GPS Safety Summary

3,3'- Di Chloro Benzidine Dihydro Chloride

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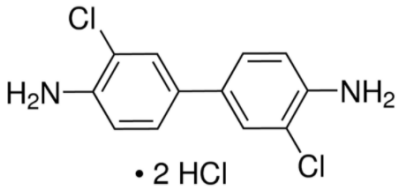
1. General Statement

3,3'-Dichlorobenzidine Dihydrochloride is an organic compound. 3,3'-Dichlorobenzidine Dihydrochloride white to gray white crystalline powder with a mild odor but commercial samples are often colored. It is barely soluble in water and is often supplied as a wet paste. It is a combustible substance, poorly flammable. It slightly soluble in water.Aqueous solution reacts acidic.Acute or chronic health hazards result from the substance.The substance is hazardous to the aquatic environment.

2. Chemical identity

Name : 3,3'-dichlorobenzidine, dihydrochloride
CAS number(s) : 612-83-9
EC number : 210-323-0
Molecular formula : C12H10Cl2N2.2HCl
Structure :



3. Uses and Benefits

3,3'-Dichlorobenzidine Dihydrochloride (and some of its derivatives) is used primarily as an intermediate in the manufacture of pigments for printing inks, textiles, paints, and plastics. It is also used in the analytical determination of gold and as a curing agent in the synthesis of polyurethane elastomers.

4. Physical / chemical properties

Property	Value
Physical state :	Solid
Colour :	White to light grey.
Odour :	Mild odour. Irritating/pungent odour.
pH :	3 – 5 (30 °C)
Melting point	No data available
Boiling point :	No data available
Flash point :	> 200 °C

Density :	No data available
Soluble in Water:	Water: < 0.1 g/100ml

5. Health Effects

Effect Assessment	Result
Acute toxicity (Oral / inhalation / dermal)	Harmful in contact with skin.
Irritation / corrosion Skin / eye/ respiratory tract	It causes serious eye damage
Respiratory or skin sensitisation	May cause an allergic skin reaction.
Toxicity after repeated exposure Oral / inhalation / dermal	NA
Genotoxicity / Mutagenicity	No
Carcinogenicity	May cause cancer.
Toxicity for reproduction	No.

6. Environmental Effects

Effect Assessment	Result
Aquatic toxicity	Yes.
Fate and behavior	**Result**
Persistence and degradability	Inherently biodegradable. Not readily biodegradable in water.
Bioaccumulative potential	Potential for bioaccumulation (500 ≤ BCF ≤ 5000).

7. Exposure

Human health

The substance may cause cancer , cause serious eye damage and also it may cause an allergic skin reaction.

The most likely route of human exposure (workers) is through skin. In industrial settings, ingestion is not an anticipated route of exposure.The probability of exposure to workers is expected to be low because this product is manufactured in an enclosed controlled environment and is transported in well sealed containers. Workers may be exposed during (un)loading, mixing, sampling, analysis or maintenance operations and particularly in case of batch processes.The exposure must be kept as minimum as possible by the use of appropriate risk management measures as suitable collective and personal protective equipment, good industrial hygiene practices and risk communication through appropriate training of workers.

Careless handling or accidental spillage of the chemical could result in exposure to potentially hazardous levels of chemicals.
Industrial workers should ensure that they follow the advice found in the extended safety data sheet (SDS).
Environment

Substance is very toxic to aquatic life with long lasting effects. Care should be taken to avoid releases of these products to sewage, drainage systems and water bodies. Spillage shall be quickly collected in the event of an accidental release. More information about release measures and accidental release measures are available in the extended safety data sheet.

8. Risk Management Recommendations

Human health measures

Organizational	A basic standard of occupational hygiene is recommended. Ensure operatives are well informed of the hazards and trained to minimise exposures.Ensure regular inspection and maintenance of equipment and machines.Handle and store according to the indications of the Safety Data Sheet.	
Protection	Eye protection:	Safety glasses
	Skin and body protection:	Wear suitable protective clothing
	Respiratory protection:	Wear an appropriate mask. Self-contained breathing apparatus
Engineering controls	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.Ensure good ventilation of the work station.	
Environment protective measures		
Products must not be released into water without pre-treatment. Neutralize wastewater before release.		

9. First-aid measures

First-aid measures after inhalation : Remove the person to fresh air and keep them comfortable for breathing. Move the affected person away from the contaminated area and into the fresh air. If you feel unwell, seek medical advice.

