



8210 N. Austin Avenue, Morton Grove, IL 60053-3205, U.S.A.
 847-967-6000 800-323-8144
 (Monday - Friday: 7:30 a.m. - 4:00 p.m. CST)

Emergency Contact:
 INFOTRAC 800-535-5053 [U.S.A.]

Name: N-Methyl-N-(trimethylsilyl)trifluoroacetamide + 1% Trimethylchlorosilane or MSTFA + 1% TMCS
 Code: 1-270690-200, 1-270690-500, 1-270691-200, 1-270692-200, 1-270693-200, 1-270694-200

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SECTION 1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

- 1.1 Product Identifier
 - Name N-Methyl-N-(trimethylsilyl)trifluoroacetamide + 1% Trimethylchlorosilane
 - Code 1-270690-200, 1-270690-500, 1-270691-200, 1-270692-200, 1-270693-200, 1-270694-200
- 1.2 Use of Substance/Mixture
 - Use Analytical Reagent—GC Derivatization; Silylation Reagent
- 1.3 Details of Manufacturer/Supplier
 - Company Regis Technologies, Inc.
 8210 N. Austin Avenue
 Morton Grove, IL 60053
 847-967-6000; 800-323-8144 (toll free)
 Email: cservice@registech.com
 www.registech.com
- 1.4 Emergency Telephone
 - INFOTRAC 800-535-5053 [U.S.A.]

SECTION 2 HAZARDS IDENTIFICATION

- 2.1 Classification of the Substance or Mixture
 - GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
 - Physical Hazards
 - Flammable Liquid Category 3 H226
 - Health Hazards
 - Skin Corrosion / Irritation Category 1B H314
 - Serious Eye Damage / Irritation Category 1 H318
 - Environmental Hazards - Not classified

GHS Label Elements

Pictograms or hazard symbols



Signal Word Danger

Hazard Statement

- H226 Flammable liquid and vapor.
- H314 Causes severe skin burns and eye damage.
- H318 Causes serious eye damage.

Precautionary Statements

- [Prevention] P210 – Keep away from heat and hot surfaces.
 P264 – Wash thoroughly after handling.
 P280 – Wear protective gloves/protective clothing/eye protection/face protection.
- [Response] P302+P352 – IF ON SKIN: Wash with plenty of water.
 P305+P351+P338 – IF IN EYES: Rinse cautiously with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing.
 PP313+P332+P337 – Get medical advice/attention if skin or eye irritation persists
 P403+P235 –Store in a well-ventilated place. Keep cool.

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SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS.....

Name N-Methyl-N-(trimethylsilyl)trifluoroacetamide + 1% Trimethylchlorosilane, or MSTFA + 1% TMCS
 Synonyms N-Methyl-N-(trimethylsilyl)-2,2,2-trifluoro-N-methylacetamide + 1% Chlorotrimethylsilane

Hazardous components

Component	Classification	Concentration
N-Methyl-N-(trimethylsilyl)-2,2,2-trifluoro-N-methylacetamide CAS No. 24589-78-4 EC No. 246-331-6	Flam. Liq. 3; Skin Irr. 2A; Eye Irr. 2; STOT-SE 3; H226, H315, H319; H335	97-95.5 %
Chlorotrimethylsilane CAS No. 75-77-4 EC No. 200-900-5	Flam. Liq. 2; Acute Tox. 3; Acute Tox. 4; Acute Tox. 3; Skin Corr. 1A; Eye Dam. 1; H225, H261, H301 + H331, H312, H314; H318	0.5-3.0 %

For full test of the H-Statements mentioned in this Section, see Section 16.

SECTION 4 FIRST AID MEASURES

- 4.1 Description of first aid measures
 General: This material may cause corrosive injury to any body tissue upon contact. Do not attempt to neutralize as it frequently makes matters worse.
 Inhalation: Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and keep person warm and at rest. Consult physician.
 Skin contact: Immediately remove contaminated clothing and shoes, then wash skin with soap and plenty of water. If irritation persists or burns occur, consult physician.
 Eye contact: Rinse eyes with plenty of water for at least 15 minutes; lift eyelids occasionally. If irritation persists or burns occur, consult physician.
 Ingestion: Give large amounts of water or milk (two glasses at most). Avoid vomiting. Consult physician immediately.
- 4.2 Most important symptoms and effects, both acute and delayed.
Burns or severe irritation to body tissues - pain, itching, tearing, redness, blurred vision, lens damage, blistering, difficult breathing, shortness of breath, burning sensation, cough, sore throat, abdominal pain, collapse, photophobia.
- 4.3 Indication of immediate medical attention and special treatment needed.
 No information available.

