Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

GS-411

METHYLTRIMETHOXYSILANE

(CAS #1185-55-3)

GREENSCREEN® FOR SAFER CHEMICALS (GREENSCREEN®) ASSESSMENT

Version 1.5a

Prepared by:

ToxServices LLC

Assessment Date: October 23, 2026

Expiration Date: October 23, 2031

1526 New Hampshire Ave., N.W., Suite 350
Washington, D.C. 20036

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

TABLE OF CONTENTS

GREENSCREEN® EXECUTIVE SUMMARY FOR METHYLTRIMETHOXYSILANE (CAS #1185-55-3) i
Chemical Name 1
GreenScreen® Summary Rating for Methyltrimethoxysilane 2
Environmental Transformation Products 3
Introduction 3
U.S. EPA Safer Choice Program's Safer Chemical Ingredients List 4
GreenScreen® List Translator Screening Results 4
Hazard Statement and Occupational Control 4
Physicochemical Properties of Methyltrimethoxysilane 5
Toxicokinetics 6
Hazard Classification Summary 6
Group I Human Health Effects (Group I Human) 6
Carcinogenicity (C) Score 6
Mutagenicity/Genotoxicity (M) Score 7
Reproductive Toxicity (R) Score 9
Developmental Toxicity incl. Developmental Neurotoxicity (D) Score 9
Endocrine Activity (E) Score 11
Group II and II* Human Health Effects (Group II and II* Human) 12
Acute Mammalian Toxicity (AT) (Group II) Score 12
Systemic Toxicity/Organ Effects incl. Immunotoxicity (ST-single) (Group II) Score 13
Systemic Toxicity/Organ Effects incl. Immunotoxicity (ST-repeat) (Group II*) Score 14
Neurotoxicity (single dose, N-single) (Group II) Score 16
Neurotoxicity (repeated dose, N-repeated) (Group II*) Score 17
Skin Sensitization (SnS) (Group II*) Score 18
Respiratory Sensitization (SnR) (Group II*) Score 19
Skin Irritation/Corrosivity (IrS) (Group II) Score 19
Eye Irritation/Corrosivity (IrE) (Group II) Score 20
Ecotoxicity (Ecotox) 20
Acute Aquatic Toxicity (AA) Score 20
Chronic Aquatic Toxicity (CA) Score 21
Environmental Fate (Fate) 21
Persistence (P) Score 21
Bioaccumulation (B) Score 22
Physical Hazards (Physical) 22
Reactivity (Rx) Score 22
Flammability (F) Score 23

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Climate Impact 23
Ozone Depletion Potential (ODP) Score 23
Global Warming Potential (GWP) Score 24
Use of New Approach Methodologies (NAMs) in the Assessment, Including Uncertainty Analyses of Input and Output 25
References 28
APPENDIX A: Hazard Classification Acronyms 31
APPENDIX B: Data Sources Searched 32
APPENDIX C: Artificial Intelligence (A.I.)-Based Sources Accessed to Identify Use and Chemical Descriptive Information on Methyltrimethoxysilane (CAS #1185-55-3) 33
APPENDIX D: Pharos Output for Methyltrimethoxysilane (CAS #1185-55-3) 37
APPENDIX E: Results of Automated GreenScreen® Score Calculation for Methyltrimethoxysilane (CAS #1185-55-3) 39
APPENDIX F: OECD Toolbox Results for Methyltrimethoxysilane (CAS #1185-55-3) 40
APPENDIX G: VEGA Carcinogenicity Results for Methyltrimethoxysilane (CAS #1185-55-3) 41
APPENDIX H: Danish QSAR Carcinogenicity Results for Methyltrimethoxysilane (CAS #1185-55-3) 65
APPENDIX I: ECOSAR Modeling Results for Methyltrimethoxysilane (CAS #1185-55-3) 67
APPENDIX J: EPI Suite™ Modeling Results for Methyltrimethoxysilane (CAS #1185-55-3) 68
APPENDIX K: Change in Benchmark Score 72
Licensed GreenScreen® Profilers 73

TABLE OF FIGURES

Figure 1: GreenScreen® Hazard Summary Table for Methyltrimethoxysilane 3

TABLE OF TABLES

Table 1: Environmental Transformation Product Summary 3
Table 2: GHS H Statements for Methyltrimethoxysilane (CAS #1185-55-3) (ECHA CHEM, CAS #1185-55-3, 2026) 5
Table 3: Occupational Exposure Limits and Recommended Personal Protective Equipment for Methyltrimethoxysilane (CAS #1185-55-3) 5
Table 4: Physical and Chemical Properties of Methyltrimethoxysilane (CAS #1185-55-3) 5
Table 5: Summary of NAMs Used in the GreenScreen® Assessment, Including Uncertainty Analyses 25
Table 6: Sources Searched for Relevant Chemical, Health Effects, and Ecotoxicity Data 32
Table 7: Change in ToxServices' GreenScreen® Benchmark™ for Methyltrimethoxysilane 72

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

GREENSCREEN® EXECUTIVE SUMMARY FOR METHYLTRIMETHOXYSILANE (CAS #1185-55-3)

Methyltrimethoxysilane is an organic silicon compound that is used as a coupling agent in thermoplastics and thermosetting resins, a crosslinker in silicone sealants, an ingredient in polymeric filler treatment, a water repellent component, an ingredient in adhesives, an ingredient in silicone hard coats for plastics, and a manufacturing intermediate. Methyltrimethoxysilane is a liquid at room temperature. Its high vapor pressure of 22.5 mmHg indicates that it is likely to form a gas. It is highly soluble in water and its estimated log K_{ow} of 0.53 indicates that it is more soluble in octanol than in water.

Methyltrimethoxysilane was assigned a **GreenScreen Benchmark™ Score of 2** ("Use but Search for Safer Substitutes"). This score is based on the following hazard score combinations:

- Benchmark 2e
    - Moderate T Group I Human (Endocrine Activity-E)
- Benchmark 2g
    - High Flammability or High Reactivity (Flammability-F)

There are data gaps for ozone depletion potential-ODP and global warming potential-GWP. As outlined in GreenScreen® Guidance Section 11.6.2.1 and Annex 5 (Conduct a Data Gap Analysis), methyltrimethoxysilane meets requirements for a GreenScreen Benchmark™ Score of 2 despite the data gaps. Climate impact endpoints do not affect Benchmark scores.

The GreenScreen® Benchmark Score for methyltrimethoxysilane has changed over time. ToxServices performed the original GreenScreen® assessment in 2014 under version 1.2 criteria and ToxServices assigned a Benchmark 1_{TP} (BM-1_{TP}) score. The BM score changed to a BM-2 with a version 1.3 update in 2017 due to reclassification of the transformation product, methanol (LT-1), as not relevant due to its transient nature. Most recently, ToxServices maintained the GreenScreen® benchmark score of BM-2 despite reclassification of some endpoints following a weight of evidence evaluation of this chemical's dataset.

