CHLORENDIC ANHYDRIDE HANDLING/STORAGE GUIDELINES

THESE GUIDELINES WERE DEVELOPED BY VELSICOL CHEMICAL CORPORATION AND ARE INTENDED TO PROVIDE INFORMATION FOR THE SAFE HANDLING AND THE STORAGE OF CHLORENDIC ANHYDRIDE. THIS INFORMATION SHOULD BE USED SOLELY AS A GUIDE IN DEVELOPING PROCEDURES AND CONSTRUCTING FACILITIES FOR HANDLING THESE MATERIALS. CUSTOMERS SHOULD DETERMINE FOR THEMSELVES THE APPROPRIATE PROCEDURES AND FACILITIES FOR THEIR OPERATIONS. FURTHER, LOCAL AND STATE REGULATIONS REGARDING THE HANDLING AND STORAGE OF CHEMICALS MAY VARY WIDELY. THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), ENVIRONMENTAL PROTECTION AGENCY (EPA), NATIONAL FIRE PROTECTION AGENCY (NAPA) AND A USER'S INSURANCE COMPANY ALSO IMPOSE SAFETY STANDARDS. KNOWLEDGE OF THESE AND OTHER APPROPRIATE LAWS AND REGULATIONS AS WELL AS CONSULTATION WITH THE USERS OWN TECHNICAL AND LEGAL ADVISORS SHOULD PROVIDE FURTHER GUIDANCE.

I. CHLORENDIC ANHYDRIDE PROPERTIES

Chlorendic Anhydride (CA) is of the Chlorinated Bicyclic Anhydride chemical family with a molecular weight of 371 and the chemical formula $C_9H_2Cl_6O_3$. The finished product is a fine crystalline solid white to yellowish powder with no distinctive odor. Important physical properties are listed below:

Specific Gravity	1.73 (H_2O = 1)
Melting Point	235^{o} C

Additional physical information may be found in the accompanying Material Safety Data Sheet.

Chlorendic Anhydride is not regulated by DOT.

OSHA hazardous ingredients as defined by 29 CFR 1910.1200 includes:

- Chlorendic Anhydride (95% min),
- Chlorendic Acid *(may exceed 0.1-3% depending on storage conditions and length of storage).*
- Chlorobenzene (0-3.5%)
- Maleic Anhydride (0-1.0%)

The solvent contains up to 3% occluded chlorobenzene, which can flash during handling if static discharge occurs.

II. SAFE HANDLING PROCEDURES

Personal Protective Equipment - All personnel involved in the manufacture, transfer, loading and unloading of Chlorendic Anhydride are required to wear specific protective clothing and safety equipment. Standard gear consists of hard hat, goggles, gloves, safety shoes/boots, and long sleeve coveralls. In areas where the dry product can produce a dusty environment, a full-face piece cartridge respirator is required. When dusty atmosphere exceeds $1mg/m^3$ a full-face piece air supplied respirator is recommended. It is recommended that the employees remove all safety gear and shower at the end of the workday.

Chlorendic Anhydride reacts with water and/or sunlight to form Chlorendic Acid. The National Toxicology Program (NTP) has concluded that chlorendic acid showed clear evidence of carcinogenicity (cancer) in animals. The International Agency for Research on Cancer (IARC) has given Chlorendic Acid an overall evaluation of 2B (possibly carcinogenic).

Chlorendic Anhydride may be harmful if swallowed, irritating to eyes, skin and respiratory tract and may cause allergic skin reaction. No exposure limits have been set for Chlorendic Anhydride.

First-Aid Procedures

Eyes	Immediately flush with plenty of water for at least 15 minutes. Get medical attention immediately.
Skin	Immediately wash with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Destroy contaminated shoes.
Ingestion	Induce vomiting as directed by medical personnel. Get medical attention. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.
Inhalation	Remove to fresh air/give artificial respiration, if Breathing is difficult, give oxygen. GET MEDICAL ATTENTION.
	IN ALL CASES OF EMERGENCY, CONTACT A PHYSICIAN

III. CHLORENDIC STORAGE

While Chlorendic Anhydride is not flammable, the occluded solvent trapped within the crystal may ignite. Protect against static buildup and/or use in an inert atmosphere.

Chlorendic Anhydride degrades to Chlorendic Acid in the presence of water and/or sunlight. Store in cool, ventilated area away from sources of ignition. Keep away

from direct sunlight or strong incandescent light. Keep drums and bags closed to prevent the absorption of water.

Recommended material of construction for equipment that contacts Chlorendic Anhydride is 316 stainless steel.

IV. CHLORENDIC CONTAINERS – UNLOADING

Falling product can generate a static charge. Protect against the hazards associated with potential static discharge by using an inert atmosphere.

250 LB Fiber Drums – Remove seal and wire-tie on drum ring. Pull locking lever down and pull handle out to release ring. Remove ring and lid from drum. The Chlorendic Anhydride is sealed in an inner bag. Remove wire-tie to open bag. Scoop or shovel product out of drum. If entire contents are not used from the drum, reseal the inner bag tightly and replace top on drum to prevent absorption of water.

500 Kilo and 2000 LB Bags – Support bag with the lifting straps. Pull inner liner through top nozzle and attach to secure structure to minimize the likelihood of liner slipping out of the outer bag with product. Untie string on bottom of bag and pull bottom nozzle out. With the nozzle properly positioned, untie second string to release product.

25 Kilo Bags – The 25 Kilo bag is simply a foil-lined paper bag. Tear or cut a hole in the bag and pour product out.

V. ACCIDENTAL RELEASE MEASURES

SMALL SPILLS - Use appropriate tools to put the spilled solid in a convenient waste disposal container. Standard Personal Protective Equipment mentioned in Section II should be appropriate for personnel involved in the clean up.

LARGE SPILLS – Stop the leak, if possible. Ventilate the area involved. Sweep up the material and place in container for later disposal. Required Personal Protective Equipment should include body covering clothing (e.g. Tyvek suit) and an air supplied respirator if the atmosphere is dusty (>1 mg/m^3).

DISPOSAL – Material should be recycled to process, if possible. Dispose of waste material in accordance with local regulatory requirements.

Dispose of all material according to federal and state regulations.

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