SECTION 5 FIRE-FIGHTING MEASURES.....

- 5.1 Suitable Extinguishing Media
 Carbon dioxide, dry chemical powder, dry sand, foam.
 Water may be effective for cooling, but may not effect extinguishment for large fires.
- 5.2 Specific hazards arising from the chemical.
 Flammable and corrosive liquid and vapor.
 Hydrolyzes readily on contact with water, but **not violently** so, to produce trimethylsilanol (flammable) and 2,2,2-trifluoro-N-methylacetamide. TMCS can readily react with water to form corrosive hydrochloric acid.
Chlorosilanes may cause re-ignition to occur. A fire guard should be posted during any clean up operation.
 Exposure to oxidizers or acids could start or accelerate fire conditions.
 Emits toxic fumes under fire conditions: carbon oxides, silicon oxides, nitrogen oxides, hydrogen fluoride, hydrogen chloride

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5.3 Advice for fire-fighters
 Wear personal protective equipment for flammable organic/acid vapor conditions.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment, and emergency procedures
 For non-emergency personnel – Avoid material contact or inhalation of flammable or corrosive mists. Evacuate unnecessary personnel from area.

For emergency responders – Wear protective clothing corrosive and flammable conditions to prevent contact with skin and eyes. Avoid breathing mists. Wear NIOSH/MSHA approved respirator for organic/acid gas, dust, and mists to prevent inhalation. See Section 8.3.

6.2 Environmental precautions
 Prevent material from entering drains.

6.3 Methods of clean up
 Evacuate unnecessary people from area. Isolate spilled material.
 Ventilate area. Eliminate all ignition sources. Use spark proof tools.
 Keep away from water. Hydrolyzes readily on contact with water, but **not violently** so, to produce trimethylsilanol (flammable) and 2,2,2-trifluoro-N-methylacetamide. TMCS can readily react with water to form corrosive hydrochloric acid.
 Contain and recover material when possible. Neutralize with sodium bicarbonate or other suitable neutralizing agent.
 If neat or in solution, mix with sand or similar inert adsorbent material or spill pillow.
 Sweep up, if not absorbed in pillow, seal in appropriate hazardous waste container, and hold for proper waste disposal.
 Keep out of water supplies and sewers. Wash spill site after material pickup is complete.

SECTION 7 HANDLING AND STORAGE

7.1 Precautions for Safe Handling
Observe precautions in Section 2.
 Wear suitable protective equipment for flammables and corrosives to avoid contact with or inhalation of liquids or vapors.
 Handle under nitrogen. Protect from moisture. – Contact with water or moist air may readily generate trimethylsilanol (flammable) and 2,2,2-trifluoro-N-methylacetamide, and possibly corrosive hydrochloric acid.
 Ground and bond containers or use inert gas purge when transferring or handling material. Use spark proof tools and explosion proof equipment. Empty containers retain product residue, (liquid/vapor), and can be dangerous.

7.2 Conditions for safe storage, including any incompatibilities
 Store in tinted glass bottle under nitrogen, in a cool, dry place with adequate ventilation, in area suitable for flammables and corrosives.
 Protect from light and heat. May be stored refrigerated.
 Store away from incompatible materials (See Section 10.).

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
 Exposure limits TMCS or Trimethylchlorosilane (75-77-4) –
 OSHA – PEL or ACGIH – TLV: No limits established.
 Dow Corning Guide – Ceiling Limit 5 ppm (7 mg/m³)
 Note: Hydrogen chloride [5ppm-(OSHA – PEL and NIOSH-REL); 2ppm (ACGIH – TLV)] is formed on contact with humid air or water

Environmental Do not empty into drains.

8.2 Appropriate engineering controls
 Handle in accordance with good industrial hygiene and safety practice.
 Local exhaust and mechanical ventilation required. Hood recommended. Use adequate general and/or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Fume scrubber. Safety shower and

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eye wash.

8.3 Personal protection

- Eye/Face Tightly fitting safety glasses or safety goggles. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US).
- Hand Compatible chemical-resistant gloves for acidic corrosives such as hydrochloric acid.
- Respiratory If exposure to mist or vapors likely: NIOSH/MSHA (US) approved respirator for organic/acid vapor and mists.
- Dermal (not hand) Protective Clothing (e.g., lab coat)
- Hygiene Avoid inhalation, ingestion; contact with eyes, skin, and clothing; Avoid prolonged or repeated exposure. Remove contaminated clothing and discard contaminated footwear. Wash thoroughly after handling.