New Approach Methodologies (NAMs) used in this GreenScreen® include use of modeling for carcinogenicity, respiratory sensitization, chronic aquatic toxicity, persistence, and bioaccumulation, and use of *in vitro* assays for mutagenicity and endocrine activity. The quality, utility, and accuracy of NAM predictions are greatly influenced by two primary types of uncertainties:

- Type I: Uncertainties related to the input data used
- Type II: Uncertainties related to extrapolations made

Type I (input data) uncertainties in methyltrimethoxysilane's NAMs dataset include limited carcinogenicity data and no experimental respiratory sensitization data, and lack of validated test methods for respiratory sensitization. Methyltrimethoxysilane's Type II (extrapolation output) uncertainties include lack of defined applicability domains for OECD Toolbox structural alerts, the compound being out of domain for VEGA, Danish (Q)SAR database, and OncoLogic™, *in vitro* mutagenicity assays being unable to fully account for *in vivo* metabolism and focusing on a few events in the complex mutagenesis process, endocrine screening assays lacking consideration of metabolism and other toxicokinetic factors, and respiratory sensitization evaluation of structural alerts not accounting for non-immunologic mechanisms.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

GreenScreen® Hazard Summary Table for Methyltrimethoxysilane

Group I Human					Group II and II* Human									Ecotox		Fate		Physical		Climate Impact	
C	M	R	D	E	AT	ST		N		SnS	SnR	IrS	IrE	AA	CA	P	B	Rx	F	ODP	GWP
						s	r*	s	r*	*	*										
L	**L**	**L**	**L**	**M**	**L**	**L**	*M*	**M**	**L**	**L**	*L*	**L**	**L**	**L**	*L*	**L**	*vL*	*L*	**H**	DG	DG

Note: Hazard levels (Very High (vH), High (H), Moderate (M), Low (L), Very Low (vL)) in *italics* reflect lower confidence in the hazard classification while hazard levels in **BOLD** font reflect higher confidence in the hazard classification. Group II Human Health endpoints differ from Group II* Human Health endpoints in that they have four hazard scores (i.e., vH, H, M, and L) instead of three (i.e., H, M, and L), and are based on single exposures instead of repeated exposures. Group II* Human Health endpoints are indicated by an * after the name of the hazard endpoint or after "repeat" for repeated exposure sub-endpoints. The "Not Applicable (NA)" hazard level is reserved for the Climate Impact endpoints (ODP, GWP) and is assigned to non-volatile compounds or for substances that are not gases or vapors under normal conditions. Please see Appendix A for a glossary of hazard acronyms.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

GREENSCREEN® CHEMICAL ASSESSMENT FOR METHYLTRIMETHOXYSILANE (CAS #1185-55-3)

Method Version: GreenScreen® Version 1.5a
Assessment Type[1]: Certified
Assessor Type: Licensed GreenScreen® Profiler
See Appendix A for an overview of endpoint-specific hazard acronyms.
Databases identified in Appendix B were searched for relevant chemical, human health, environmental, and physical hazard data (Note: Studies rated as Klimisch 3 or 4 are not included in the CHA).
See Appendix C for Artificial Intelligence (A.I.)-based search output such as Google AI or ChatGPT.

GreenScreen® Assessment (v.1.2) Prepared By:
Name: Jennifer Rutkiewicz, Ph.D.
Title: Toxicologist
Organization: ToxServices LLC
Date: September 23, 2014

Quality Control Performed By:
Name: Bingxuan Wang, Ph.D.
Title: Toxicologist
Organization: ToxServices LLC
Date: December 1, 2014

GreenScreen® Assessment (v.1.3) Updated By:
Name: Bingxuan Wang, Ph.D., D.A.B.T.
Title: Senior Toxicologist
Organization: ToxServices LLC
Date: June 14, 2017

Quality Control Performed By:
Name: Jennifer Rutkiewicz, Ph.D.
Title: Senior Toxicologist
Organization: ToxServices LLC
Date: June 19, 2017

GreenScreen® Assessment (v.1.5a) Prepared By:
Name: John Lee, M.P.H.
Title: Toxicologist
Organization: ToxServices LLC
Date: September 3, 2026; October 12, 2026

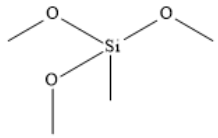
Quality Control Performed By:
Name: Bingxuan Wang, Ph.D., D.A.B.T.
Title: Senior Toxicologist
Organization: ToxServices LLC
Date: September 25, 2026; October 23, 2026

Expiration Date: October 23, 2031[2]

Chemical Name: Methyltrimethoxysilane

CAS Number: 1185-55-3

Chemical Structure(s):



(CAS #1185-55-3)

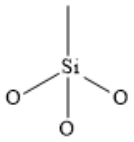
[1] GreenScreen® reports are either "UNACCREDITED" (by unaccredited person), "AUTHORIZED" (by Authorized GreenScreen® Practitioner), or "CERTIFIED" (by Licensed GreenScreen® Profiler or equivalent).
[2] Assessments expire five years from the date of completion starting from January 1, 2019. An assessment expires three years from the date of completion if completed before January 1, 2019 (CPA 2023).

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Also called:
Trimethoxy(methyl)silane; Trimethoxymethylsilane; Silane, trimethoxymethyl-; methyl trimethoxysilane; methyl-trimethoxysilane; methyltrimethoxy silane; trimethoxy-methyl-silane (PubChem 2026)

Suitable surrogates or moieties of chemicals used in this assessment (CAS #'s):
Although a relatively complete toxicological dataset was identified for methyltrimethoxysilane, the hydrolysis product methylsilanetriol (CAS #2445-53-6) is used to fill data gaps for chronic aquatic toxicity. Methyltrimethoxysilane is rapidly hydrolyzed to methanol and methylsilanetriol in water (ECHA CHEM, CAS #1185-55-3, 2026).

Surrogate: Methylsilanetriol (CAS #2445-53-6)



(CAS #2445-53-6)
(ECHA CHEM, CAS #1185-55-3, 2026)

Identify Applications/Functional Uses: (OECD 2009)
1. Coupling agent in thermoplastics and thermosetting resins
2. Crosslinker in silicone sealants
3. Ingredient in polymeric filler treatment
4. Water repellent component
5. Ingredient in adhesives
6. Ingredient in silicone hard coats for plastics
7. Manufacturing intermediate

Known Impurities[3]:
Methyltrimethoxysilane may contain dimethoxy(dimethyl)silane (CAS #1112-39-6) as an impurity (ECHA CHEM, CAS #1185-55-3, 2026). The GreenScreen® assessment is performed on the theoretical pure substance.

GreenScreen® Summary Rating for Methyltrimethoxysilane[4,5 6,7]: Methyltrimethoxysilane was assigned a **GreenScreen Benchmark™ Score of 2** ("Use but Search for Safer Substitutes") (CPA 2026). This score is based on the following hazard score combinations:
- Benchmark 2e
  - Moderate T Group I Human (Endocrine Activity-E)
- Benchmark 2g
  - High Flammability or High Reactivity (Flammability-F)

[3] Impurities of the chemical will be assessed at the product level instead of in this GreenScreen®.
[4] For inorganic chemicals with low human and ecotoxicity across all hazard endpoints and low bioaccumulation potential, persistence alone will not be deemed problematic. Inorganic chemicals that are only persistent will be evaluated under criteria for Benchmark 4.
[5] See Appendix A for a glossary of hazard endpoint acronyms.
[6] For inorganic chemicals only, see GreenScreen® Guidance v1.5a Section 12 (Inorganic Chemical Assessment Procedure).
[7] For Systemic Toxicity and Neurotoxicity, repeated exposure data are preferred. Lack of single exposure data is not a Data Gap when repeated exposure data are available. In that case, lack of single exposure data may be represented as NA instead of DG. See GreenScreen® Guidance v1.5a Annex 2.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

There are data gaps for ozone depletion potential-ODP and global warming potential-GWP. As outlined in GreenScreen® Guidance (CPA 2026) Section 11.6.2.1 and Annex 5 (Conduct a Data Gap Analysis), methyltrimethoxysilane meets requirements for a GreenScreen Benchmark™ Score of 2 despite the data gaps. Climate impact endpoints do not affect Benchmark scores.

Figure 1: GreenScreen® Hazard Summary Table for Methyltrimethoxysilane

Group I Human					Group II and II* Human									Ecotox		Fate		Physical		Climate Impact	
C	M	R	D	E	AT	ST		N		SnS	SnR	IrS	IrE	AA	CA	P	B	Rx	F	ODP	GWP
						s	r*	s	r*	*	*										
L	**L**	**L**	**L**	**M**	**L**	**L**	*M*	**M**	**L**	**L**	*L*	**L**	**L**	**L**	*L*	**L**	*vL*	*L*	**H**	DG	DG

Note: Hazard levels (Very High (vH), High (H), Moderate (M), Low (L), Very Low (vL)) in *italics* reflect lower confidence in the hazard classification while hazard levels in **BOLD** font reflect higher confidence in the hazard classification. Group II Human Health endpoints differ from Group II* Human Health endpoints in that they have four hazard scores (i.e., vH, H, M, and L) instead of three (i.e., H, M, and L), and are based on single exposures instead of repeated exposures. Group II* Human Health endpoints are indicated by an * after the name of the hazard endpoint or after "repeat" for repeated exposure sub-endpoints. The "Not Applicable (NA)" hazard level is reserved for the Climate Impact endpoints (ODP, GWP) and is assigned to non-volatile compounds or for substances that are not gases or vapors under normal conditions. Please see Appendix A for a glossary of hazard acronyms.

