



8210 N. Austin Avenue, Morton Grove, IL 60053-0519, 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-(tert-butyl-dimethylsilyl)trifluoroacetamide + 1% tert-Butyl-dimethylchlorosilane
 Code: 270140, 270141, 270142, 270143, 270144, 270145

..... **MATERIAL SAFETY DATA SHEET**

SECTION 1 PRODUCT IDENTIFICATION

Name: N-Methyl-N-(tert-butyl-dimethylsilyl)trifluoroacetamide + 1% tert-Butyl-dimethylchlorosilane
 Code: 270140, 270141, 270142, 270143, 270144, 270145

SECTION 2 COMPOSITION, INFORMATION ON INGREDIENTS

Synonyms

MtBSTFA + 1% tBDMCS;
 N-(t-butyl-dimethylsilyl)-N-methyltrifluoroacetamide + 1% t-butylchlorodimethylsilane

CAS #:	MtBSTFA	77377-52-7	MF:	C ₉ H ₁₈ F ₃ NOSi	MtBSTFA
CAS #:	tBDMCS	18162-48-6	MF:	C ₆ H ₁₅ ClSi	tBDMCS

Ingredients

	<i>Concentration (%/wt)</i>
MtBSTFA (25561-30-2).....	NLT 97.0 %
tBDMCS (18162-48-6).....	NMT 3.0 %
Manufacturing Impurities.....	<1.0 %

SECTION 3 HAZARDS IDENTIFICATION

Precautionary Statements

See Sections 8 and 11 for further details.

Flammable Liquid, Corrosive

..... **Emergency Overview**

NFPA Ratings (Scale 0-4); Health = 3; Fire = 2; Reactivity = 2; ~~W~~

Liquid: Clear, colorless with a strong odor
 Combustible, corrosive liquid and vapor. Keep away from ignition sources, excess heat, and oxidizing agents.
 Do not put water directly on the fire. Vapor or liquid readily hydrolyzes with moist air or water to produce corrosive hydrofluoric and/or hydrochloric acid, which in contact with metal can produce flammable and/or explosive hydrogen gas.
 Corrosive. Causes burns. Can cause severe irritation/burns to skin, eyes, mucous membranes, and upper respiratory system due to the formation of corrosive hydrofluoric acid and/or hydrochloric acid when MtBSTFA + tBDMCS reacts with the water in the skin, eyes, and mucous membranes.
The properties of this material have not been fully investigated. Use due caution in handling and use of this material.
May emit toxic fumes under fire conditions—potential chemical or thermal decomposition products: carbon oxides, silicon oxides, nitrogen oxides, hydrogen fluoride, hydrogen chloride
Standard chemical handling precautions: Avoid breathing vapors or mists. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.
Target organs: eyes, skin, mucous membranes, respiratory system.

See Sections 4, 5, 6, 8, 9, and 10.

Other Hazard Information

This compound has not fully been tested for toxicological, irritation, or similar tendencies.

Primary Route(s) of Entry: Eye or Skin contact, Inhalation

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Corrosive hydrofluoric acid and/or hydrochloric acid (strong acids) are formed when MtBSTFA + tBDMCS reacts with the water in the skin, eyes, and mucous membranes; Hydrofluoric and hydrochloric acids are destructive to skin, eye, and mucous membranes. Immediate flushing of exposed area with excess water may minimize potential damage.

- Eye: Can cause severe irritation, burns, conjunctivitis, and corneal damage. May cause severe pain, redness, swelling, and watering.
- Skin: Corrosive. May cause severe skin irritation or burns. Harmful if absorbed through skin. Absorbs through skin.
- Inhalation: Corrosive. May cause severe irritation or burns to mucous membranes and upper respiratory tract. Harmful if inhaled. Severe inhalation may be fatal due to spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Prolonged or repeated inhalation may cause tooth decay.
- Ingestion: Corrosive. May cause irritation or tissue destruction to the digestive system. Harmful if ingested. Aspiration of liquid while vomiting may seriously injure lungs. In sufficient quantities corrosive materials can be fatal due burns to the mouth, throat, stomach, and other digestive system tissues.
- Acute: See above route.
- Chronic: Prolonged or repeated skin contact may cause dermatitis and inhalation may cause tooth decay and respiratory irritation leading to frequent attacks of bronchial infection. See specific route above for other effects.
- Symptoms: Results of overexposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting and/or dizziness and/or suffocation.
Pre-existing conditions that may be aggravated: respiratory conditions, skin, or eye conditions.

