	35 ppm (24 mg/m <sup>3</sup> ) STEL
OSHA PEL:	(PNOC): 5 mg/m <sup>3</sup> TWA (respirable)
	15 mg/m <sup>3</sup> TWA (total)
	Ammonia: 50 ppm (35 mg/m <sup>3</sup> ) TWA

* TLV	=	Threshold Limit Values
PEL	=	Permissible Exposure Limits
TWA	=	8-hour Time-weighted Average
STEL	=	15-minute Short Term Exposure Limit
PNOC	=	Particulates Not Otherwise Classified



Effective Date: July 1, 2006

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Brown to black granules
<b>Odor:</b>	Odorless or slight ammonia odor
<b>Odor Threshold Level:</b>	Not applicable.
<b>Physical State:</b>	Solid
<b>pH:</b>	Approximately 8 (1% aqueous solution)
<b>Vapor Pressure:</b>	(ammonia released): < 100Pa at 20°C
<b>Vapor Density (Air = 1):</b>	Not applicable.
<b>Boiling point (760 mm Hg):</b>	Not applicable.
<b>Melting point:</b>	Decomposes at 155°C (311°F)
<b>Solubility in water (per 100 g water):</b>	588 g/L at 20°C (68°F)
<b>Specific gravity (H<sub>2</sub>O = 1):</b>	1.619 (heavier than water)
<b>Evaporation rate (Butyl acetate = 1):</b>	Not applicable.
<b>Percentage volatile by volume (%):</b>	Stable in air
<b>Molecular weight:</b>	132.07
<b>Molecular formula:</b>	(NH <sub>4</sub> ) <sub>2</sub> HPO <sub>4</sub>





Effective Date: July 1, 2006

## 10. STABILITY AND REACTIVITY

**Stability (thermal, light, etc.):** Stable under ordinary conditions of use and storage.

**Incompatibility (Materials to avoid):** Contact with high pH or alkaline materials (e.g., sodium hypochlorite) may cause diammonium phosphate to emit ammonia.

**Hazardous Decomposition Products:** Gradually loses ammonia when exposed to air at room temperature. Decomposes to ammonia and monoammonium phosphate at around 70°C (158°F). At 155°C (311°F), DAP emits phosphorus oxides, nitrogen oxides and ammonia.

**Hazardous Polymerization:** Will not occur.

**Conditions to Avoid:** Avoid contact with alkaline materials.

## 11. TOXICOLOGICAL INFORMATION

### DAP

**Oral LD50:** > 2,000 mg/kg (rats)

**Dermal LD50:** > 5,000 mg/kg (rats)

**Inhalation LC50:** No data available.

Urea dust at 22 mg/m<sup>3</sup> caused mild irritation (species not specified).

**Sensitization Capability:** No data available.

**Synergistic Chemicals:** No data available.

**Genetic Toxicity:** Negative results in both gene mutation and chromosomal aberration in-vitro assays.

**Human Experience:** DAP is affirmed as “generally recognized as safe” (GRAS) for use as a food additive for both human food and ruminant feed according to prescribed conditions.

**Chronic Toxicity:** No carcinogenicity data available.

There is no definitive information available on carcinogenicity, mutagenicity, target organs or developmental toxicity for this product.



Effective Date: July 1, 2006

## **Iron Compounds**

**Target Organ(s):** Chronic exposure to high concentrations of iron have been associated with hemosiderosis, hemochromatosis and in severe cases, liver cirrhosis. Typical occupational exposures to iron compounds are not expected to cause these effects. Chronic inhalation can produce “mottling” of the lungs (siderosis). This is considered a benign pneumoconiosis and does not normally lead to fibrosis or cause significant physiologic impairment.

## **12. ECOLOGICAL INFORMATION**

Can be harmful to aquatic life at high concentrations. Large-scale release may lead to eutrophication of waterways. Notify local health and wildlife officials and operators of any nearby water intakes upon contamination.

### **Ecotoxicity Information:**

The acute toxicity of diammonium phosphate is slightly toxic to practically non-toxic for both freshwater fish and invertebrates.

The 96-hour LC50 for fathead minnows is 156 mg/L (static and flow-through bioassays), the 96-hour LC50 for rainbow trout is 172 mg/L (flow-through bioassay), and the 96-hour LC50 for coho salmon is 245 mg/L (static bioassay). The 96-hour LC50 for bluegills is >1,500 mg/L (static Bioassay). The 96-hour LC50 for large mouth bass is 1,160->1,500 mg/L (static bioassay). The 96-hour LC50 for mature scuds/sideswimmers is 40 mg/L (static bioassay). No toxicity observed in aquatic algae (*Selenastrum*) at concentrations up to 97.1 mg/L. DAP is not toxic to algae but can stimulate algal growth.

### **Environmental Fate Information:**

Diammonium phosphate is considered biodegradable and is taken up as a nutrient by vegetation.



Effective Date: July 1, 2006

### **13. DISPOSAL CONSIDERATIONS**

Diammonium phosphate is not considered a hazardous waste under Federal Hazardous Waste Regulations 40 CFR 261. Consult local, state or federal environmental regulatory agencies for acceptable disposal procedures and locations. Follow standard disposal procedures.

### **14. TRANSPORT INFORMATION**

Diammonium phosphate is not listed as a hazardous material by the U.S. Department of Transportation (DOT), Transport Canada, the International Maritime Organization (IMO) or the United Nations (UN).

**Proper Shipping Name:** Chemicals, N.O.S. (non-regulated)

### **15. REGULATORY INFORMATION**

**OSHA (Occupational Safety and Health Administration):** This material is considered to be hazardous as defined by the OSHA Hazard Communication Standard.

**SARA TITLE III (Superfund Amendment and Reauthorization Act of 1986):** No federal requirements. User should contact local and state regulatory agencies for information on additional or more stringent reporting requirements.

**Sections 311/312:** This product has been reviewed according to the USEPA "Hazard Categories" promulgated under Sections 311 and 312 of SARA Title III and is considered, under applicable definitions, to meet the following categories:

Acute: yes    Chronic: no    Fire: no    Reactivity: no

**DOT (Department of Transportation):** Please refer to Section 14 (Transport Information) for guidance concerning transportation.

This material has not been identified as a carcinogen by NTP, IARC or OSHA.



Effective Date: July 1, 2006

## 16. DOCUMENTARY INFORMATION AND DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

---

Issue Date: July 1, 2006

Previous Issue Date: July 1, 2003

CF Industries believes the information contained herein is accurate; however, CF Industries makes no guarantees or warranties with respect to such accuracy and assumes no liability in connection with the use of the information contained herein by any party. The provision of the information contained herein by CF Industries is not intended to be and should not be construed as legal advice or as ensuring compliance by other parties. Judgments as to the suitability of the information contained herein for the party's own use or purposes are solely the responsibility of that party. Any party using this product should review all applicable laws, rules or regulations prior to use.