Environmental Transformation Products

Methyltrimethoxysilane undergoes rapid hydrolysis in the environment, producing methanol (3 moles) and methylsilanetriol (1 mole) (ECHA CHEM, CAS #1185-55-3, 2026). Methanol is readily biodegradable in the environment. Methanol is rapidly released after the hydrolysis of the parent compound (half-life 2.2 hours at 25ºC and pH of 7) and then rapidly degraded, thereby reducing the potential for human/environmental exposure. As a result, although methanol is an BM-1 chemical based on developmental toxicity, it is not considered a relevant environmental transformation product due to its transient nature.

Table 1: Environmental Transformation Product Summary

Life Cycle Stage	Transformation Pathway	Environmental Transformation Product	CAS #	Feasible (Yes or No)	Relevant (Yes or No)	GreenScreen® List Translator Score or GreenScreen® Benchmark™ Score[8,9]
Any	Hydrolysis	Methylsilanetriol	2445-53-6	Yes	Yes	LT-UNK
Any	Hydrolysis	Methanol	67-56-1	Yes	No	BM-1

Introduction

Methyltrimethoxysilane is an organic silicon compound that is used as a coupling agent in thermoplastics and thermosetting resins, a crosslinker in silicone sealants, an ingredient in polymeric

[8] The GreenScreen® List Translator identifies specific authoritative or screening lists that should be searched to screen for GreenScreen Benchmark™ 1 chemicals (CPA 2026). Pharos (Pharos 2026) is an online list-searching tool that is used to screen chemicals against the lists in the List Translator electronically.
[9] A GreenScreen® assessment of a transformation product depends on the Benchmark score of the parent chemical (see GreenScreen® Guidance).

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

filler treatment, a water repellent component, an ingredient in adhesives, an ingredient in silicone hard coats for plastics, and a manufacturing intermediate (OECD 2009).

ToxServices assessed methyltrimethoxysilane against GreenScreen® Version 1.5a (CPA 2026) following procedures outlined in ToxServices' SOPs (GreenScreen® Hazard Assessment) (ToxServices 2021). Databases identified in Appendix B were searched for relevant chemical, human health, environmental, and physical hazard data pertaining to methyltrimethoxysilane. Artificial Intelligence (A.I.) databases including GoogleAI and ChatGPT were searched by chemical name and CAS number to provide general use information and a chemical description of methyltrimethoxysilane, as shown in Appendix C.

U.S. EPA Safer Choice Program's Safer Chemical Ingredients List

The SCIL is a list of chemicals that meet the Safer Choice standard (U.S. EPA 2026a). It can be accessed at: http://www2.epa.gov/saferchoice/safer-ingredients. Chemicals on the SCIL have been assessed for compliance with the Safer Choice Standard and Criteria for Safer Chemical Ingredients (U.S. EPA 2024a).

Methyltrimethoxysilane is not listed on the SCIL.

GreenScreen® List Translator Screening Results

The GreenScreen® List Translator identifies specific authoritative or screening lists that should be searched to identify GreenScreen Benchmark™ 1 chemicals (CPA 2026). Pharos (Pharos 2026) is an online list-searching tool that is used to screen chemicals against all of the lists in the List Translator electronically. ToxServices also checks the U.S. Department of Transportation (U.S. DOT) lists (U.S. DOT 2008a,b),[10] which are not considered GreenScreen® Specified Lists but are additional information sources, in conjunction with the Pharos query. The output indicates benchmark or possible benchmark scores for each human health and environmental endpoint. The output for methyltrimethoxysilane can be found in Appendix D.

- Methyltrimethoxysilane is a BM-1$_{TP}$ chemical when screened using Pharos, and therefore a full GreenScreen® is required.
- Methyltrimethoxysilane is listed on the U.S. DOT list as a Hazard Class 3 chemical, Packing Group II.
- Methyltrimethoxysilane is not on any lists for multiple endpoints. Specified lists for single endpoints are reported in individual hazard endpoints in the hazard assessment section below.

Hazard Statement and Occupational Control

No Globally Harmonized System of Classification and Labelling of Chemicals (GHS) hazard statements that are harmonized across the European Union (EU) were identified for methyltrimethoxysilane. The self-classifications by its ECHA dossier authors are indicated in Table 2. General personal protective equipment (PPE) recommendations and occupational exposure limits (OELs) are presented in Table 3, below.

[10] DOT lists are not required lists for GreenScreen® List Translator v1.5a. They are reference lists only.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Table 2: GHS H Statements for Methyltrimethoxysilane (CAS #1185-55-3) (ECHA CHEM, CAS #1185-55-3, 2026)	
H Statement	**H Statement Details**
H225	Flammable liquid
H360F	May damage fertility (when containing ≥ 0.3% of the impurity dimethoxy(dimethyl)silane)

Table 3: Occupational Exposure Limits and Recommended Personal Protective Equipment for Methyltrimethoxysilane (CAS #1185-55-3)			
Personal Protective Equipment (PPE)	**Reference**	**Occupational Exposure Limits (OEL)**	**Reference**
Wear protective eyeglasses or chemical safety goggles, protective gloves, and clothing to prevent skin exposure	Thermo Fisher Scientific Chemicals, Inc. 2025	8h TWA WEEL value of 10 ppm (55 mg/m3)	WEEL and OARS TERA 2025
OEL: Occupational Exposure Limit TWA: Time Weighted Average WEEL: Workplace Environmental Exposure Level			

Physicochemical Properties of Methyltrimethoxysilane

Methyltrimethoxysilane is a liquid at room temperature. Its high vapor pressure of 22.5 mmHg indicates that it is likely to form a gas. It is highly soluble in water and its estimated log K_{ow} of 0.53 indicates that it is more soluble in octanol than in water.

Table 4: Physical and Chemical Properties of Methyltrimethoxysilane (CAS #1185-55-3)		
Property	**Value**	**Reference**
Molecular formula	$C_4H_{12}O_3Si$	PubChem 2026
SMILES Notation	CO[Si](C)(OC)OC	PubChem 2026
Molecular weight	136.22 g/mol	PubChem 2026
Physical state	Liquid	ECHA CHEM, CAS #1185-55-3, 2026
Appearance	Clear	ECHA CHEM, CAS #1185-55-3, 2026
Melting point	< -77°C	ECHA CHEM, CAS #1185-55-3, 2026
Boiling point	102°C	ECHA CHEM, CAS #1185-55-3, 2026
Vapor pressure	3,000 Pa (22.5 mmHg) at 20°C	ECHA CHEM, CAS #1185-55-3, 2026
Water solubility	Hydrolyzes immediately in water, but the hydrolysis product has a predicted solubility of 1,000,000 mg/L at 20°C	ECHA CHEM, CAS #1185-55-3, 2026
Dissociation constant	Not identified	
Density/specific gravity	0.95 to 0.96 g/cm^3	ECHA CHEM, CAS #1185-55-3, 2026
Partition coefficient	Log K_{ow} = 0.53 (estimated)	U.S. EPA 2026b, Appendix J

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Toxicokinetics

There are no toxicokinetics data available for methyltrimethoxysilane; however, the ECHA CHEM REACH dossier provides a summary based on the physicochemical properties of the target chemical and its hydrolysis product.