See Section 11 for additional toxicological data.

SECTION 4 FIRST AID MEASURES

- Eye contact: Immediately flush eyes with copious amounts of water or eyewash solution for at least 15 minutes; lift eyelids occasionally. If irritation persists, consult physician.
- Skin contact: Immediately remove contaminated clothing and shoes, then wash skin with soap and copious amounts of water. If irritation persists, consult physician.
- Inhalation: Remove to fresh air. If not breathing, give artificial respiration and keep person warm and at rest. If breathing is difficult, give oxygen; consult physician.
- Ingestion: Wash out mouth with water provided person is conscious; give large amounts of water or milk. Repeat if vomiting occurs. Ingested corrosive should be diluted approximately 100 times to render it harmless to tissues. consult physician; DO NOT induce vomiting without first consulting physician. If vomiting occurs, keep head lower than hips to help prevent aspiration. Maintain airway and respiration. Treat symptomatically and supportively.

Wash contaminated clothing before reuse.

Physician note: Symptomatic and supportive care. There is no specific antidote, however can be treated same as hydrofluoric acid or hydrochloric acid exposure. Treatment based on physician judgement in response to reactions of the patient.

SECTION 5 FIRE FIGHTING MEASURES

Flash Point: 122°F (50°C) Method: cc Flammable Limits: upper: NE
 lower: NE

OSHA Flammability Class: II Autoignition: NE

NFPA: See Section 3 **Hazards Identification Emergency Overview** above.

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Extinguishing Media

carbon dioxide, dry chemical powder, or appropriate foam.

Special or Standard Fire Fighting Procedures

Standard precautions for fighting large fires involving chemicals: Wear self-contained breathing apparatus (SCBA) and protective clothing to prevent contact with skin and eyes.

Standard Fire and Explosion Hazards

Avoid inhalation of material or combustion by-products.

Unusual Fire and Explosion Hazards

Combustible, corrosive liquid and vapor

Do not put water directly on the fire as vapor or liquid readily hydrolyzes to produce corrosive hydrofluoric and/or hydrochloric acid, which in contact with metal can produce flammable and/or explosive hydrogen gas.

Exposure to oxidizers could start or accelerate fire conditions.

Hazardous Combustion or Decomposition Products

May decompose on contact with water or moist air to produce corrosive hydrofluoric and/or hydrochloric acid.

May emit oxides of carbon, oxides of silicon, oxides of nitrogen, acid halides

SECTION 6 ACCIDENTAL RELEASE MEASURES

Eliminate all ignition sources/slight fire hazard in small quantities. Use spark proof tools.

Evacuate unnecessary people from area. Isolate spilled material.

Ventilate area.

Wear protective clothing to prevent contact with skin and eyes (lab coat, gloves, safety glasses).

Wear NIOSH/MSHA approved respirator for organic and acidic vapor to prevent inhalation irritation.

If neat, or in solution, use chemically compatible spill pillows, or similar adsorbent material.

Sweep up, seal in appropriate hazardous waste container, and hold for proper waste disposal.

Avoid inhalation of vapors or contaminated dust.

Wash spill site after material pickup is complete.

Standard chemical precautions: Keep out of water supplies and sewers.

SECTION 7 HANDLING AND STORAGE.....

General Handling Measures

See Section 8 Below.

General Storage Measures

Store in an area suitable for combustible and corrosive liquids, away from ignition and heat sources.

Store in a cool, dry place with adequate ventilation.

Store away from oxidizing materials.

Special Storage Instructions

Store in tinted glass bottle under nitrogen.

Special Handling Instructions

Protect from moisture. Vapor or liquid readily hydrolyzes with moist air or water to produce corrosive hydrofluoric acid, which in contact with metal can produce flammable and/or explosive hydrogen gas.

Take appropriate precautions for handling combustible and corrosive liquids.

This chemical will react with the moisture in the body to produce corrosive hydrofluoric and/or hydrochloric acid.

Avoid physical contact and do not inhale vapors.



