

Specification Sheet

Chemical Name		CAS No.
trans-4,5-Difluoro-1,3-dioxolan-2-one (DFEC)		311810-76-1
Testing Parameters	Testing Method	Specification
Appearance	Visual Inspection	Colorless, clear liquid
Purity (wt%)	GC	≥99.0
APHA Color	UV-Vis	≤30
Moisture (ppm)	Karl Fisher	≤200
Acidity/HF (ppm)	Titration	≤50



Safety Data Sheet (SDS)

trans-4,5-Difluoro-1,3-dioxolan-2-one (DFEC)

CAS Number: 311810-76-1

SECTION 1: IDENTIFICATION

- **Product Name:** trans-4,5-Difluoro-1,3-dioxolan-2-one
- **Synonyms:** rel-(4S,5S)-4,5-Difluoro-1,3-dioxolan-2-one, rel-(4R,5R)-4,5-Difluoro-1,3-dioxolan-2-one
- **CAS Number:** 311810-76-1
- **Molecular Formula:** $C_3H_2F_2O_3$
- **Recommended Use:** Laboratory chemical, research and development, intermediate
- **Supplier:** Automat Solutions, Inc.
- **Emergency Contact:** 510-982-6488

SECTION 2: HAZARD IDENTIFICATION

- **GHS Classification:**
 - Skin Irritation – Category 2
 - Eye Irritation – Category 2A
 - Specific Target Organ Toxicity (Single Exposure) – Category 3 (Respiratory tract irritation)
- **Signal Word:** Warning
- **Hazard Statements:**
 - H315: Causes skin irritation
 - H319: Causes serious eye irritation
 - H335: May cause respiratory irritation
- **Precautionary Statements:**
 - P261: Avoid breathing fumes, mist, spray, vapors



- P264: Wash thoroughly after handling
- P271: Use only outdoors or in a well-ventilated area
- P280: Wear protective gloves/protective clothing/eye protection/face protection
- P302+P352: If on skin: Wash with plenty of soap and water
- P305+P351+P338: If in eyes: Rinse cautiously, remove contact lenses if easy to do, continue rinsing
- P304+P340: If inhaled: Remove person to fresh air and keep comfortable for breathing
- P337+P313: If eye irritation persists: Get medical attention
- P332+P313: If skin irritation occurs: Get medical attention
- P362+P364: Take off contaminated clothing and wash before reuse
- P403+P233: Store in a well-ventilated place. Keep container tightly closed
- P405: Store locked up
- P501: Dispose of contents/container in accordance with regulations

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Number	% Composition
trans-4,5-Difluoro-1,3-dioxolan-2-one	311810-76-1	≤ 100%

SECTION 4: FIRST AID MEASURES

- **Inhalation:** Move to fresh air. Get medical attention. If not breathing, give artificial respiration.
- **Skin Contact:** Wash with plenty of soap and water. Seek medical attention if irritation persists.
- **Eye Contact:** Rinse thoroughly for at least 15 minutes. Remove contact lenses. Seek medical attention.
- **Ingestion:** Do not induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get medical help.



- **Note to Physician:** Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

- **Suitable Extinguishing Media:** Alcohol-resistant foam, CO₂, dry chemical, water spray
- **Hazards:** Thermal decomposition may produce carbon oxides and hydrogen fluoride
- **Protective Equipment:** Wear gas-tight protective clothing and SCBA

SECTION 6: ACCIDENTAL RELEASE MEASURES

- **Personal Precautions:** Use appropriate PPE. Ensure ventilation. Avoid vapor/spray inhalation.
- **Environmental Precautions:** Prevent entry into drains and waterways. Notify authorities if contamination occurs.
- **Cleanup Methods:** For large spills, use vacuum or pump followed by absorbent. Use explosion-proof equipment. Ventilate area.

SECTION 7: HANDLING AND STORAGE

- **Handling:** Use with adequate ventilation. Avoid contact with skin/eyes and breathing vapors.
- **Storage:** Store in tightly closed container under inert gas in a dry, well-ventilated place. Protect from moisture.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

- **Engineering Controls:** Use local exhaust. Eye wash stations and safety showers recommended.
- **Personal Protective Equipment:**
 - **Hands:** Protective gloves (per OSHA 29 CFR 1910.138)
 - **Eyes/Face:** Chemical safety goggles and face shield
 - **Skin/Body:** Suitable protective clothing
 - **Respiratory:** Use approved respiratory protection (29 CFR 1910.134) if ventilation is inadequate



SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

- **Physical State:** Liquid
- **Color:** No data available
- **Odor:** No data available
- **Boiling Point:** No data available
- **Melting/Freezing Point:** No data available
- **Flash Point:** No data available
- **Vapor Pressure/Density:** No data available
- **Solubility:** No data available
- **Molecular Weight:** 124.04 g/mol
- **Autoignition Temperature:** No data available

SECTION 10: STABILITY AND REACTIVITY

- **Stability:** Stable under recommended conditions
- **Incompatible Materials:** Strong oxidizing agents
- **Conditions to Avoid:** Heat, flames, sparks
- **Hazardous Decomposition Products:** CO, CO₂, HF (in fire)

SECTION 11: TOXICOLOGICAL INFORMATION

- **Acute Toxicity:** Not classified
- **Skin Irritation:** Causes skin irritation (H315)
- **Eye Irritation:** Causes serious eye irritation (H319)
- **Respiratory Irritation:** May cause respiratory irritation (H335)
- **Carcinogenicity, Mutagenicity, Reproductive Toxicity:** Not classified

SECTION 12: ECOLOGICAL INFORMATION

- **Toxicity:** No data available
- **Persistence & Degradability:** No data available



- **Bioaccumulation:** No data available
- **Mobility in Soil:** No data available

SECTION 13: DISPOSAL CONSIDERATIONS

- **Waste Treatment:** Dispose via licensed hazardous waste facility
 - **Recommendations:** Incineration with afterburner and flue gas scrubber. Follow all federal, state, and local regulations.
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SECTION 14: TRANSPORT INFORMATION

- **DOT / IATA / IMDG:** Not regulated for transport

SECTION 15: REGULATORY INFORMATION

- **TSCA:** Not listed
- **US Federal Regulations:** Not subject to SARA Title III Section 313
- **State Regulations:**
 - **California Proposition 65:** Not listed as a carcinogen or reproductive toxin

SECTION 16: OTHER INFORMATION

- **NFPA Ratings:**
 - Health: 3
 - Fire: 1
 - Reactivity: 0
- **HMIS Ratings:**
 - Health: 2
 - Flammability: 1
 - Physical Hazard: 0
- **Revision Date:** May 2025



- **Disclaimer:** This SDS is intended as a safety guide and does not constitute a warranty. Automat Solutions, Inc. is not responsible for damages resulting from handling or contact.