- ECHA CHEM, CAS #1185-55-3, 2026
  - Absorption: Based on its molecular weight and water solubility, methyltrimethoxysilane is likely to be rapidly absorbed via the oral route. Very little dermal absorption is expected due to the low log K_{ow} value of 0.53, indicating it is not likely to be sufficiently lipophilic to cross the stratum corneum. Inhalation studies on methyltrimethoxysilane that show adverse systemic effects indicate that it is absorbed following inhalation exposure.
  - Distribution: Based on methyltrimethoxysilane's rapid hydrolysis and low log K_{ow}, the chemical is expected to partition to blood and not diffuse across membranes or accumulate in tissues.
  - Metabolism: Methyltrimethoxysilane hydrolyzes to form methanol and methylsilanetriol once absorbed into the body. There is no evidence of additional metabolism.
  - Excretion: The estimated soluble fraction of methyltrimethoxysilane in the blood is 97% and the estimated soluble fraction of the hydrolysis product methylsilanetriol in the blood is > 99%. The substances are likely to be eliminated via the kidneys in urine.

Hazard Classification Summary

Group I Human Health Effects (Group I Human)

Carcinogenicity (C) Score (H, M, or L): *L*

Methyltrimethoxysilane was assigned a score of Low for carcinogenicity based on expert judgment by authors of the REACH dossier and no structural alerts for genotoxic and nongenotoxic carcinogenicity. Additional modeling did not yield reliable results. GreenScreen® criteria classify chemicals as a Low hazard for carcinogenicity when adequate data are available and they are not GHS classified (CPA 2026). The confidence in the score is low as no experimental data from carcinogenicity studies were available.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA CHEM, CAS #1185-55-3, 2026
  - No data were available. However, a carcinogenicity study is waived based on lack of indications of carcinogenicity in a 90-day subchronic inhalation study with a 28-day recovery period, lack of structural alerts for carcinogenicity, and lack of mutagenicity.
- OECD 2026, Appendix F
  - Methyltrimethoxysilane does not contain structural alerts for genotoxic or nongenotoxic carcinogenicity as defined with QSAR Toolbox v4.9.
- VEGA 2026, Appendix G
  - ToxServices predicted the carcinogenicity potential of methyltrimethoxysilane in the following six VEGA v1.3.19 models: CAESAR v2.1.10, ISS v.1.0.3, IRFMN/ISSCAN-CGX v1.0.2, IRFMN/Antares v1.0.2, IRFMN Carcinogenicity oral classification model v1.0.1, and IRFMN Carcinogenicity inhalation classification model v1.0.1. If an external compound is beyond the defined scope of a given model, it is considered outside that model's applicability domain (AD) and cannot be associated with a reliable prediction (Sahigara 2007). Values for AD index (ADI) range from 0 (worst case) to 1 (best case).

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Generally, ADI values of > 0.70 indicate that the prediction has moderate or better predictivity (Gad 2016).
    - All six models had a global ADI < 0.7; therefore, the results of these models are not suitable for a weight of the evidence evaluation.
- DTU 2026, Appendix H
    - Methyltrimethoxysilane was also modeled for carcinogenicity using the Danish QSAR Database. The compound was out of the applicability domains of all models, and therefore, they are not included in the weight of evidence.
- U.S. EPA 2024b
    - Methyltrimethoxysilane could not be modeled with OncoLogic v9.4 as it is outside the domain of this software.

Mutagenicity/Genotoxicity (M) Score (H, M, or L): L

Methyltrimethoxysilane was assigned a score of Low for mutagenicity/genotoxicity based on negative results for clastogenicity and mutagenicity in *in vivo* studies with mice and rats. GreenScreen® criteria classify chemicals as a Low hazard for mutagenicity/genotoxicity when data are available for both gene mutations and chromosome aberrations, and they are not GHS classified (CPA 2026). The confidence in the score is high as it is based on high quality *in vivo* data.

- Authoritative and Screening Lists
    - *Authoritative:* Not present on any authoritative lists for this endpoint.
    - *Screening:* Not present on any screening lists for this endpoint.
- ECHA CHEM, CAS #1185-55-3, 2026
    - *In vitro:* Methyltrimethoxysilane (purity not specified) was negative in a GLP-compliant bacterial reverse mutation assay conducted according to OECD Guideline 471 in *Salmonella typhimurium* strains TA1535, TA1537, TA98, and TA100, and *Escherichia coli* WP_2 uvrA at concentrations of 100, 333, 1,000, 3,333 and 5,000 µg/plate with and without metabolic activation (rat liver S9). The positive controls were 2-aminoanthracene, 2-nitrofluorene, sodium azide, 9-aminoacridine, and methylmethanesulfonate. No increase in revertants was seen in any strain at any concentration. Vehicle and positive controls were reported as valid (Klimisch (1997) 1, reliable without restriction) (Unnamed study 2004, 001 Key). Note that the numbering of studies changes over time in ECHA CHEM dossiers.
    - *In vitro:* Methyltrimethoxysilane (purity not specified) was negative in a GLP-compliant bacterial reverse mutation assay conducted according to OECD Guideline 471 in *S. typhimurium* strains TA1535, TA1537, TA98, and TA100, and *E. coli* WP_2 *uvr*A at concentrations up to 5,000 µg/plate with and without metabolic activation (S9 mix). The positive controls were sodium azide, 9-aminoacridine, 2-nitrofluorene, ethylnitrosurea, 2-aminoanthracene, and benzo(a)pyrene. No increase in revertants was seen in any strain at any concentration. Vehicle and positive controls were reported as valid (Klimisch 1, reliable without restriction) (Unnamed study 2002, 002 Supporting).
    - *In vitro:* Methyltrimethoxysilane (purity not specified) was negative in a non-GLP Ames reverse mutation assay similar to OECD Guideline 471 in *S. typhimurium* strains TA1535, TA1537, TA1538, TA98, and TA100 with and without metabolic activation (Aroclor induced rat liver S9). The positive controls were methylnitrosoguanidine, 9-aminoacridine, 2-nitrofluorene, 2-anthramine, 2-aminoquinolone, and 2-aminofluorine. No increase in revertants was seen in any strain at any concentration. Vehicle and positive controls were reported as valid (Klimisch 2, reliable with restrictions) (Unnamed study 1977, 003 Supporting).
    - *In vitro:* In a GLP-compliant *in vitro* mammalian cell chromosome aberration test conducted

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

according to OECD Guideline 473, Chinese hamster ovary (CHO-K1) cells were treated with methyltrimethoxysilane at concentrations of 340.6, 681.2 and 1,362.4 µg/ml with and without metabolic activation (Aroclor induced rat liver S9, NADP as cofactor). The positive controls were mitomycin C and cyclophosphamide. No cytotoxicity was observed. A statistically significant dose-dependent increase in structural aberrations was seen with metabolic activation, but not without metabolic activation. Positive and solvent controls were reported as valid. Authors concluded that methyltrimethoxysilane was positive with metabolic activation and negative without metabolic activation (Klimisch 1, reliable without restriction) (Unnamed study 2004, 004 Key).

- *In vitro:* In a GLP-compliant *in vitro* mammalian cell chromosome aberration test conducted according to OECD Guideline 473, CHO cells were treated with methyltrimethoxysilane at concentrations of 750, 1,000 and 1,362 µg/ml with and without metabolic activation (Aroclor induced rat liver S9). The positive controls were not specified. Cytotoxicity was observed above 750 µg/ml. Methyltrimethoxysilane was clastogenic for the cells with and without metabolic activation (Klimisch 1, reliable without restriction) (Unnamed study 2002, 005 Supporting).
- *In vitro:* In a GLP-compliant *in vitro* mammalian cell mutagenicity assay conducted according to OECD Guideline 476, mouse lymphoma L5178Y cells were treated with 26 to 1,360 µg/ml methyltrimethoxysilane (purity not specified) with and without metabolic activation (Aroclor induced rat liver S9). The positive controls were methylmethanesulfonate and 3-methylcholanthrene. No cytotoxicity was observed. A statistically significant dose-dependent increase in mutant frequency was seen with metabolic activation. An increase in mutant frequency was seen at the low dose without metabolic activation. Authors concluded that methyltrimethoxysilane is positive with metabolic activation and ambiguous without metabolic activation (Klimisch 1, reliable without restriction) (Unnamed study 2002, 006 Key).
- *In vivo:* Methyltrimethoxysilane (purity not specified) was negative in a GLP-compliant *in vivo* mammalian erythrocyte micronucleus test conducted according to OECD Guideline 474 in female Crl: WI(Han) rats. No increase in micronuclei in the bone marrow of mice (5/sex/dose) was seen 24 or 48 hours after a single oral dose of 0, 500, 1,000, or 2,000 mg/kg via gavage. The positive control was mitomycin C. Clinical signs (mortality, reduced activity, ataxia and hunched posture) at the mid and high doses suggest systemic availability. Vehicle and positive controls were valid. Authors concluded that methyltrimethoxysilane was negative for clastogenicity *in vivo* (Klimisch 1, reliable without restriction) (Unnamed study 2002, 001 Key).
- *In vivo:* Methyltrimethoxysilane (purity not specified) was negative in a GLP-compliant *in vivo* mammalian comet assay conducted according to OECD Guideline 489 in male and female CD-1 mice (5/group). There was no increase in genotoxic alterations in bone marrow, liver and lung cells after inhalation exposure up to 20 mg/L for 4 hours. The positive control was ethylmethanesulphonate. No signs of toxicity were reported. Negative and positive controls were valid. Authors concluded that methyltrimethoxysilane was negative for genotoxicity *in vivo* (Klimisch 1, reliable without restriction) (Unnamed study 2017, 002 Key).