First-aid measures after skin contact : After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water. Wash skin with plenty of water. Get medical advice/attention. Take off contaminated clothing. If skin irritation or rash occurs: Get medical advice/attention.

First-aid measures after eye contact : In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.

First-aid measures after ingestion : Rinse mouth out with water. Drink plenty of water. Get immediate medical advice/attention. Call a poison center or a doctor if you feel unwell.

10. Fire-fighting measures

Extinguishing media
Suitable extinguishing media : Water spray. Dry powder. Foam.
Unsuitable extinguishing media : Carbon dioxide (CO2).

Special hazards arising from the substance or mixture
Hazardous decomposition products in case of fire : On burning: release of toxic and corrosive gases/vapours (nitrous vapours, hydrogen chloride, carbon monoxide - carbon dioxide).

Advice for firefighters
Precautionary measures fire : Evacuate area. Eliminate all ignition sources if safe to do so. Keep the container closed when not in use.

Firefighting instructions : Do not enter a fire area without proper protective equipment, including respiratory protection.Prevent fire fighting water from entering the environment. Fight fire from a safe distance and protected location.

11. Accidental release measures

Protective equipment : Wear recommended personal protective equipment. Use self-contained breathing apparatus and chemically protective clothing. ISO 374-1. ISO 16321-1. EN 14605.

Environmental precautions : Avoid release to the environment. Prevent liquid from entering sewers, watercourses,underground or low areas. Notify authorities if a product enters sewers or public waters.

For containment : Stop leak without risks if possible. Collect spillage.

12. Disposal consideration

Regional legislation (waste) : Disposal must be done according to official regulations.

Waste treatment methods : Dispose of contents/container in accordance with licensed collector’s sorting instructions.

Sewage disposal recommendations :Do not discharge into drains or the environment. Dispose of an authorized waste collection point. Hazardous waste shall not be mixed together with other waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals.

13. Handling and storage

Precautions for safe handling : Ensure good ventilation of the work station. Do not handle it until all safety precautions have been read and understood. Avoid contact with skin, eyes and clothing. Eliminate all ignition sources if safe to do so. Handle and open the container with care. Handle carefully. Wear personal protective equipment. Obtain special instructions before use. Take all necessary technical measures to avoid or minimize the release of the product in the workplace. Limit quantities of product at the minimum necessary for handling and limit the number of exposed workers. Provide local exhaust or general room ventilation. Floors, walls and other surfaces in the hazard area must be cleaned regularly. Do not get in eyes, on skin, or on clothing. Avoid breathing dust/fume/gas/mist/vapors/spray.

Hygiene measures : Always wash hands after handling the product. Remove contaminated clothes. Wear personal protective equipment. Separate working clothes from town clothes. Launder separately. Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product.

14. Classification and Labeling

GHS US labeling

Hazard pictograms (GHS US) :

Signal word (GHS US) : Danger

Hazard statements (GHS US) :
H312 - Harmful in contact with skin
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H350 - May cause cancer.
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (GHS US) :
P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P261 - Avoid breathing dust, fume, gas, mist, spray, vapours.
P272 - Contaminated work clothing must not be allowed out of the workplace.
P273 - Avoid release to the environment.
P280 - Wear protective clothing, eye and face protection, protective gloves.
P302+P352 - If on skin: Wash with plenty of water.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P310 - Immediately call a poison center or doctor.
P312 - Call a POISON CENTER, a doctor if you feel unwell.
P321 - Specific treatment (see supplemental first aid instruction on this label).
P333+P313 - If skin irritation or rash occurs: Get medical advice or attention.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P391 - Collect spillage.
P405 - Store locked up.
P501 - Dispose of hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulations.

15. Conclusion

3,3'-Dichlorobenzidine Dihydrochloride white to gray white crystalline powder with a mild odor but commercial samples are often colored. 3,3'-Dichlorobenzidine is considered a carcinogen.It is a combustible substance, poorly flammable. It is slightly soluble in water.Aqueous solution reacts acidic.Acute or chronic health hazards result from the substance.The substance is hazardous to the aquatic environment.This compound has been shown to increase the incidence of tumors in animals. Because it is structurally similar to benzidine, a known carcinogen, it is believed that it may share a similar mechanism in causing bladder cancer in humans. Care should be taken to avoid releases of these products to sewage, drainage systems and water bodies. The exposure must be kept as minimum as possible by the use of appropriate risk management measures as suitable collective and personal protective equipment, good industrial hygiene practices and risk communication through appropriate training of workers.

16. Contact Information within company

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