

Technical Data Sheet (TDS)

1. Product Overview

- **Product Name:** Adrenocorticotrophic Hormone (ACTH)
- **English Name:** Adrenocorticotrophic Hormone
- **CAS Number:** 9002-60-2
- **Formula:** 39 Amino Acid Polypeptide (Ser-Tyr-Ser-Met-Glu-His-Phe-Arg-Trp-Gly-Lys-Pro-Val-Gly-Lys-Lys-Arg-Arg-Pro-Val-Lys-Val-Tyr-Pro-Asn-Gly-Ala-Glu-Asp-Glu-Ser-Ala-Glu-Ala-Phe-Pro-Leu-Glu-Phe)
- **Molecular Weight:** 4541.9 Da
- **Product Characteristics:** High-purity natural-sourced polypeptide hormone, white lyophilized powder, odorless, soluble in water/saline buffer. High biological activity (≥ 100 IU/mg), low endotoxin and heavy metal content, suitable for biopharmaceutical R&D and biological experiments. Stable at 2-8°C (24 months shelf life), degrades at high temperature and freeze-thaw cycles. No flammable/explosive properties, biodegradable, non-toxic to the environment. Allergic reaction may occur in sensitive individuals; strict PPE required for handling.

2. Technical Specifications (Biopharmaceutical Grade)

Item	Specification
Appearance	White to off-white lyophilized powder
Purity (HPLC)	$\geq 95.0\%$
Biological Activity	≥ 100 IU/mg
pH Value (1mg/mL in H ₂ O, 25°C)	5.0-7.0
Moisture Content	$\leq 5.0\%$
Bacterial Endotoxin	≤ 5 EU/mg
Sterility	Negative
Heavy Metals (Pb)	≤ 5 ppm
Protein Content	$\geq 90.0\%$
Aggregation (SEC-HPLC)	$\leq 3.0\%$
Solubility	Soluble in water/0.9% saline buffer
Optical Rotation	$[\alpha]_{20}^D = -60$ to -70° (1 mg/mL in H ₂ O)
Storage Stability	24 months (2-8°C, sealed, protected from light)
Reconstituted Stability	72 hours (2-8°C, 1 mg/mL aqueous solution)

3. Product Advantages

1. **High Purity & Activity:** $\geq 95\%$ HPLC purity and ≥ 100 IU/mg biological activity; consistent batch-to-batch quality ensures reliable experimental results.
2. **Low Impurities:** Ultra-low bacterial endotoxin (≤ 5 EU/mg), heavy metal and aggregation content; meets biopharmaceutical R&D and cell culture requirements.
3. **Good Stability:** 24-month shelf life at 2-8°C; stable reconstituted solution (72h at 2-8°C) for lab use; lyophilized form with mannitol as lyoprotectant to prevent degradation.
4. **Sterile & Apyrogenic:** Sterile (negative) and low endotoxin; no additional sterilization required for in vitro experiments/cell culture.
5. **Biodegradable & Enviro-Friendly:** Fully biodegradable via peptide hydrolysis; non-toxic to aquatic/soil organisms; no environmental pollution risk.
6. **Easy to Use:** Soluble in water/0.9% saline buffer (no organic solvent required); simple reconstitution for immediate lab use; compatible with most biological buffers.

4. Application Fields

- **Biopharmaceutical R&D:** ACTH drug development, formulation research, potency testing and quality control of corticotropin products.
- **In Vitro Diagnostics:** Raw material for ACTH immunoassay kits (ELISA, chemiluminescence); clinical diagnostic reagent for endocrine disease detection.
- **Biological Experiment Research:** Endocrinology research, adrenal gland function study, hormone interaction experiment and animal model research.



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- **Cell Culture Additive:** Low-concentration additive for adrenal cortical cell culture; promotes cell proliferation and hormone secretion (in vitro).
 - **Academic Research:** Peptide hormone structure-activity relationship study, protein folding and degradation research, neuroendocrine system research.
- ### 5. Usage Methods
- **Reconstitution:** Add sterile water/0.9% physiological saline buffer to the lyophilized powder to prepare the desired concentration (1mg/mL recommended for stock solution); gently swirl (do not vortex) to dissolve completely (avoid foam generation).
 - **Stock Solution Storage:** Prepare 1mg/mL stock solution at 2-8°C for ≤72 hours; aliquot and freeze at -20°C for long-term use (avoid repeated freeze-thaw cycles).
 - **Working Concentration:** Dilute stock solution with appropriate biological buffer (PBS, HEPES) to working concentration (0.01-10 µg/mL, adjust according to experiment).
 - **Optimal Conditions:** Use sterile technique for all operations; perform experiments at 25±2°C; avoid high temperature (>37°C) and extreme pH for reaction systems; discard unused reconstituted solution after 72 hours.
- ### 6. Packaging & Storage
- **Packaging Specifications:** 1mg/vial, 5mg/vial, 10mg/vial, 50mg/vial (sterile glass vials with rubber stoppers and aluminum crimp seals); customized packaging available upon request (100mg-1g).
 - **Storage Conditions:** 2-8°C (refrigerated), dark, sealed, protected from light and moisture; avoid freeze-thaw cycles, high temperature (>40°C) and room temperature storage for long term; store in a dedicated biological reagent refrigerator.
 - **Shelf Life:** 24 months (unopened, 2-8°C, specified conditions); 72 hours (reconstituted 1mg/mL solution, 2-8°C); 6 months (aliquoted stock solution, -20°C, avoid repeated freeze-thaw).
 - **Transportation:** UN 3373 (Biological Substance, Category B); **refrigerated transport (2-8°C)** with insulated packaging and ice packs; use express delivery with cold chain service; avoid freeze-thaw and direct sunlight during transport.
- ### 7. Safety & Protection
- **Mandatory PPE:** Wear nitrile gloves, N95 dust mask, chemical splash goggles and lab coat for all handling operations; use face shield and sterile gloves for powder weighing/reconstitution.
 - **Handling Precautions:** Operate in a clean, well-ventilated lab/dust-free workbench; avoid dust generation/inhalation/skin/eye contact; use sterile technique for reconstitution; no eating/drinking/smoking in the work area.
 - **Allergy Prevention:** Sensitive individuals (to polypeptides/proteins) should avoid contact; have antihistamine/bronchodilator available in the lab for emergency use.
 - **Emergency Measures:** Rinse eyes with plenty of water for 15-20 minutes and consult a doctor if contact occurs; wash skin with soap and water for 10 minutes if irritation/rash occurs; move to fresh air and seek medical attention for respiratory allergy symptoms.
- ### 8. Quality Assurance
- Manufactured under ISO 9001 (quality) and ISO 14001 (environmental) management systems; strict GMP-compliant production process for biopharmaceutical raw materials.
 - Each batch is tested for purity, biological activity, endotoxin, sterility and heavy metals; accompanied by a Certificate of Analysis (COA) to ensure compliance with biopharmaceutical standards.
 - All raw materials are sourced from GMP-certified suppliers; full traceability of production and testing records for all batches.
 - Provide professional technical support: reconstitution guidance, buffer selection, experimental protocol optimization and data analysis; on-site technical service for large-scale R&D projects.
 - Comply with international regulations (USP, EP, CP, REACH, TSCA); complete product certification and testing reports available upon request; custom synthesis service for modified ACTH polypeptides available.