- Based on the weight of evidence, a score of Low was assigned. Negative results in an *in vivo* micronucleus assay outweighed the positive results in several *in vitro* chromosomal aberration tests in the assessment, and indicate that methyltrimethoxysilane is not likely to be clastogenic *in vivo*. Additionally, negative results in an *in vivo* comet assay outweighed the positive results in an *in vitro*

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

mammalian cell mutagenicity assay, and indicate that methyltrimethoxysilane is not likely to be mutagenic *in vivo*. Therefore, a score of Low was assigned.

Reproductive Toxicity (R) Score (H, M, or L): L

Methyltrimethoxysilane was assigned a score of Low for reproductive toxicity based on a lack of effects on reproductive indices in an extended one-generation reproductive toxicity study and a combined repeated dose toxicity study with reproductive and developmental toxicity screening test in rats. GreenScreen® criteria classify chemicals as a Low hazard for reproductive toxicity when adequate data are available and they are not GHS classified (CPA 2026). The confidence in the score is high as it is based on high quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA CHEM, CAS #1185-55-3, 2026
  - In a GLP-compliant extended one-generation reproductive toxicity study with F2 generation and both developmental, neuro-, and immunotoxicity examinations conducted according to OECD Guideline 443, Crl:CD(SD) rats (10-24/sex/dose) were administered methyltrimethoxysilane (purity not specified) in corn oil at doses of 0, 100, 300, or 1,000 mg/kg/day via gavage for two weeks before pairing, throughout pairing and up to necropsy after the F1 litters were weaned (males) or two weeks before pairing, throughout pairing up to necropsy on Day 28 of lactation (females). The F1 generation cohorts were treated from weaning (Day 21 of age) to their scheduled termination (relevant to each cohort). No effects on reproductive performance or fertility (estrous cycle, sperm measures, male and female mating index, male and female fertility index, male copulation index, and female conception index) were seen in the P0 or F1 animals. Authors identified a NOAEL of 1,000 mg/kg/day based on the lack of effects on reproduction (Klimisch 1, reliable without restriction) (Unnamed study 2023, 001 Key).
  - In a GLP-compliant combined repeated dose toxicity study with reproductive and developmental toxicity screening test conducted according to OECD Guideline 422 in Crl:CD(SD) rats, animals (10/sex/dose) were administered methyltrimethoxysilane (100% purity) in corn oil at doses of 0, 50, 250, or 1,000 mg/kg/day via gavage for 14 days prior to mating and through a 14 day mating period (males) or postpartum day 3 (females). No effects on reproductive performance (male and female mating index, male and female fertility index, male copulation index, and female conception index) were seen. All females delivered live litters, and there were no effects on litter size. Authors identified a NOAEL of 1,000 mg/kg/day based on the lack of effects on reproduction (Klimisch 1, reliable without restriction) (Unnamed study 2002, 002 Supporting).

Developmental Toxicity incl. Developmental Neurotoxicity (D) Score (H, M, or L): L

Methyltrimethoxysilane was assigned a score of Low for developmental toxicity based on a lack of effects on developmental indices in an extended one-generation reproductive toxicity study and a combined repeated dose toxicity study with reproductive and developmental toxicity screening test in rats and no specific and adverse developmental effects in a prenatal developmental toxicity study in rabbits. GreenScreen® criteria classify chemicals as a Low hazard for developmental toxicity when adequate data are available and they are not GHS classified (CPA 2026). The confidence in the score is high as it is based on high quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA CHEM, CAS #1185-55-3, 2026
  - In a GLP-compliant prenatal developmental toxicity study conducted according to OECD Guideline 414 in New Zealand White rabbits, females (24/dose) were administered methyltrimethoxysilane (purity not specified) unchanged at doses of 0, 50, 150, or 400 mg/kg/day via gavage from Day 6 to Day 28 after mating (22 days). Dams in the 400 mg/kg/day group showed a marked reduction in group mean body weight gain and food consumption, and two animals in the group were euthanized for welfare reasons. There was also reduced fetal weights at the 400 mg/kg/day dose. In fetuses, there was also an increase in the incidence of major heart and vessel abnormalities in the 150 and 400 mg/kg/day groups (2 fetuses from 2 litters and 3 fetuses from 2 litter respectively). These included dilated ascending aorta/aortic arch, marked narrow pulmonary trunk, membranous ventricular septal defect, muscular ventricular septal defect, large ventricle, malrotated heart, and thick ventricle wall. Some of the findings were within the historical control range. The study director concluded that a relationship to treatment cannot be discounted and identified a NOAEL of 50 mg/kg/day for developmental toxicity based on the cardiovascular findings. An independent review concluded that the cardiovascular findings at 150 mg/kg/day and 400 mg/kg/day were not adverse due to being within historical range. In addition, the reviewer attributed reduced fetal weight to maternal toxicity and established the NOAEL for developmental toxicity as 150 mg/kg/day based on the reduced fetal weights at the high dose secondary to maternal toxicity (Klimisch 1, reliable without restriction) (Unnamed study 2022, 003 Key).
  - In the previously described GLP-compliant combined repeated dose toxicity study with reproductive and developmental toxicity screening test conducted according to OECD Guideline 422, Crl:CD(SD) rats (10/sex/dose) were administered methyltrimethoxysilane (100% purity) in corn oil at doses of 0, 50, 250, or 1,000 mg/kg/day via gavage for 14 days prior to mating and through a 14 day mating period (males) or postpartum day 3 (females). There were no effects on offspring viability, clinical signs, body weight, or gross pathology. There were no visible external, soft tissue or skeletal abnormalities. Authors identified a NOAEL of 1,000 mg/kg/day, the highest dose studied, based on the lack of effects on development (Klimisch 1, reliable without restriction) (Unnamed study 2002, 004 Supporting).
  - In the previously described GLP-compliant extended one-generation reproductive toxicity study with F2 generation and both developmental, neuro-, and immunotoxicity conducted according to OECD Guideline 443, Crl:CD(SD) rats (10-24/sex/dose) were administered methyltrimethoxysilane (purity not specified) in corn oil at doses of 0, 100, 300, or 1,000 mg/kg/day via gavage for two weeks before pairing, throughout pairing and up to necropsy after the F1 litters were weaned (males) or two weeks before pairing, throughout pairing up to necropsy on Day 28 of lactation (females). The F1 generation cohorts were treated from weaning (Day 21 of age) to their scheduled termination (relevant to each cohort). There were no effects on fetal development and growth, developmental neurotoxicity, or developmental immunotoxicity. Authors identified a NOAEL of 1,000 mg/kg/day based on the lack of effects on development (Klimisch 1, reliable without restriction) (Unnamed study 2023, 001 Key).
- Based on the weight of evidence, a score of Low was assigned based on a lack of effects on developmental indices in an extended one-generation reproductive toxicity study and a reproductive toxicity screening test in rats. Although reduced fetal weights were observed at the 400 mg/kg/day dose in a prenatal developmental toxicity study in rabbits, this high dose was very toxic to maternal

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

animals with a marked reduction in group mean body weight gain and food consumption and two animals needing to be euthanized for welfare reasons. An independent review considered it secondary to maternal toxicity, which is not classifiable under GHS. Therefore, a score of Low was assigned.