SECTION 9 **PHYSICAL AND CHEMICAL PROPERTIES**

9.1 Information on physical and chemical data

Chemical Formula	C ₆ H ₁₂ F ₃ NOSi + 1% (CH ₃) ₂ SiCl	
Molecular Weight	199.25 (MSTFA) + 108.66 (TMCS)	
Form	liquid	
Appearance	clear, colorless	
Odor	strong, pungent odor	
Odor threshold	Not available	
pH	Not available	
Melting/freezing point	Not available	
Boiling point:	116-127°C (242-262°F)	
Flammability (liquid)		
Flash Point	36°C (89°F)	Method: tcc
Flammable limits (%v/v)	UEL (upper explosive limit)	Not available
	LEL (lower explosive limit)	1.2% (MSTFA)
Autoignition temperature	Not available	
Decomposition temperature	Not available	
OSHA Flammability Class	IC	
Evaporation Rate (BuAc = 1.0)	<1	
Vapor pressure (mmHg)	11.7 hPa (8.8 mmHg) at 27 °C (81 °F) (MSTFA)	
Vapor density (air=1):	>1	
Relative density (g/cm ³)	1.075 g/cm ³ (MSTFA)	
Water Solubility/Reactive	Yes. Hydrolyzes readily, but no violently, to produce trimethylsilanol (flammable) and 2,2,2-trifluoro-N-methylacetamide. TMCS reacts readily with water or moist air to produce hydrochloric acid.	
Solubility (other)	Not available	
Partition coefficient: N-octanol/water	Kow (Pow) = Not available	
Viscosity	Not available	
Refractive Index (n _D ²⁰)	Not available	

SECTION 10 **STABILITY AND REACTIVITY**

10.1 Reactivity

Readily hydrolyzes in contact with water for form trimethylsilanol (flammable) and 2,2,2-trifluoro-N-methylacetamide. While MSTFA is reacts with water, it does **not** do so violently. TMCS reacts readily with water or moist air to produce hydrochloric acid.

10.2 Chemical Stability

Stable if stored under nitrogen and protected from moisture.

10.3 Possibility of hazardous reactions

Flammable liquid and vapor—protect from heat and ignition sources.

10.4 Conditions to avoid

Avoid incompatibilities.

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Protect from static, heat, flames, sparks, and ignition sources.
 Keep out of water supplies and sewers.

10.5 Incompatible materials
 Heat, light
 Strong acids, strong oxidizers, alcohols, peroxides, alkalis, and compounds with liable or active hydrogen.
 Water, moisture, or humid air—readily hydrolyzes, but not violently, to trimethylsilanol (flammable) and 2,2,2-trifluoro-N-methylacetamide and may produce hydrochloric acid.

10.6 Hazardous decomposition products
 Combustion carbon oxides, silicon oxides, nitrogen oxides, hydrogen fluoride, hydrogen chloride
 Decomposition trimethylsilanol (flammable), 2,2,2-trifluoro-N-methylacetamide, hydrochloric acid

SECTION 11 TOXICOLOGICAL INFORMATION

11.1 Toxicological Information		
Acute toxicity	Oral LD50	Not available for mixture or MSTFA. TMCS: orl rat LD50 5660uL/kg
	Inhalation LC50	Not available for mixture or MSTFA. TMCS: ihl rat LC50 3000ppm/1H; TMCS: ihl mus LCLo 500mg/m3/10M
	Dermal LD50	Not available for mixture or MSTFA. TMCS: skn rbt LD50 1780uL/kg
	Other acute toxicity	Not available for mixture or MSTFA.
Skin corrosion/irritation	Mixture of MSTFA + 1 % TMCS	– Corrosive range (DOT /IATA PG II)
	TMCS: skn rbt 500 uL mod	
Serious eye damage/irritation	Not available for mixture or MSTFA.	
	TMCS: eye rbt 5 uL mod	
Respiratory irritation	No data available	
Respiratory or skin sensitization	No data available	
Germ cell mutagenicity	No data available	
Carcinogenicity		
IARC	No data available.	
NTP	No data available	
OSHA	No data available	
Other	Not available for mixture or MSTFA.	TMCS: Some studies have shown that TMCS may induce certain types of cancers.
Reproductive toxicity (Including teratogenicity)	No data available	
Specific target organ toxicity (STOT)		
STOT-single exposure	No data available	
STOT-repeated exposure	No data available	
Aspiration hazard	No data available	
RTECS Number	RTECS number for MSTFA is AC9800000 and for TMCS is VV2710000.	
11.2 Further Information		
Potential health effects		
Eye	Can cause eye burns, lacrimation, and destruction of mucous membranes.	
Skin	Can cause severe irritation, dryness, and skin burns.	
Inhalation	Can be extremely destructive to mucous membranes and respiratory tract. Symptoms: coughing, shortness of breath, difficulty breathing, headache.	
Ingestion	Can be very destructive if in contact with mucous membranes of the GI system.	
Symptoms	See above route. Pre-existing conditions that may be aggravated: not determined.	
Miscellaneous	No data available.	