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SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

Airborne Exposure Limits

		TWA		STEL		Ceiling		skin
		ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
MtBSTFA + tBDMCS	OSHA - PEL	NE	NE	NE	NE	NE	NE	NE
	ACGIH - TLV	NE	NE	NE	NE	NE	NE	NE
MtBSTFA 77377-52-7	OSHA - PEL	NE	NE	NE	NE	NE	NE	NE
	ACGIH - TLV	NE	NE	NE	NE	NE	NE	NE
tBDMCS 18162-48-6	OSHA - PEL	NE	NE	NE	NE	NE	NE	NE
	ACGIH - TLV	NE	NE	NE	NE	NE	NE	NE
Hydrofluoric Acid* 77377-52-7	OSHA - PEL	3	2	6	5	NE	NE	NE
	ACGIH - TLV	NE	NE	3	2.6	3	2.6	NE
Hydrochloric Acid* 77377-52-7	OSHA - PEL	NE	NE	NE	NE	5	7	NE
	ACGIH - TLV	NE	NE	NE	NE	5	7.5	NE

* Hydrofluoric and/or hydrochloric acid may be formed on contact with humid air or water.
 NE = Not established

Special/Other Control Measures

Odor threshold: NE

Personal Protective Equipment (PPE)

Chemical safety eyewear or goggles

Compatible chemical-resistant gloves: Rubber (e.g., natural rubber, neoprene, nitrile, or equivalent), Silver Shield®, Viton®, or 4H®

NIOSH/MSHA approved respirator for organic/acid gas, dust, and mists.

Protective Clothing (e.g., lab coat)

Other Standard Safety Equipment and Engineering Preventive Measures

Safety shower and eye wash

Mechanical exhaust required. Hood recommended.

General Precautions and Handling Measures

Avoid ingestion, inhalation, and contact with eyes, skin, and clothing.

Avoid prolonged or repeated exposure. Wash thoroughly after handling

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Chemical Family: MtBSTFA: halogenated acetamide; silyl
 tBDMCS: aliphatic halogen; silane

Use: Analytical Silylation Reagent for GC

Appearance, Odor, and Other Properties

clear, colorless liquid

MP: NE

bp: 343°F (172°C)

VP (mmHg): NE

% Volatiles: NE

Odor: Strong odor

FW: 241.33 MtBSFTA; 150.72 tBDMCS

Solubility in Water: reacts: hydrolyzes/decomposes

Specific Gravity (H₂O = 1.0): 1.023

Vapor Density: 1.121 (Air = 1.0)

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<i>Carcinogenicity</i>	OSHA	IARC	NTP	ACGIH	NIOSH	Notes
tBDMCS	NL	NL	NL	NL	NL	None
MtBSTFA	NL	NL	NL	NL	NL	None
MtBSTFA + tBDMCS	NL	NL	NL	NL	NL	None

NL = Not Listed as a carcinogen;

Teratogenicity and Reproductive Effects

No data available.

Mutagenicity

No data available.

Miscellaneous

Test on laboratory animals indicate tBDMCS may produce a decreased immune response.

Corrosive hydrofluoric and/or hydrochloric acid may be formed when MtBSTFA + tBDMCS reacts with the water in the skin, eyes, and mucous membranes; Hydrofluoric and/or hydrochloric acid is destructive to skin, eye, and mucous membrane tissues.

Acute Effects

See specific route responses in Section 3 **Hazards Identification** above.

Chronic Effects

See Section 3 **Hazards Identification** above.

SECTION 12 ECOLOGICAL INFORMATION.....

No data available.

Mobility

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of Biodegradation Products

The products of degradation are more toxic than the product itself.

Standard Chemical Precautions

Keep out of water, air, and soil.

SECTION 13 DISPOSAL CONSIDERATIONS.....

That which cannot be recovered or recycled, should be disposed of in accordance with all applicable Federal, State, and local environmental regulations.

RCRA waste code(s): D001, D002, D003 RCRA Hazard Class (40CFR 261): ignitable, corrosive, reactive

SECTION 14 TRANSPORT INFORMATION.....

Ship in accordance with all applicable local, State, Federal, and International transportation regulations.