Endocrine Activity (E) Score (H, M, or L): M

Methyltrimethoxysilane was assigned a score of Moderate for endocrine disruption based on changes to T4 and THS levels accompanied by organ weight and/or pathology effects in the thyroid and adrenal glands in an extended one-generation reproductive toxicity study in rats and pathological changes to the thyroid gland in a combined repeated dose toxicity study with reproductive and developmental toxicity screening test in rats. GreenScreen® criteria classify chemicals as a Moderate hazard for endocrine disruption when there is evidence of endocrine activity (CPA 2026). The confidence in the score is high as the data demonstrate effects on hormone levels and endocrine organs *in vivo* in multiple studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- U.S. EPA 2026c
  - Methyltrimethoxysilane was active in 0/6 estrogen receptor (ER) assays, 0/8 androgen receptor (AR) assays, 0/2 steroidogenesis assays, and 0/8 thyroid receptor assays performed as part of the U.S. EPA's Endocrine Disruptor Screening Program (EDSP) in the 21st Century.
- ECHA CHEM, CAS #1185-55-3, 2026
  - In the previously described GLP-compliant extended one-generation reproductive toxicity study with F2 generation and both developmental, neuro-, and immunotoxicity conducted according to OECD Guideline 443, Crl:CD(SD) rats (10-24/sex/dose) were administered methyltrimethoxysilane (purity not specified) in corn oil at doses of 0, 100, 300, or 1,000 mg/kg/day via gavage for two weeks before pairing, throughout pairing and up to necropsy after the F1 litters were weaned (males) or two weeks before pairing, throughout pairing up to necropsy on Day 28 of lactation (females). There was a significant decrease in T4 concentrations for P0 males given 300 mg/kg/day and for both sexes given 1,000 mg/kg/day. There was also an increase in TSH levels in P0 female rats in the 1,000 mg/kg/day dose group. There was test item-related diffuse cortical vacuolation of the adrenal glands observed in males administered 100, 300 and 1000 mg/kg/day but with no clear dose-response relationship. Follicular hypertrophy was noted in the thyroid of males and females administered 100, 300 and 1000 mg/kg/day. There was increased thyroid/parathyroid weights in both sexes at 300 or 1000 mg/kg/day and increased adrenal gland weights in both sexes at 1,000 mg/kg/day. Similar effects were noted in the offspring generations. There were no treatment-related effects on anogenital distance or nipple retention in the offspring (Klimisch 1, reliable without restriction) (Unnamed study 2023, 001 Key).
  - In the previously described GLP-compliant combined with repeated dose toxicity study with reproductive and developmental toxicity screening test conducted according to OECD Guideline 422, Crl:CD(SD) rats (10/sex/dose) were administered methyltrimethoxysilane (100% purity) in corn oil at doses of 0, 50, 250, or 1,000 mg/kg/day via gavage for 14 days prior to mating and through a 14 day mating period (males) or postpartum day 3 (females). Thyroid gland follicular cell hyperplasia/hypertrophy was seen in all animals (males and females) at doses of 250 and 1,000 mg/kg/day (Klimisch 1, reliable without restriction) (Unnamed study 2002, 004 Supporting).
  - In a subchronic inhalation toxicity study conducted according to OECD Guideline 413, Crl:

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

CD® (SD) IGS BR VAF/Plus® rats (10/sex/dose) were administered 25, 100, 400, or 1,600 ppm (0.14, 0.56, 2.2, or 8.9 mg/L) methyltrimethoxysilane (purity not reported) for 6 hours/day, 5 days/week via whole body inhalation for 90 days. To treatment related changes were seen at up to 0.56 mg/L. At the 2.2 mg/L dose, calculi were seen in the urinary bladder of 2 males, and urinary bladder epithelial hyperplasia was seen in both sexes. Absolute adrenal gland weight was increased by 18% in females. Calculi were also seen in the urinary bladder of 4 males and 1 female at the high dose, and persisted through a 28-day recovery period. Moderate dilation of the kidney was also observed. In females at the high dose, absolute and relative adrenal weights were significantly increased by 25% and 27%, respectively, and relative kidney weights were significantly increased by 12%. Authors identified a NOAEC of 0.56 mg/L and LOAEC of 2.2 mg/L based on effects on the bladder and kidney. These values are equivalent to 0.4 and 1.6 mg/L[11] for a 7 days/week exposure frequency (Klimisch 1, reliable without restriction) (Unnamed study 2008, 001 Key).

Group II and II* Human Health Effects (Group II and II* Human)

Note: Group II and Group II* endpoints are distinguished in the v 1.4 Benchmark system (the asterisk indicates repeated exposure). For Systemic Toxicity and Neurotoxicity, Group II and II* are considered sub-endpoints. See GreenScreen® Guidance v1.4, Annex 2 for more details.

Acute Mammalian Toxicity (AT) (Group II) Score (vH, H, M, or L): L

Methyltrimethoxysilane was assigned a score of Low for acute toxicity based on an oral LD_{50} of 7,000 mg/kg in mice, dermal LD_{50} of greater than 9,500 mg/kg in rabbits, and inhalation LC_{50} of greater than 42.1 mg/L in rats. GreenScreen® criteria classify chemicals as a Low hazard for acute toxicity when the most conservative oral and dermal LD_{50} values are greater than 2,000 mg/kg and the most conservative inhalation LC_{50} value is greater than 20 mg/L (CPA 2026). The confidence in the score is high as it is based on high quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* GHS - Japan - H332 - Harmful if inhaled [Acute toxicity (inhalation: vapor) - Category 4]. Based on a 6-hour vapor LC_{50} of > 7,605 ppm in an OECD Guideline 403 study in rats (NITE 2013, 2022). *ToxServices notes that although the value 7,605 ppm is within the Category 4 range of ,500 and 20,000 ppm for gases, the reported LC_{50} value was greater than the value, and may have been the top concentration tested. As the actual pinpoint LC_{50} value was not reported, the study could not serve as the basis for Category 4 classification.*
- ECHA CHEM, CAS #1185-55-3, 2026
  - *Oral*: LD_{50} (rat, male Carworth Farms-Eliss) = 11,685 mg/kg (non-GLP, non-guideline) (Klimisch 2, reliable with restrictions) (Unnamed study 1963, 001 Key)
  - *Oral*: LD_{50} (mouse, male and female, strain not specified) = 7,000 mg/kg (non-GLP, OECD Guideline 401) (Klimisch 2, reliable with restrictions) (Unnamed study 1972, 002 Supporting)
  - *Oral*: LD_{50} (rat, male Sprague-Dawley) > 9,500 mg/kg (non-GLP, OECD Guideline 401) (Klimisch 2, reliable with restrictions) (Unnamed study 1966, 003 Supporting)
  - *Inhalation*: LC_{50} (rat, male and female Sprague-Dawley) > 42.1 mg/L/6h (GLP, OECD Guideline 403) (Klimisch 1, reliable without restriction) (Unnamed study 2006, 001 Key)
  - *Inhalation*: LC_{50} (rat, female, strain not specified) > 26,000 ppm/4h (144.9 mg/L/4h[12]) (non-

[11] 0.56 * 5 days/7 days = 0.4 mg/L
[12] 26,000 ppm * 136.222 / 24,450 = 144.9 mg/L

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

GLP, non-guideline) (Klimisch 2, reliable with restrictions) (Unnamed study 1963, 002 Supporting)
- *Dermal*: LD_{50} (rabbit, sex and strain not specified > 9,500 mg/kg (non-GLP, OECD Guideline 402) (Klimisch 2, reliable with restrictions) (Unnamed study 1963, 001 Key)

