

Safety Data Sheet (MSDS) - Mivacurium Chloride

According to: GB/T 16483, GB/T 17519, GHS Rev.9, USP 45, EP 10.0 **Product Name:** Mivacurium Chloride **CAS Number:** 94246-42-9 **Product Number:** MC-20260222 **Brand:** SIGALD **Revision Date:** 22 FEB 2026 **Supplier:** NEWAY SINOPHC TECH. LIMITED **Address:** RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE **Telephone/Fax:** +86-021-50350029 **Emergency Telephone:** +86-021-50350029 (24h Pharmaceutical Raw Material Emergency Response)

SECTION 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Identifiers

- Product Name: Mivacurium Chloride
- CAS-No.: 94246-42-9
- MDL No.: MFCD00072118
- Synonyms: (±)-2,2'-[1,5-Pentanediy]bis(oxy-3,1-phenylene)]bis[1,2,3,4-tetrahydro-6,7-dimethoxy-2-methylisoquinolinium] dichloride; Mivacurium dichloride
- Product Number: MC-20260222

1.4 Relevant Identified Uses and Uses Advised Against

- **Identified Uses:** Pharmaceutical raw material for the production of clinical non-depolarizing muscle relaxant injections (only for licensed pharmaceutical enterprises).
- **Uses Advised Against:** Non-pharmaceutical use, direct clinical administration (raw material only), household use, unauthorized processing/sale, use in food/cosmetic production, and unlicensed clinical use.

SECTION 2: Hazards Identification

2.1 GHS Classification

- Acute toxicity, oral (Category 4)
- Acute toxicity, dermal (Category 4)
- Acute toxicity, inhalation (dust/mist, Category 4)
- Specific target organ toxicity - single exposure (skeletal muscle, nervous system, Category 3)
- Serious eye irritation (Category 2)
- Skin irritation (Category 2)

2.2 GHS Label Elements

- **Hazard Pictograms:** Exclamation mark (!)
- **Signal Word:** Warning
- **Hazard Statements:**
 - H302: Harmful if swallowed
 - H312: Harmful in contact with skin
 - H332: Harmful if inhaled
 - H315: Causes skin irritation
 - H319: Causes serious eye irritation
 - H373: May cause damage to organs (skeletal muscle, nervous system) through prolonged or repeated exposure
- **Precautionary Statements:**
 - P261: Avoid breathing dust/fume/gas/mist/vapors/spray
 - P270: Do not eat, drink or smoke when using this product
 - P280: Wear protective gloves/eye protection/face protection
 - P301+P312: If swallowed: Call a POISON CENTER/doctor if you feel unwell
 - P302+P352: If on skin: Wash with plenty of soap and 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.
 - P312: Call a POISON CENTER/doctor if you feel unwell

- P405: Store locked up
- P501: Dispose of contents/container in accordance with local/national/international regulations

2.3-2.6 Hazards Summary

- **Physical/Chemical Hazards:** Non-flammable, non-explosive, non-oxidizing under normal use; stable at recommended storage temperature (2~8°C).
- **Health Hazards:** Inhalation/skin contact/swallowing causes skeletal muscle weakness, neuromuscular junction block and mild central nervous system depression; skin irritation and serious eye irritation; prolonged exposure may cause chronic muscle weakness and neuromuscular damage.
- **Environmental Hazards:** Low toxicity to aquatic organisms; no long-term adverse environmental effects; slightly biodegradable in aquatic environments.

SECTION 3: Composition/Information on Ingredients

- **Substance/Mixture:** Pure pharmaceutical grade substance (100% w/w)
- **Active Ingredient:** Mivacurium Chloride (CAS:94246-42-9) | Hazard classification: see Section 2
- **No other ingredients/additives**

SECTION 4: First Aid Measures

4.1 First-Aid Measures

- **Inhaled:** Move victim to fresh air; keep respiratory tract open. If breathing is difficult or respiratory muscle paralysis occurs, give artificial ventilation and oxygen immediately; **call a poison center/physician at once** and administer cholinesterase inhibitors (neostigmine) under medical supervision if needed.
- **Skin Contact:** Remove contaminated clothing and shoes; rinse skin with plenty of soap and running water for 10~15 minutes. If irritation/redness occurs, apply mild emollient and seek medical advice; monitor for muscle weakness symptoms.
- **Eye Contact:** Rinse eyes thoroughly with plenty of sterile water for injection for 15 minutes (lift upper/lower eyelids); remove contact lenses if worn. **Consult an ophthalmologist immediately** (causes serious eye irritation).
- **Swallowed:** Do not induce vomiting; rinse mouth with water. **Call a poison center/doctor at once**; provide artificial ventilation if respiratory muscle paralysis occurs, and administer specific antagonists for neuromuscular block under medical supervision.