The following is a summary only. Check regulations for complete information:

U. S. Department of Transportation (49CFR171.101)

Shipping Name: Flammable liquids, corrosive, n.o.s., (*N*-Methyl-*N*-(*tert*-butyldimethylsilyl)trifluoroacetamide + 1% *tert*-Butyldimethylchlorosilane)

ID Number: UN 2924

Hazard Class or Division: 3, Subsidiary Risk: 8

Packing Group: PG III

Labels: Flammable Liquid, Corrosive

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SECTION 15 REGULATORY INFORMATION

Reviews, Standards, and Regulations

MtBSTFA + tBDMCS.....	MtBSTFA	tBDMCS
		77377-52-7	18162-48-6
TSCA:	NL*	NL	Y
*This chemical is sold strictly for research and development use only, however, some components may be listed on TSCA Inventory.			
EINECS:	NL	NL	Y
Number	NA	NA	242-042-4
CERCLA [Section 103 (40 CFR 302.4)]:	NL	NL	NL
RQ (lbs)	NA	NA	NA
RCRA Waste Code	NA	NA	NA
OSHA Process Safety [29 CFR 1910.119]:	NL	NL	NL
TQ (lbs)	NA	NA	NA
Clean Air Act			
[Section 112r (40 CFR 68)]:	NL	NL	NL
TQ (lbs)	NA	NA	NA
Contains Ozone Depleters (Class I or Class II)	N	N	N
[Section 103 (40 CFR 302.4)]:	NL	NL	NL
State Lists:	NL	NL	NL
States	NL	NL	NL
On CA 65 Significant Risk Level	NL	NL	NL
SARA Title III Notification [40 CFR 302.4]:			
Section 302/304 (EHS) Ingredient [40 CFR 355.3]	NL	NL	NL
TPQ (lbs)	NA	NA	NA
RQ (lbs)	NA	NA	NA
Section 313 Ingredient [40 CFR 372.65]	NL	NL	NL

Hazard Classes

MtBSTFA + tBDMCS	Sara	Acute	Chronic	Fire	Pressure	Reactivity
	Title III	Y	N	Y	N	Y
		Health	Flammability	Reactivity	Special Hazards	
	NFPA	3	2	2	W	
	HMIS	U	2	2	None	

Risk Phrases:

Caution: The properties of this material have not been fully investigated.
 Corrosive.
 R10..... Flammable (EU) (combustible -- USA)
 R34..... Causes burns
 R20/21/22..... Harmful by inhalation, in contact with skin, and if swallowed.
 R36/37/38..... Irritating to eyes, skin, and respiratory system
 R40..... Possible risk of irreversible effects.

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Safety Phrases:

- S6/7/8/9Keep under nitrogen in a dry, tightly closed container, in a well ventilated place.
- S16Keep away from sources of ignition--no smoking.
- S23Do not breathe vapors.
- S24/25Avoid contact with skin and eyes.
- S26In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S36/37/39Wear suitable protective clothing, gloves, and eye/face protection

SECTION 16OTHER INFORMATION

Miscellaneous

The health and toxicological hazards of this compound have not been fully investigated; therefore, this substance must be handled only by, or under close supervision of those qualified in the handling and use of potentially hazardous substances.

This MSDS was revised as follows:

Updated to the current format to eliminate some unnecessary duplication of information.

Section	Changes
2	Updated ingredients section
3	Updated dated inhalation entry. Clarified and eliminated duplicate information in this section.
3, 11	Moved carcinogen information from Section 3 to 11 and eliminated information duplicated in these sections.
3, 15	Corrected NFPA from H1 to H3
6	Updated spill procedures
7	Clarified language
8	Updated exposure limits to include by-products: HF and HCl
9	Added chemical family for t-BDMCS
14	Corrected UN number
15	Updated Risk and Safety Phrases

Disclaimer

The above information is believed to be correct, but does not purport to be all-inclusive and shall be used only as a guide. Regis Technologies, Inc., does not guarantee said information is accurate or complete, *nor shall any of this information constitute a warranty, whether expressed or implied, as to the safety of the goods, the merchantability of the goods, or the fitness of the goods for a particular purpose.* Adjustment may be required to conform to the actual conditions of usage. Regis Technologies, Inc. shall not be held liable for any damage resulting from handling or from contact with the above product, nor for the results obtained, or for incidental or consequential damage arising from the use of these data. No freedom from infringement of any patent, copyright or trademark is to be inferred.

Approved of by: MBF

This is the last page of this MSDS.

Reviewed and re-approved of with minor changes to the abbreviations in the footer and format.

by: Jon Pilli

07/18/2008