SECTION 12 ECOLOGICAL INFORMATION

12.1 Ecotoxicity No data available for this product.

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Toxicity to Bacteria	TMCS: <i>Water danger/protection:</i> WGH Salmonella typhimurium TA97, TA98, TA100, TA1353, TA1537 without metabolic activation positive.
12.2 Persistence and degradability	TMCS: <i>Aquatic toxicity:</i> Tlm96: 100-10 ppm. No data available for this product.
12.3 Bioaccumulative potential	BCF = No data available for this product.
12.4 Motility in soil	Log Kow = No data available for this product.
12.5 Other adverse effects	No data available for this product.

SECTION 13 DISPOSAL CONSIDERATIONS

13.1 Disposal methods	D001, D002
U . S. EPA Waste Codes	RCRA Hazard Class (40CFR 261): Ignitable, Corrosive
Waste Characterization (per U. S. regulations)	Generator is responsible for proper waste characterization. NOTE: U. S. Federal and state hazardous waste regulations may differ considerably.
Waste Disposal	That which cannot be recovered or recycled, should be disposed of in accordance with all applicable international, national, regional, state, and local laws. Do NOT dump into any sewer, on ground, or into any body of water.

SECTION 14 TRANSPORT INFORMATION

14.1 UN number	UN 2920
14.2 UN proper shipping name	Corrosive liquids, flammable, n.o.s., (Trimethylchlorosilane, N-Methyl-N-(trimethylsilyl)trifluoroacetamide).
14.3 Transport Hazard Class	8+3
14.5 Packing group	PG II
14.6 Environmental hazards	Not applicable
14.6 Special precautions for user	See Section 8 for exposure/personal protection guidance.

SECTION 15 REGULATORY INFORMATION

15.1 Safety, health and Environmental regulations specific for the product in question.

NFPA: H3 F3 R0 HMIS: H3* F3 R0

15.2 Chemical Inventory Lists

Reviews, Standards, and Regulations

	MSTFA	TMCS	MSTFA + 1% TMCS
CAS Number	24589-78-4	75-77-4	NE
TSCA:	NL	Y	NL
<i>is sold strictly for research and development use, however, some components may be listed on TSCA Inventory.</i>			
EINECS:	Y	Y	NL
Number	246-331-6	200-900-5	NL
CERCLA [Section 103 (40 CFR 302.4)]:	NL	NL	NL
RQ (lbs)	NA	NA	NA
RCRA Waste Code	D001,D002	D001,D002	D001,D002
		D003	
OSHA Process Safety [29 CFR 1910.119]:	NL	NL	NL
TQ (lbs)	NA	NA	NA
State Lists:	NL	Y	NL
States	NL	NJ,FL,PN,MA	NL
On CA 65 Significant Risk Level	NL	NL	NL

Reviews, Standards, and Regulations

	MSTFA	TMCS	MSTFA + 1% TMCS
CAS Number	24589-78-4	75-77-4	NL
SARA Title III Notification [40 CFR 302.4]:			

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Section 302/304 (EHS) Ingredient [40 CFR 355.3]	NL	Y	NL
TPQ (lbs)	NA	1,000	NA
RQ (lbs)	NA	1,000	NA
Section 313 Ingredient [40 CFR 372.65]	NL	Y	NL
SARA Hazards	Acute	N	Y
	Chronic	N	N
	Fire	Y	Y
	Pressure	N	N
	Reactivity	N	Y

SECTION 16 OTHER INFORMATION

16.1 Full test of H-Statements referred to under Section 2 and 3.

Acute Tox.	Acute toxicity
Eye Dam.	Serious eye damage
Eye Irr.	Eye Irritant
Flam. Liq.	Flammable liquids
H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H261	In contact with water releases flammable gases.
H301+ H331	Toxic if swallowed or if inhaled
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H319	Causes severe eye irritation
H318	Causes serious eye damage
H335	May cause respiratory irritation.
Skin Corr.	Skin corrosion
Skin Irr.	Skin irritation
STOT-SE	Specific Target Organ Toxicity – Single Exposure

The above information is believed to be correct to the best of our present state knowledge, but does not purport to be all-inclusive and shall be used only as a guide. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.

Prepared by: Regis Technologies

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