4.2 Most Important Symptoms

Acute: Skeletal muscle weakness, limb fatigue, difficulty breathing, respiratory muscle paralysis (severe cases), skin redness/irritation, eye redness/pain/tearing; mild nausea and dizziness. Delayed: Prolonged exposure may cause chronic muscle weakness, neuromuscular junction dysfunction and recurrent eye irritation.

4.3 Medical Attention

Inform the physician of the product name (Mivacurium Chloride) and CAS number; treat symptomatically (e.g., artificial ventilation for respiratory muscle paralysis, cholinesterase inhibitors for neuromuscular block, anti-irritation treatment for skin/eye damage).

SECTION 5: Firefighting Measures

5.1 Extinguishing Media

- **Suitable:** Dry powder, carbon dioxide (CO₂), foam; water spray (for cooling fire-exposed containers).
- **Unsuitable:** No restrictions; avoid direct high-pressure water on bulk powder (to prevent dust spread and inhalation).

5.2 Special Hazards



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No hazardous combustion products under normal fire conditions; thermal decomposition at high temperature (>250°C) produces small amounts of carbon monoxide (CO), nitrogen oxides (NO_x) and hydrogen chloride (HCl).

5.3 Firefighter Advice

Wear self-contained breathing apparatus (SCBA) and full fire-fighting protective gear; fight fire from upwind; cool containers with water spray until fire is out; prevent fire water from entering drainage systems and water bodies; collect fire debris as hazardous waste for disposal.

SECTION 6: Accidental Release Measures

6.1 Personal Precautions

- Wear full PPE (nitrile rubber gloves, chemical safety goggles, N95 dust mask, impermeable protective clothing); avoid any contact with spilled material.
- Evacuate non-essential personnel to a safe distance; set up warning zones; operate in a well-ventilated area with local exhaust ventilation.
- Prepare emergency respiratory support equipment in the spill area in case of accidental inhalation leading to muscle weakness.

6.2 Environmental Precautions

Prevent spilled powder/leachate from entering sewers, rivers, lakes, soil and groundwater; contain spilled material with inert absorbents (e.g., sand, diatomite) to avoid environmental contamination.

6.3 Containment and Cleaning Up

- **Small Spill:** Absorb with inert absorbent; place into a sealed hazardous waste container for pharmaceutical waste disposal; mark the container clearly.
- **Large Spill:** Contain with dikes; collect with an anti-static vacuum cleaner into a sealed stainless steel drum; dispose of by licensed hazardous waste treatment enterprises.
- Do not reuse contaminated absorbents; do not wash spilled material into drainage systems; decontaminate the spill area with neutral detergent and rinse with water.

SECTION 7: Handling and Storage

7.1 Safe Handling

- Operate only in GMP-certified workshops by trained pharmaceutical production personnel; use closed operation and local exhaust ventilation/dust collection system to avoid dust generation/inhalation.
- Do not eat, drink or smoke during handling; wash hands/face thoroughly with soap and water after operation; change work clothes if contaminated.
- Avoid contact with strong acids, strong bases, high temperature (>40°C) and strong light (to prevent drug degradation and decomposition); prepare emergency respiratory support equipment in the operation area.

7.2 Safe Storage

- **Storage Conditions:** 2 ~ 8°C (refrigerated, dark place); tightly sealed HDPE/aluminum foil/stainless steel containers; relative humidity ≤60%.
- **Incompatibilities:** Strong acids (pH<3), strong bases (pH>10), oxidizing agents (e.g., hydrogen peroxide, potassium permanganate), reducing agents (e.g., sodium borohydride), cholinesterase inhibitors.
- **Storage Class:** Pharmaceutical raw material (locked storage in a dedicated, alarm-equipped pharmaceutical warehouse with 24h temperature monitoring).
- **Shelf Life:** 24 months (unopened, 2~8°C refrigeration); 6 months after opening (sealed, refrigerated).

SECTION 8: Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

- No official national/international OEL for Mivacurium Chloride; use **best practice exposure control** (closed system, dust collection) to minimize occupational exposure.
- Biological limit: No established standard; regular physical examination for operators (focus on neuromuscular and respiratory system function).

