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When using iron or steel equipment, or that fabricated from materials other than the recommended list above, *use only the emulsion (stabilized) form of benzyl chloride*. It is advisable to wet the equipment with soda ash solution just prior to contact with stabilized benzyl chloride. It is also a good precaution to maintain a small amount of soda ash solution in any iron or steel vessel that is used for stabilized benzyl chloride.

Warning: These above precautions are necessary to prevent possible product decomposition that can attain explosive violence.

The emulsion (stabilized) form of benzyl chloride should be used as rapidly as practical in order to avoid excessive storage periods. This is to prevent a possible build-up of a dangerous pressure within a storage vessel, occasioned by loss or dissipation of the stabilizing solution. However, Monsanto stabilized benzyl chloride, in standard containers and under normal storage conditions, exhibits no pressure build-up in periods of as long as two years.

Sampling equipment should be thoroughly cleaned before samples are taken. A recommended procedure is to rinse with C. P. hydrochloric acid until iron free and follow with a distilled water rinse. Sample bottles should be dry when working with anhydrous benzyl chloride. The bottles should preferably be of the ground glass stopper type.

TOXICITY

Care should be exercised in handling and using benzyl chloride. It is irritating to the skin and its vapors are highly irritating to the eyes, nose and throat. Contact with the skin and breathing of the vapors should be avoided. It should not, of course, be taken internally.

In case of accidental contact with the skin, wash the affected area immediately with soap and water and secure medical attention. If it is splashed in the eyes, flush them thoroughly with water for at least fifteen minutes and secure medical attention. If benzyl chloride is accidentally swallowed, induce vomiting immediately, using mustard and water or other emetic, and secure medical attention.

Ventilation should be provided, whenever possible, to maintain vapor concentrations below an irritating level. In all other cases, respiratory protective devices, such as approved gas masks or respirators should be used. In addition the use of various combinations of other protective garments and equipment, such as rubber gloves, rubber aprons, rubber shoes, goggles, etc., is advisable. All protective garments and equipment should be clean before use.

If a spill occurs dissipate the benzyl chloride by flushing with a large amount of water. If that is not possible use materials such as soda ash or lime to absorb the spillage, sweep up and discard, and flush the area with as much water as is available.

CHEMICAL INTERMEDIATE

Santochlor undergoes sulfonation, nitration and other reactions characteristic of aromatic molecules. It is used as an intermediate in the preparation of certain specialty dyes.

INSTRUCTIONS FOR HANDLING SANTOCHLOR

para-Dichlorobenzene, when handled with ordinary care, should lead to no ill effects. However, it is not intended for internal consumption and should this happen inadvertently, an emetic such as mustard water should be administered. A physician should be called.

Care should be taken to avoid prolonged inhalation of high concentrations which may occur in a confined space. If concentrations are sufficiently high, tearing of the eyes will occur. The U. S. Department of Agriculture, Farmer's Bulletin 1246, revised January, 1940, indicates that *para*-Dichlorobenzene vapors are harmless to persons and domestic animals under normal conditions.

If a person is exposed to excessive amounts of vapor, a physician should be called. If material gets into the eyes, they should be flushed immediately with copious amounts of water.

During industrial manufacture, no reports of illness due to Santochlor have been reported in either the manufacturing or packaging operations.

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^{22,23} and aquatic midges²⁴, in termite control^{25,26,27}, a larvacide^{28,29,30,31,32}, a fungicide^{33,34}, a vermifuge^{35,36}, an insecticidal fumigant^{37,38,39,40,41,42,43,44,45}, a wood preservative^{46,47,48,49,50}, a soil poison and soil-steritan^{51,52,53,54} in the control of aquatic weeds^{55,56} and the protection of oysters⁵⁷.

Plastics and Fibers

Ortho-dichlorobenzene has been used³ as a polymerization solvent^{58,59}, as an additive⁶⁰ and as a constituent⁶¹ in polymeric systems.

