

NDMRB-SOP-042 Use of cyanogen bromide solution

1.0 Introduction

Cyanogen bromide is the inorganic compound with the formula CNBr or BrCN. It is a colorless solid that is widely used to modify biopolymers, fragment proteins and peptides, and synthesize other compounds. The compound is classified as a pseudohalogen.

5 M cyanogen bromide solution in acetonitrile would be 10 times diluted with acetonitrile in fume hood before use. 1 uL of the diluted cyanogen bromide solution would be transferred to about 10 uL of aqueous solution containing DNA. This chemical reaction would be performed in a closed tube under mild temperature. After the reaction, 10 uL of 1:10 diluted bleach would be carefully added and stand for 10 minutes to fully deactivate the cyanogen bromide.

2.0 Safety precautions

Cyanogen bromide is volatile, and readily absorbed through the skin or gastrointestinal tract. Therefore, toxic exposure may occur by inhalation, physical contact, or ingestion. It is acutely toxic, causing a variety of nonspecific symptoms. Exposure to even small amounts may cause convulsions or death. LD50 orally in rats is reported as 25–50 mg/kg.

The acetonitrile solvent is highly flammable liquid. Keep away from heat/sparks/open flames/hot surfaces.

Wear protective gloves/protective clothing/eye protection/face protection. Cyanogen bromide must be handled in a fume hood at all times.

IF INHALED: Remove victim to fresh air and Keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

3.0 Disposal of waste products

Before disposal, the compound must be fully deactivated with proper amount of 1:10 diluted bleach. Trace amount (e.g. 50 micro gram) could be disposed of to drains after fully deactivation. Large amount should be disposed of via safety office.

4.0 References

- https://en.wikipedia.org/wiki/Cyanogen_bromide
- Cyanogen Bromide HSDB 708. HSDB. NIH / NLM. 2009-04-07.
- Lunn, G.; Sansone, E. B. (1985). Destruction of Cyanogen Bromide and Inorganic Cyanides. *Analytical Biochemistry*. 147 (1): 245–250.
- [MSDS](#)

5.0 Risk Assessment

NDMRB-RA-110 Cyanogen Bromide

6.0 Review

This document should be reviewed by the relevant person every three years