8.2 Exposure Controls

- **Engineering Controls:** Closed operation system, local exhaust ventilation, dust collection system, GMP workshop air filtration (HEPA filter), real-time temperature monitoring.
- **Personal Protective Equipment (PPE):**
 - Eye/Face: Chemical safety goggles + face shield (for bulk powder handling)
 - Skin: Nitrile rubber gloves (thickness ≥ 0.1 mm) + impermeable protective clothing + anti-static shoes
 - Respiratory: N95 dust mask (for normal powder handling); SCBA (for emergency spills/leaks)
 - Other: Disposable hairnet/mask/gown (GMP compliance), emergency eye wash, shower and respiratory support equipment.
- **Hygiene:** Dedicated hand washing station; no food/drinks in the operation area; separate storage of work clothes and daily clothes; regular occupational health checkups for operators.

SECTION 9: Physical and Chemical Properties

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Property	Value
Physical State	White to off-white crystalline powder
Odor	Odorless
Melting Point	165 ~ 170°C (decomposes)
Boiling Point	Decomposes before boiling (>200°C)
Flash Point	Non-flammable (no flash point)
Autoignition Temperature	>300°C
Solubility	Freely soluble in water/methanol; soluble in ethanol; slightly soluble in chloroform
pH Value (1% aqueous solution, 25°C)	4.0 ~ 6.0
Density (25°C, solid)	1.26 g/cm ³
Vapor Pressure (25°C)	<0.001 hPa (negligible)
Particle Size	95% pass through 100-mesh sieve (pharmaceutical grade)
Chloride Content	5.1 ~ 5.7%
Stability	Stable at 2~8°C; degrades at >25°C (long-term) and >40°C (rapid)

SECTION 10: Stability and Reactivity

10.1 Chemical Stability

Stable under **recommended storage conditions (2~8°C, dark, sealed)**; no degradation for the shelf life and good compatibility with common pharmaceutical excipients and clinical infusion solutions.

10.2-10.5 Reactivity Summary

- No hazardous reactions under normal use/handling conditions.
- **Conditions to Avoid:** High temperature (>40°C), direct strong light, moisture, contact with strong acids/alkalis/oxidizing/reducing agents.
- **Incompatible Materials:** Concentrated HCl/H₂SO₄, NaOH/KOH, hydrogen peroxide, potassium permanganate, sodium borohydride, neostigmine, pyridostigmine.

- **Hazardous Decomposition Products:** Carbon monoxide (CO), nitrogen oxides (NO_x), hydrogen chloride (HCl) and aromatic hydrocarbons (at >250°C).
- No polymerization under normal storage and use conditions.

SECTION 11: Toxicological Information

11.1 Key Toxicological Data

- **Acute Toxicity:**
 - Oral (Rat, LD₅₀): 350 mg/kg bw
 - Dermal (Rabbit, LD₅₀): 410 mg/kg bw
 - Inhalation (Rat, LC₅₀, 4h): 1.6 mg/m³ (dust)
- **Skin Irritation (Rabbit):** Moderate irritation (4h exposure, erythema and slight edema; reversible)
- **Eye Irritation (Rabbit):** Severe irritation (24h exposure, conjunctivitis, corneal redness and tearing; reversible within 72h)
- **Sensitization:** No skin/respiratory sensitization (Guinea pig test)
- **Carcinogenicity:** IARC Class 3 (Not classifiable as to its carcinogenicity to humans)
- **Reproductive Toxicity:** No teratogenic/fertility damage effects at clinical relevant doses (rat/mouse tests); high doses may cause fetal muscle development retardation.
- **Target Organ Toxicity:** Skeletal muscle (weakness, paralysis), neuromuscular junction (block), central nervous system (mild depression); no other organ toxicity at occupational exposure levels.

11.2 Toxicity Summary

The main toxic effect of Mivacurium Chloride is neuromuscular junction block and skeletal muscle weakness at high exposure levels, which may lead to respiratory muscle paralysis in severe cases; local effects include moderate skin irritation and serious eye irritation. No chronic toxic effects, carcinogenicity or obvious reproductive toxicity at occupational exposure levels; all acute effects are reversible with symptomatic treatment (e.g., artificial ventilation, cholinesterase inhibitors).

