



## CERTIFICATE OF ANALYSIS

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### 1. Identification

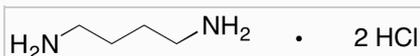
**Catalogue Number:** D416020

**CAS Number:** 333-93-7

**Product:** 1,4-Diaminobutane Dihydrochloride

**Synonym:** 1,4-Butanediamine Dihydrochloride; 1,4-Diaminobutane Dihydrochloride; Putrescine Dihydrochloride; Putrescine Hydrochloride; Tetramethylenediamine Dihydrochloride

**Structure:**



**Molecular Formula:**

C<sub>4</sub>H<sub>14</sub>Cl<sub>2</sub>N<sub>2</sub>

**Molecular weight:**

161.07

**Source of Product:**

N/A

**Solubility:**

Water (Slightly)

**Lot Number:** 2-HBS-112-1

**Purity:** 98%

**Shipping Condition:** This Product Is Stable To Be Shipped At Room Temperature

**Storage Condition:** 4°C

### 2. Warning

**Warning 1:**

**Warning 2:**

**Warning 3:**

### 3. Analytical Information

Tests:	Specifications:	Results:
Appearance	White to Off-White Solid	White Solid
NMR	Conforms to Structure	Conforms
Elemental Analysis	Conforms	%C: 29.91, %H: 8.46, %N: 17.23
HPLC Purity	Report Result	99.97% (ELSD)
MS	Conforms to Structure	Conforms

**Additional Information:** N/A

Purity is based on the analytical results of the tests performed. NMR and Elemental Analysis (if available) may have an accuracy of ± 2%. Isotopic purity is based on mass distribution observed. The contents of the specifications are subject to change without advance notice, and the specification values displayed here are the most up to date values.

### 4. Signatures

Reviewed By	Reviewed By	C of A Approved By	Test Date	Retest Date
Sarbjeeet Kaur	Toni Rantanen	Chanell Chu	11/8/2023	11/6/2027