Systemic Toxicity/Organ Effects incl. Immunotoxicity (ST-single) (Group II) Score (vH, H, M, or L): L

Methyltrimethoxysilane was assigned a score of Low for systemic toxicity (single dose) based on a lack of persistent clinical effects or changes in gross organ pathology at doses from 29 to 9,500 mg/kg in an acute oral toxicity study in rats. GreenScreen® criteria classify chemicals as a Low hazard for systemic toxicity (single dose) when no evidence of systemic toxicity is seen below the guidance value of 2,000 mg/kg in an acute oral toxicity study (CPA 2026). The confidence in the score is high as it is based on high quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA CHEM, CAS #1185-55-3, 2026
  - *Oral*: In the acute oral toxicity study in male Carworth Farms-Eliss rats that identified an LD_{50} of 11,685 mg/kg, animals (5/dose) were administered a single oral dose of 8 mL/kg or 16 mL/kg (7,600 or 15,200 g/kg[13]) methyltrimethoxysilane (purity not specified) via gavage and were observed for 14 days. Animals were sluggish and demonstrated unsteady gait shortly after dosing. No effects on body weight gain were found. Congested lungs, mottled livers with prominent acini, and hemorrhage and congestion of the gastrointestinal tract were seen at necropsy (Klimisch 2, reliable with restrictions) (Unnamed study 1963, 001 Key).
  - *Oral*: In the acute oral toxicity study in male and female mice that identified an LD_{50} of 7,000 mg/kg, animals (10 sex/dose) received a single oral (unspecified) dose of 2.6, 4, 9, or 13.5 g/kg methyltrimethoxysilane (purity not specified) and were observed for 10 days. At nonlethal doses, mice were sedated, with loss of reflexes and dyspnea, increasing in a dose dependent manner. There were no details on gross pathological changes at necropsy (Klimisch 2, reliable with restrictions) (Unnamed study 1972, 002 Supporting).
  - *Oral*: In the acute oral toxicity study in male Sprague-Dawley rats that identified an LD_{50} of > 9,500 mg/kg, animals, animals (5/sex/dose) were administered a single oral dose of 0.031, 0.1, 0.316, 1, 3.16, or 10 mL/kg (29, 95, 300, 950, 3,002, or 9,500 mg/kg[14]) methyltrimethoxysilane (purity not specified) via gavage and were observed for an unspecified duration. Depression, labored respiration, ataxia, and excessive urination were seen at the highest dose and resolved by day 4. No gross pathological changes were seen at necropsy (Klimisch 2, reliable with restrictions) (Unnamed study 1966, 003 Supporting).
  - *Inhalation*: In the acute inhalation toxicity study in male and female Sprague-Dawley rats that identified an LC_{50}, > 42.1 mg/L/6h, animals (5/sex) were exposed to 42.1 mg/L methyltrimethoxysilane (purity not specified) vapor via whole body inhalation for 6 hours and were observed for 14 days. No mortality or effects on body weight were found. Urinary bladder calculi and kidney foci were seen in both sexes, an enlarged kidney was seen in one male, and abscessed prostate glands were seen in two males (Klimisch 1, reliable without restriction) (Unnamed study 2006, 001 Key).
  - *Inhalation*: In the acute inhalation toxicity study in female rats that identified an LC_{50} of >144.9 mg/L, 6 animals were exposed to 26,000 ppm (144.9 mg/L) methyltrimethoxysilane

[13] 8 mL/kg *0.95 g/mL * 1,000 mg/g = 7,600 mg/kg
[14] 0.031 mL/kg *0.95 g/mL * 1,000 mg/g = 29 mg/kg

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

(purity not specified) vapors for 4 hours and were observed for 14 days. Animals appeared to be anesthetized when removed from the chambers. Most survivors gained weight during the 2-week observation period after exposure and had no gross pathological findings at sacrifice (Klimisch 2, reliable with restrictions) (Unnamed study 1963, 002 Supporting).
    - *Dermal*: In the acute dermal toxicity study in rabbits that identified an LD_{50} of > 9,500 mg/kg, 4 animals were exposed to 10 ml/kg (9,500 mg/kg) methyltrimethoxysilane (purity not specified) vapors for 24 hours and were observed for 14 days. Minor skin irritation was observed and some desquamation was found after 14 days. There were no details on gross pathological changes at necropsy (Klimisch 2, reliable with restrictions) (Unnamed study 1963, 001 Key).
- Based on the weight of evidence, a score of Low was assigned. The oral toxicity study in Carworth Farms-Eliss rats and inhalation toxicity study in Sprague-Dawley rats are insufficient to assess systemic toxicity, as all doses were greater than the guidance values. As no gross pathological changes were seen in the acute oral toxicity study in Sprague-Dawley rats, which included doses both below and above the guidance value, a score of Low was assigned. Clinical signs (ataxia and depression) will be assessed for neurotoxicity-single dose below.

Systemic Toxicity/Organ Effects incl. Immunotoxicity (ST-repeat) (Group II*) Score (H, M, or L): *M*

Methyltrimethoxysilane was assigned a score of Moderate for systemic toxicity (repeated dose) based on ToxServices classifying it to GHS Category 2 based on a LOAEL of 250 mg/kg/day in a 28-day oral study in rats. GreenScreen® criteria classify chemicals as a Moderate hazard for systemic toxicity (repeated dose) when they are classified to GHS Category 2 (effects seen between the adjusted guidance values of 30 and 300 mg/kg/day for a 28-day oral study) (CPA 2026). The confidence in the score is low as results from the extended one-generation reproductive toxicity with a longer exposure duration do not require GHS classification.

- Authoritative and Screening Lists
    - *Authoritative:* Not present on any authoritative lists for this endpoint.
    - *Screening:* GHS - Japan - H373 - May cause damage to organs through prolonged or repeated exposure (liver and thyroid (NITE 2013)) [Specific target organs/systemic toxicity following repeated exposure - Category 2].
- ECHA CHEM, CAS #1185-55-3, 2026
    - *Oral*: In the previously described GLP-compliant combined repeated dose toxicity study with reproductive and developmental toxicity screening test conducted according to OECD Guideline 422 in Sprague-Dawley rats, the toxicity group animals (10/sex/dose) were administered methyltrimethoxysilane (100% purity) at doses of 0, 50, 250, or 1,000 mg/kg/day via gavage for 14 days prior to mating and through a mating for a total treatment period of 28-29 days. Transient inactivity and salivation were observed after dosing. Body weight and weight gain were significantly decreased in males at the high dose. Absolute and relative liver weights were significantly increased in both sexes at the mid and high doses. At the mid and high doses, prothrombin time was significantly increased in males but not females. Platelet concentration was increased in both sexes and red blood cell concentration was increased in males at the high dose. Histopathological changes at the mid and high doses included hepatocellular hypertrophy, periportal vacuolation, ancanthocytosis, thyroid gland hyperplasia/hypertrophy, mucosal lipidosis of the duodenum, and jejunum, and adrenal gland hyperplasia/hypertrophy, apoptosis, and lymphocytic infiltration. Authors identified a NOAEL of 50 mg/kg/day and LOAEL of 250 mg/kg/day based on thyroid gland hyperplasia/hypertrophy, as well as increased liver weights in both sexes, decreased thymus

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

weight in males, and hepatocellular hypertrophy and periportal vacuolation in females recorded at the LOAEL (Klimisch 1, reliable without restriction) (Unnamed study 2002, 001 Key). *Due to the short duration of the study (28-29 days), these values are compared to tripled guidance values of 30 and 300 mg/kg/day.*