SECTION 12: Ecological Information

12.1 Ecotoxicity

- Fish (Zebrafish, LC₅₀, 96h): 18.2 mg/L
- Daphnia (EC₅₀, 48h): 12.5 mg/L
- Algae (EC₅₀, 72h): 20.3 mg/L
- **Conclusion:** Low toxicity to aquatic organisms; no acute lethal effect on aquatic life at normal environmental concentrations.

12.2-12.7 Ecological Properties

- **Persistence/Degradability:** Slightly biodegradable (BOD₅/COD = 0.28~0.38) in aquatic environments; degraded by microbial action in natural water bodies.
- **Bioaccumulative Potential:** Low (log Kow=3.1; bioaccumulation factor (BAF) <150 in fish)
- **Mobility in Soil:** Low (adsorbs to soil organic matter; no leaching to groundwater)
- **PBT/vPvB:** Not classified as PBT/vPvB
- **Other Adverse Effects:** No adverse effects on soil microorganisms and terrestrial plants; no eutrophication risk.

SECTION 13: Disposal Considerations

13.1 Waste Treatment

- **Product Waste:** Classified as **pharmaceutical hazardous waste**; dispose of by licensed hazardous waste treatment enterprises (incineration at >800°C with flue gas purification treatment to remove HCl).
- **Packaging Waste:** Rinse packaging with methanol (3 times); collect the rinse solution and incinerate with the product waste; decontaminate the clean packaging and dispose of as pharmaceutical hazardous waste (no recycling).

- **Do not dispose of with household waste, general industrial waste or medical waste;** do not discharge into sewers/rivers/soil/groundwater.

13.2 Disposal Regulations

Comply with China's **Hazardous Waste Pollution Control Law, Pharmaceutical Waste Disposal Standards** and EU **REACH/WEEE** regulations.

SECTION 14: Transport Information

14.1-14.7 Transport Details

- **UN Number:** UN 3077 (Environmentally hazardous substance, solid, n.o.s.)
- **UN Proper Shipping Name:** Mivacurium Chloride (pharmaceutical raw material)
- **Transport Hazard Class:** 9 (Miscellaneous dangerous goods)
- **Packaging Group:** III
- **Marine Pollutant:** No
- **Special Transport Requirements:**
 1. Refrigerated transport (2~8°C) with real-time temperature monitoring; use sealed, shockproof, moisture-proof, light-proof and tamper-proof packaging.
 2. Load/unload gently; avoid package damage; store separately from food, feed, strong acids/alkalis and oxidizing agents in the transport vehicle.
 3. The transport vehicle is equipped with fire-fighting equipment, emergency spill treatment materials and simple respiratory support equipment; no smoking/open fire during transport.
 4. Comply with national pharmaceutical raw material transportation regulations for road/air/sea transport.
- **International Transport:** Comply with IATA/IMDG/ADR regulations for Class 9 dangerous goods.

SECTION 15: Regulatory Information

15.1 National/International Regulations

- **China:**
 - Pharmaceutical Administration Law (pharmaceutical raw material classification)
 - Hazardous Chemical Safety Management Regulation (Class 9 miscellaneous dangerous goods)
 - Chinese Pharmacopoeia (2025 Edition)
 - GMP for Pharmaceutical Raw Materials
- **International:**
 - GHS Rev.9 (hazard classification)
 - USP 45 / EP 10.0 (pharmacopoeial standards)
 - REACH (EU) (registered; not in SVHC Candidate List)
 - TSCA (US) (listed on the TSCA Inventory)
 - IATA/IMDG (Class 9 transport regulations)

15.2 Other Requirements

- Production/sale/use limited to **licensed pharmaceutical enterprises** with GMP certification.
- Occupational operation requires professional pharmaceutical production training and compliance with GMP/GLP guidelines; establish a complete production and quality record system for traceability.

SECTION 16: Other Information

- **MSDS Validity:** This MSDS is valid for 3 years from the revision date (22 FEB 2026) unless the product formula or hazard information changes.
- **Disclaimer:** This MSDS is based on current scientific and technical knowledge; the supplier is not liable for any damage caused by improper use, non-compliance with regulations, or unauthorized handling of the product.
- **Additional Information:** For more technical/formulation data, contact the supplier's technical department (+86-021-50350029 ext. 811).



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- **Key Reminder:** This product is a clinical pharmaceutical raw material for muscle relaxation; any unauthorized production/sale/use/transport will be subject to legal liability in accordance with the law.



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