It also has been investigated as a chain-transfer agent in free-radical polymerizations^{62,63,64}.

Ortho-dichlorobenzene is used as a dye carrier in the dyeing of synthetic fibers^{65,66,67,68,69}, wool^{70,71} and blends of polyester fibers and wool⁷². It is also used in the treatment of synthetic fibers with optical bleaching agents⁷³.

Other Uses

Miscellaneous uses for ortho-dichlorobenzene include its use in food coatings⁷⁴, as an antiseptic for the storage of yams⁷⁵ and a means to control the food-sterilization temperature⁷⁶ in the food industry; as a freezing point lowering additive⁷⁷ in hydraulic and dielectric fluids; an additive⁷⁸ for sulfur-containing fuels for high-speed diesel engines; a cooling liquid⁷⁹ for magnetic coils; a heat transfer fluid⁸⁰ a reaction solvent in the manufacture of vat dyes^{81,82} and in sulfonations⁸³ and as a solvent used in the purification and recovery of maleic anhydride⁸⁴.

Toxicity

"Ortho-dichlorobenzene is irritating to the eyes and prolonged breathing of the vapors in confined spaces may lead to signs of toxicity. Therefore, continuous or repeated contact with the skin or prolonged breathing of the vapors should be avoided."

Safe Handling

Ortho-dichlorobenzene can be handled with complete safety if the following precautions are observed:

- (1) Provide adequate ventilation to avoid excessive breathing of the vapors.
- (2) The material should not be allowed to remain on the skin or clothing for a prolonged period of time.
- (3) A burning or stinging sensation may result from skin contact, but unless an individual is sensitive to the material, no skin irritation is likely.
- (4) If contact with the skin occurs, wash immediately with soap and warm water.

Shipping Information

Shipping Classification (USA):

Ortho-dichlorobenzol

Shipping Regulations:

Product label required by law
16 ounce sample available

Standard Containers:

Tank cars and ICC-17E steel drums containing 550 lbs. net.

The following references were taken from the literature and are given to suggest additional applications for ortho-dichlorobenzene.

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STABILITY AND STORAGE

Ortho-nitroaniline is stable up to 270°C and noncorrosive. It may be safely stored in the original fiber drums for a year or longer but might cake if exposed to high temperature and humidity.

TOXICITY AND SAFE HANDLING

Ortho-nitroaniline is a poisonous substance but may be handled safely if proper precautions are constantly observed. It may exert its toxic effect when swallowed, after inhalation of its dust or vapor, and after absorption through the intact skin. Skin absorption and inhalation of vapor account for most cases of industrial poisoning.

When *ortho*-nitroaniline enters the body—by the digestive tract, the respiratory tract, or the unbroken skin—it complexes with hemoglobin to reduce the oxygen-carrying capacity of the blood. The early signs of acute poisoning include cyanosis—development of blue color of the lips and under the fingernails because of oxygen deficiency. This symptom may be accompanied by a feeling of well-being but is followed by severe headache, weakness, increase in pulse and respiration rates and—if exposure continues—unconsciousness and death.

Exposure to *ortho*-nitroaniline must be prevented by using wholly closed systems for handling and by proper industrial hygiene and engineering controls. The use of approved respiratory protective devices and protective clothing is mandatory in cleaning up spills, cleaning tanks, repairing leaking equipment, etc.

After an exposure, the patient should be removed to fresh air, contaminated clothing removed, and all material washed from the skin with soap and water. Particular care should be taken to be sure that no *ortho*-nitroaniline remains in the hair or under the fingernails. If cyanosis

develops, the patient should be put to bed in a warm, well-ventilated room and kept warm. Oxygen may be administered by properly trained first-aid personnel until a physician arrives.

For more complete, detailed instructions for the safe handling and usage of *ortho*-nitroaniline, refer to "Chemical Safety Data Sheet SD-17, Aniline" (Manufacturing Chemists' Association, Washington, D. C.).

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