

BERYLLIUM SULFATE

BES

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Beryllium sulfate tetrahydrate	Solid	White	Odorless
Sinks and mixes with water			
Restrict access. AVOID CONTACT WITH SOLID AND DUST. Wear dust respirator and rubber overclothing (including gloves). Notify local health and pollution control agencies. Protect water intakes.			
Fire	Not flammable. POISONOUS GASES MAY BE PRODUCED IN FIRE. Wear goggles and self-contained breathing apparatus.		
Exposure	CALL FOR MEDICAL AID. DUST POISONOUS IF INHALED OR IF SKIN IS EXPOSED. 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. Harmful if swallowed. 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.		
Water Pollution	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 Stop discharge	2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: Not listed. 2.2 Formula: BeSO ₄ ·4H ₂ O 2.3 IMO/UN Designation: 6.1/1566 2.4 DOT ID No.: 1566 2.5 CAS Registry No.: 13510-49-1 2.6 NAERG Guide No.: 154 2.7 Standard Industrial Trade Classification: 52349
3. HEALTH HAZARDS	
3.1 Personal Protective Equipment: Respiratory protection; gloves; freshly laundered clothing; chemical safety goggles 3.2 Symptoms Following Exposure: Any dramatic, unexplained weight loss should be considered as possible first indication of beryllium disease. Other symptoms include anorexia, fatigue, weakness, malaise. Inhalation causes pneumonitis, nasopharyngitis, tracheobronchitis, dyspnea, chronic cough. Contact with eyes causes conjunctival inflammation. Contact with skin causes dermatitis of primary irritant or sensitization type; causes ulcer formation when in contact with cuts. 3.3 Treatment of Exposure: INHALATION: take chest x-ray immediately to check for evidence of pneumonitis. INGESTION: induce vomiting; get medical attention. EYES: flush with water for at least 15 min.; get medical attention. SKIN: cuts or puncture wounds in which beryllium may be embedded under the skin should be thoroughly cleansed immediately by a physician. 3.4 TLV-TWA: 0.002 mg/m ³ as beryllium 3.5 TLV-STEL: Not listed. 3.6 TLV-Ceiling: 0.01 mg/m ³ as beryllium. 3.7 Toxicity by Ingestion: Grade 3; oral rat LD ₅₀ = 82 mg/kg 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: Beryllium disease may occur in the lymph nodes, liver, spleen, kidney, etc., as well as lung. 3.10 Vapor (Gas) Irritant Characteristics: Currently not available 3.11 Liquid or Solid Characteristics: Currently not available 3.12 Odor Threshold: Currently not available 3.13 IDLH Value: 4 mg/m ³ as beryllium. 3.14 OSHA PEL-TWA: 0.002 mg/m ³ as beryllium. 3.15 OSHA PEL-STEL: 0.025 mg Be/m ³ 30 minute peak per 8 hour shift. 3.16 OSHA PEL-Ceiling: 0.005 mg/m ³ as beryllium. 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 beryllium oxide and sulfuric acid fumes may form in fire. 4.6 Behavior in Fire: Currently not available 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	7. SHIPPING INFORMATION 7.1 Grades of Purity: High purity; Analytical grade 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
5. CHEMICAL REACTIVITY 5.1 Reactivity with Water: No reaction 5.2 Reactivity with Common Materials: Currently not available 5.3 Stability During Transport: Solid 5.4 Neutralizing Agents for Acids and Caustics: Not pertinent 5.5 Polymerization: Not pertinent 5.6 Inhibitor of Polymerization: Not pertinent	8. HAZARD CLASSIFICATIONS 8.1 49 CFR Category: Poison 8.2 49 CFR Class: 6.1 8.3 49 CFR Package Group: II 8.4 Marine Pollutant: No 8.5 NFPA Hazard Classification: Not listed 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
6. WATER POLLUTION 6.1 Aquatic Toxicity: 11 ppm/96 hr/fathead minnow/TL _m /hard fresh water 0.2 ppm/96 hr/fathead minnow/TL _m /soft fresh water 6.2 Waterfowl Toxicity: Currently not available 6.3 Biological Oxygen Demand (BOD): None 6.4 Food Chain Concentration Potential: Bioconcentration of 100-fold can occur under constant exposure. Not significant in spill conditions. 6.5 GESAMP Hazard Profile: Not listed	9. PHYSICAL & CHEMICAL PROPERTIES 9.1 Physical State at 15° C and 1 atm: Solid 9.2 Molecular Weight: 177.14 9.3 Boiling Point at 1 atm: Not pertinent 9.4 Freezing Point: Not pertinent 9.5 Critical Temperature: Not pertinent 9.6 Critical Pressure: Not pertinent 9.7 Specific Gravity: 1.71 at 11°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: -11 Btu/lb = -6 cal/g = -0.3 X 10 ³ 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	26.110		N		N		N
36	26.220		O		O		O
38	26.330		T		T		T
40	26.440		P		P		P
42	26.560		E		E		E
44	26.670		R		R		R
46	26.780		T		T		T
48	26.890		I		I		I
50	27.000		N		N		N
52	27.110		E		E		E
54	27.220		N		N		N
56	27.330		T		T		T
58	27.440		P		P		P
60	27.560		E		E		E
62	27.670		R		R		R
64	27.780		T		T		T
66	27.890						
68	28.000						
70	28.110						
72	28.220						
74	28.330						
76	28.440						
78	28.560						
80	28.670						
82	28.780						
84	28.890						