

Technical Data Sheet (TDS)

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1. Product Overview

- **Product Name:** Cysteamine HCl (Cysteamine Hydrochloride)
- **Chemical Name:** 2-Mercaptoethylamine Hydrochloride; 2-Aminoethanethiol Hydrochloride
- **CAS Number:** 156-57-0
- **Molecular Formula:** C₂H₈ S N (HSCH₂CH₂NH₂·HCl)
- **Molecular Weight:** 113.61 g/mol
- **Product Trait:** White to off-white crystalline powder with slight mercaptan odor; Class 6.1 toxic substance, causes serious eye/skin irritation; non-flammable, slightly hygroscopic, stable under normal storage conditions; freely soluble in water, soluble in low alcohols; core active ingredient with whitening, anti-aging, chelating and biological activity. **FOR INDUSTRIAL, COSMETIC (SKIN/HAIR CARE), FEED AND PHARMACEUTICAL USE ONLY - NOT FOR HUMAN ORAL CONSUMPTION.**
- **Core Properties:** High purity (≥98.5%), low heavy metal and microbial content; stable physicochemical properties; excellent heavy metal chelating ability; good reducing property and biological activity; 24-month long shelf life (sealed, dry); meets industrial, cosmetic, feed and pharmaceutical grade quality standards (compliant with EU/US/FDA/China regulations).
- **Main Application:** Cosmetic raw material (skin whitening, anti-aging, anti-dandruff); pharmaceutical intermediate (cystine, carnosine and drug synthesis); feed additive (animal growth promotion, liver protection, heavy metal detoxification); organic synthesis raw material (thiol compound synthesis); metal chelating agent (heavy metal removal in wastewater/industrial systems); electroplating additive (metal surface brightener).

2. Technical Specifications (Industrial/Cosmetic/Feed/Pharm Grade, Complies with GB/EU/FDA Standards)

Item	Specification (Industrial/Cosmetic/Feed/Pharm Grade)
Appearance	White to off-white crystalline powder, no caking
Assay (Cysteamine Hydrochloride)	≥ 98.5% (Pharm grade ≥99.0%)
Melting Point	67-71 °C
pH Value (5% aq. solution, 25°C)	4.0-6.0
Loss on Drying	≤ 0.5%
Residue on Ignition	≤ 0.1%
Heavy Metals (Pb)	≤ 5 ppm (Pharm grade ≤1 ppm)
Heavy Metals (As)	≤ 1 ppm
Iron (Fe)	≤ 10 ppm (Pharm grade ≤5 ppm)
Total Bacterial Count	≤ 100 CFU/g (Pharm grade ≤10 CFU/g)
E. coli	Negative (all grades)
Solubility	Freely soluble in water, soluble in methanol/ethanol
Decomposition Temperature	≥200°C
Hygroscopy	Slightly hygroscopic
Cosmetic Compatibility	Stable with non-oxidizing cosmetic raw materials (pH 4.0-8.0)
Feed Compatibility	Stable with common feed additives (excluding strong oxidants/alkalis)

3. Product Advantages

1. **High Purity & Consistent Quality:** Assay ≥98.5% (pharm grade ≥99.0%) with ultra-low heavy metal, microbial and impurity content; batch-to-batch consistency (CV ≤0.3%) ensures stable performance in all applications; meets strict EU/FDA/China pharmaceutical/cosmetic/feed grade standards.



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2. **Excellent Functional Properties:** Strong heavy metal chelating ability (binds $\text{Cu}^{2+}/\text{Fe}^{3+}/\text{Zn}^{2+}/\text{Pb}^{2+}$); high biological activity and reducing property; in cosmetic use, inhibits tyrosinase activity for efficient skin whitening and anti-aging; in feed use, promotes animal growth and liver detoxification; ideal intermediate for pharmaceutical synthesis with high reactivity.

4. Application Fields & Dosage Guide

4.1 Main Application Fields

- **Cosmetic Industry (Skin/Hair Care):** Core raw material for skin whitening serums, anti-aging creams, spot-removal lotions, anti-dandruff shampoos and hair care masks; inhibits melanin synthesis, repairs skin barrier, chelates heavy metals in hair and scalp, and reduces dandruff.
- **Pharmaceutical Industry:** Key intermediate for the synthesis of cystine, carnosine, panthenol and various pharmaceutical raw materials; used in the production of drugs for liver disease, cardiovascular disease and skin disease.

4.2 Recommended Dosage (By Application Field, w/w in formulation/solution)

Application Field	Dosage	Remarks
Cosmetic - Skin Whitening/Anti-aging	0.5-5.0%	Main active ingredient, pH adjust to 4.0-8.0
Cosmetic - Anti-dandruff Hair Care	0.2-2.0%	Chelates scalp heavy metals, mix with non-oxidizing surfactants
Pharmaceutical - Intermediate Synthesis	10.0-99.0%	Depending on reaction type, inert gas protection optional
Feed - Poultry/Livestock	0.005-0.1%	Dilute with water before adding to feed, avoid strong alkalis
Feed - Aquatic Animals (Fish/Shrimp)	0.01-0.15%	Mix with feed pellets, no mixing with oxidizing additives
Industrial - Heavy Metal Chelation	5.0-20.0%	Wastewater treatment solution, adjust pH to 5.0-8.0
Industrial - Electroplating Brightener	0.02-0.5%	Nickel/copper plating bath, stainless steel equipment only

5. Usage & Formulation Guidelines

- Dissolve the powder in deionized water (50-60°C) under stirring (300 rpm) to form a 5-10% stock solution; dilute the stock solution to the required concentration (0.5-5.0%) in the aqueous phase; adjust the formulation pH to 4.0-8.0 with citric acid/NaOH; add humectants (glycerol/propylene glycol) and thickeners (xanthan gum/carbomer) and stir evenly; **avoid adding oxidizing ingredients (H_2O_2 , vitamin C ester)** and strong alkalis.
- **Feed Additive Preparation:** Grind the powder to 100-200 mesh (for better dispersion); dilute with corn starch/feed carrier at a ratio of 1:100-1:1000; mix the premix evenly with feed pellets under stirring (room temperature); **do not mix with strong oxidants/alkalis or high-temperature feed ($\geq 80^\circ\text{C}$).**

6. Packaging & Storage

- 100 g/500 g/1 kg Amber glass bottle (pharm/cosmetic lab/R&D/small-batch use, sealed with desiccant + anti-leakage cap)
- 5 kg/10 kg HDPE plastic drum (cosmetic/feed medium-batch use, inner aluminum foil bag + desiccant + double anti-leakage cap)
- 25 kg HDPE plastic drum (industrial/cosmetic/feed bulk use, inner aluminum foil bag + desiccant + metal frame)

7. Safety & Protection

- The product is a **Class 6.1 toxic substance**, causes **serious eye irritation and skin irritation**, and may cause respiratory irritation if inhaled as dust; **all operations must be conducted by trained professional personnel** with full specified PPE (full face shield, chemical-resistant safety goggles, nitrile rubber gloves $\geq 0.40\text{mm}$, chemical-resistant apron/neoprene suit, N95/P95 dust respirator).