

# COBALT NITRATE

CCO

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Cobalt(II) nitrate Cobaltous nitrate Cobaltous nitrate hexahydrate		Solid	Red	Odorless
		Sinks and mixes with water.		
<p>Keep people away. Shut off ignition sources and call fire department. Avoid contact with solid and dust. Notify local health and pollution control agencies. Protect water intakes.</p>				
<b>Fire</b>	Not flammable. Will increase the intensity of a fire. <b>POISONOUS GASES MAY BE PRODUCED IN FIRE.</b> Wear goggles and self-contained breathing apparatus. Flood discharge area with water.			
<b>Exposure</b>	CALL FOR MEDICAL AID. DUST Irritating to eyes, nose and throat. If inhaled will cause coughing or difficult breathing. If in eyes, hold eyelids open and flush with plenty of water. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.  SOLID Irritating to skin and eyes. If swallowed will cause nausea and vomiting. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.			
<b>Water Pollution</b>	HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.			

### 1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse  
Stop discharge

### 2. CHEMICAL DESIGNATIONS

- 2.1 **CG Compatibility Group:** Not listed.
- 2.2 **Formula:** Co(NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O
- 2.3 **IMO/UN Designation:** Not listed
- 2.4 **DOT ID No.:** Not listed
- 2.5 **CAS Registry No.:** 10141-05-6
- 2.6 **NAERG Guide No.:** Not listed
- 2.7 **Standard Industrial Trade Classification:** 52359

### 3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Bu. Mines approved respirator; rubber gloves; safety goggles; protective clothing
- 3.2 **Symptoms Following Exposure:** Inhalation causes shortness of breath and coughing; permanent disability may occur. Ingestion causes pain and vomiting. Contact with eyes or skin causes irritation.
- 3.3 **Treatment of Exposure:** INHALATION: move to fresh air; if breathing has stopped, begin artificial respiration and call a doctor. INGESTION: give large amount of water; induce vomiting; call a doctor. EYES: flush with water for at least 15 min. SKIN: flush with water.
- 3.4 **TLV-TWA:** 0.02 mg/m<sup>3</sup> as cobalt
- 3.5 **TLV-STEL:** Not listed.
- 3.6 **TLV-Ceiling:** Not listed.
- 3.7 **Toxicity by Ingestion:** Grade 3; LD<sub>50</sub> about 400 mg/kg (rabbit)
- 3.8 **Toxicity by Inhalation:** Currently not available.
- 3.9 **Chronic Toxicity:** Causes malignant tumors in rabbits
- 3.10 **Vapor (Gas) Irritant Characteristics:** Currently not available
- 3.11 **Liquid or Solid Characteristics:** Currently not available
- 3.12 **Odor Threshold:** Odorless
- 3.13 **IDLH Value:** 20 mg/m<sup>3</sup> as cobalt
- 3.14 **OSHA PEL-TWA:** 0.1 mg/m<sup>3</sup> as cobalt
- 3.15 **OSHA PEL-STEL:** Not listed.
- 3.16 **OSHA PEL-Ceiling:** Not listed.
- 3.17 **EPA AEGL:** Not listed

### 4. FIRE HAZARDS

- 4.1 **Flash Point:**  
Not flammable
- 4.2 **Flammable Limits in Air:** Not flammable
- 4.3 **Fire Extinguishing Agents:** Not pertinent
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent
- 4.5 **Special Hazards of Combustion Products:** Toxic oxides of nitrogen may form in fire.
- 4.6 **Behavior in Fire:** May increase the intensity of fire
- 4.7 **Auto Ignition Temperature:** Not pertinent
- 4.8 **Electrical Hazards:** Not pertinent
- 4.9 **Burning Rate:** Not pertinent
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** Not Pertinent
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** Not Pertinent
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

### 5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
- 5.2 **Reactivity with Common Materials:**  
Contact with wood and paper may cause fire.
- 5.3 **Stability During Transport:** Stable
- 5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
- 5.5 **Polymerization:** Not pertinent
- 5.6 **Inhibitor of Polymerization:** Not pertinent

### 6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:**  
10 ppm\*/stickleback/lethal conc. limit/fresh water  
15 ppm\*/68 hr/stickleback/avg. survival time/fresh water  
20 ppm\*/96 hr/stickleback/avg. survival time/fresh water  
\*as cobalt
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):** None
- 6.4 **Food Chain Concentration Potential:**  
Bioconcentration of 200-1000 fold only under constant exposure. Not significant in spill conditions.
- 6.5 **GESAMP Hazard Profile:** Not listed

### 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Technical hexahydrate. May also be shipped as anhydrous solid.
- 7.2 **Storage Temperature:** Ambient
- 7.3 **Inert Atmosphere:** No requirement
- 7.4 **Venting:** Open
- 7.5 **IMO Pollution Category:** Currently not available
- 7.6 **Ship Type:** Currently not available
- 7.7 **Barge Hull Type:** Currently not available

### 8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Not listed
- 8.2 **49 CFR Class:** Not pertinent
- 8.3 **49 CFR Package Group:** Not listed.
- 8.4 **Marine Pollutant:** No
- 8.5 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue)	0 1
Flammability (Red)	0 0
Instability (Yellow)	0 0
Special (White)	OX OX

- \* First column refers to non-fire situations.
- 8.6 **EPA Reportable Quantity:** Not listed.
- 8.7 **EPA Pollution Category:** Not listed.
- 8.8 **RCRA Waste Number:** Not listed
- 8.9 **EPA FWPCA List:** Not listed

### 9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Solid
- 9.2 **Molecular Weight:** 291.04
- 9.3 **Boiling Point at 1 atm:** Not pertinent (decomposes)
- 9.4 **Freezing Point:** 131°F = 55°C = 328°K
- 9.5 **Critical Temperature:** Not pertinent
- 9.6 **Critical Pressure:** Not pertinent
- 9.7 **Specific Gravity:** 1.54 at 20°C (solid)
- 9.8 **Liquid Surface Tension:** Not pertinent
- 9.9 **Liquid Water Interfacial Tension:** Not pertinent
- 9.10 **Vapor (Gas) Specific Gravity:** Not pertinent
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent
- 9.12 **Latent Heat of Vaporization:** Not pertinent
- 9.13 **Heat of Combustion:** Not pertinent
- 9.14 **Heat of Decomposition:** Not pertinent
- 9.15 **Heat of Solution:** 31 Btu/lb = 17 cal/g = 0.71 X 10<sup>5</sup> J/kg
- 9.16 **Heat of Polymerization:** Not pertinent
- 9.17 **Heat of Fusion:** Currently not available
- 9.18 **Limiting Value:** Currently not available
- 9.19 **Reid Vapor Pressure:** Currently not available

### NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
	N O T  P E R T I N E N T		N O T  P E R T I N E N T		N O T  P E R T I N E N T		N O T  P E R T I N E N T

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
34	84.730		N		N		N
36	85.469		O		O		O
38	86.200		T		T		T
40	86.929		P		P		P
42	87.669		E		E		E
44	88.400		R		R		R
46	89.129		T		T		T
48	89.870		I		I		I
50	90.599		N		N		N
52	91.330		E		E		E
54	92.070		N		N		N
56	92.799		T		T		T
58	93.530		E		E		E
60	94.270		N		N		N
62	95.000		T		T		T
64	95.730						
66	96.469						
68	97.200						
70	97.929						
72	98.669						
74	99.400						
76	100.099						
78	100.900						
80	101.599						
82	102.299						
84	103.099						