- *Oral***:** In the previously described GLP-compliant extended one-generation reproductive toxicity study with F2 generation and both developmental, neuro-, and immunotoxicity examinations conducted according to OECD Guideline 443, Crl:CD(SD) rats (10-24/sex/dose) were administered methyltrimethoxysilane (purity not specified) in corn oil at doses of 0, 100, 300, or 1,000 mg/kg/day via gavage for two weeks before pairing, throughout pairing and up to necropsy after the F1 litters were weaned (males, at least 10 weeks of treatment in total) or two weeks before pairing, throughout pairing up to necropsy on Day 28 of lactation (females). Cohort 1A animals were sacrificed at approximately 13 weeks old, 1B males 21-22 weeks old, 2A animals 75 days old, 2B animals 21/22 days old, and cohort 3 animals 60 days old, and F2 animals were sacrificed at 22 days old. There was periportal hepatocellular vacuolation accompanied by evidence of compromised liver function in P0 males and F1 females in the 300 and 1,000 mg/kg/day dose groups. There were urinary bladder abnormalities in P0 and F1 animals given 1,000 mg/kg/day. Authors identified a NOAEL of 100 mg/kg/day and LOAEL of 300 mg/kg/day based on liver toxicity (Klimisch 1, reliable without restriction) (Unnamed study 2023, 001 Key).
- *Inhalation*: In a subchronic inhalation toxicity study conducted according to OECD Guideline 413, Crl: CD® (SD) IGS BR VAF/Plus® rats (10/sex/dose) were administered 25, 100, 400, or 1,600 ppm (0.14, 0.56, 2.2, or 8.9 mg/L) methyltrimethoxysilane (purity not reported) for 6 hours/day, 5 days/week via whole body inhalation for 90 days. To treatment related changes were seen at up to 0.56 mg/L. At the 2.2 mg/L dose, calculi were seen in the urinary bladder of 2 males, and urinary bladder epithelial hyperplasia was seen in both sexes. Absolute adrenal gland weight was increased by 18% in females. Calculi were also seen in the urinary bladder of 4 males and 1 female at the high dose, and persisted through a 28-day recovery period. Moderate dilation of the kidney was also observed. In females at the high dose, absolute and relative adrenal weights were significantly increased by 25% and 27%, respectively, and relative kidney weights were significantly increased by 12%. Authors identified a NOAEC of 0.56 mg/L and LOAEC of 2.2 mg/L based on effects on the bladder and kidney. These values are equivalent to 0.4 and 1.6 mg/L[15] for a 7 days/week exposure frequency (Klimisch 1, reliable without restriction) (Unnamed study 2008, 001 Key).

- Based on the weight of evidence, a score of Moderate was assigned. The guidance values are tripled for the oral combined repeated dose toxicity study with reproductive and developmental toxicity screening test due to the 28-day duration of treatment. Therefore, the LOAEL of 250 mg/kg/day falls between the tripled guidance values of >30-300 mg/kg/day for a score of Moderate. Effects recorded at the LOAEL included histopathological changes in the liver, thyroid, and/or thymus, and increased liver weight. ToxServices considered these effects adverse and sufficient to warrant GHS classification. The exposure duration for F0 animals and certain cohorts of F1 animals for the oral extended one-generation reproductive toxicity study is close to, or longer than 90 days. The LOAEL of 300 mg/kg/day is above the GHS guidance value whereas the NOAEL of 100 mg/kg/day is equal to the guidance value for Category 2. Therefore, critical values from this study do not warrant GHS classification. The NOAEC and LOAEC of 0.4 and 1.6 mg/L for the inhalation toxicity study correspond to a score of Low (>1.0 mg/L) to Moderate (>0.2-1.0 mg/L) via inhalation, but dose spacing is insufficient to determine if effects were seen below the guidance value of 1.0

[15] 0.56 * 5 days/7 days = 0.4 mg/L

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

mg/L. Therefore, the conservative score of Moderate was assigned based on the oral combined repeated dose toxicity study with reproductive and developmental toxicity screening test.

Neurotoxicity (single dose, N-single) (Group II) Score (vH, H, M, or L): M

Methyltrimethoxysilane was assigned a score of Moderate for neurotoxicity (single dose) based on transient neurological effects in acute oral toxicity studies in rats and mice, and in acute inhalation toxicity studies in rats. GreenScreen® criteria classify chemicals as a Moderate hazard for neurotoxicity (single dose) when available data indicate that GHS Category 3 classification for transient narcotic effects is warranted (CPA 2026). The confidence in the score is high as it is based on high quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* GHS - Japan - H336 - May cause drowsiness or dizziness [Specific target organ toxicity - Single exposure - Category 3 (Narcotic effects)].
- ECHA CHEM, CAS #1185-55-3, 2026
  - *Oral*: In the acute oral toxicity study in male Carworth Farms-Eliss rats that identified an LD_{50} 11,685 mg/kg described above for systemic toxicity, animals (5/dose) were administered a single oral dose of 8 mL/kg or 16 mL/kg (7.6 or 15.2 g/kg) via gavage and were observed for 14 days. Animals were sluggish and demonstrated unsteady gait shortly after dosing (Klimisch 2, reliable with restrictions) (Unnamed study 1963, 001 Key).
  - *Oral*: In the acute oral toxicity study in male and female mice that identified an LD_{50} of 7,000 mg/kg, animals (10sex/dose) received a single oral dose of 2.6, 4, 9, or 13.5 g/kg (route unspecified) methyltrimethoxysilane (purity not specified) and were observed for 10 days. At lethal doses ($\geq$ 4.0 g/kg), animals were unreactive and displayed loss of reflexes and dyspnea. Effects were similar at the lower doses, but resolved within 2 hours. Sedation and dyspnea increased in a dose dependent manner (Klimisch 2, reliable with restrictions) (Unnamed study 1972, 002 Supporting).
  - *Oral*: In the previously described acute oral toxicity study in male Sprague-Dawley rats that identified an LD_{50} of > 9,500 mg/kg, depression, labored respiration, ataxia, and excessive urination were seen at the high dose and resolved by day 4 (Klimisch 2, reliable with restrictions) (Unnamed study 1966, 003 Supporting).
  - *Inhalation*: In the previously described acute inhalation toxicity study in male and female Sprague-Dawley rats that identified an LC_{50}, > 42.1 mg/L/6h, animals were evaluated for autonomic and central nervous systems, motor activity and behavior pattern including tremors, convulsions, salivation, diarrhea, lethargy, sleep and coma. The only clinical signs reported were discolored urine, fecal staining, and head and muzzle soiling (Klimisch 1, reliable without restriction) (Unnamed study 2006, 001 Key).
  - *Inhalation*: In the acute inhalation toxicity study in female rats that identified an LC_{50} of >144.9 mg/L, 6 animals were exposed to 26,000 ppm (144.9 mg/L) methyltrimethoxysilane (purity not specified) vapors for 4 hours and were observed for 14 days. Animals appeared to be anesthetized when removed from the chambers (Klimisch 2, reliable with restrictions) (Unnamed study 1963, 002 Supporting).
- Based on the weight of evidence, a score of Moderate was assigned. Anesthesia and lethargy were observed in acute inhalation studies in rats, and depression, loss of reflexes, and sedation were seen in acute oral toxicity studies in rats and mice. These neurological effects suggest that GHS Category 3 classification for transient narcotic effects may be appropriate.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Neurotoxicity (repeated dose, N-repeated) (Group II*) Score (H, M, or L): L

Methyltrimethoxysilane was assigned a score of Low for neurotoxicity (repeated dose) based on a lack of neurological effects with NOAELs above the relevant GHS Category 2 guidance cutoff, in an oral combined repeated dose toxicity study with reproductive and developmental toxicity screening in rats, an oral extended one-generation reproductive toxicity study in rats, and a 90-day inhalation toxicity study in rats. GreenScreen® criteria classify chemicals as a Low hazard for neurotoxicity (repeated dose) when adequate data are available and no neurological effects are seen below the relevant duration-adjusted GHS guidance values oral and inhalation toxicity studies (CPA 2026). The confidence in the score is high as it is based on high quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA CHEM, CAS #1185-55-3, 2026
  - *Oral*: In the previously described GLP-compliant combined repeated dose toxicity study with reproductive and developmental toxicity screening test conducted according to OECD Guideline 422 in Sprague-Dawley rats, neurobehavioral examinations were performed prior to dosing and during the last week of dosing. Animals were observed for unusual body movements, abnormal behavior and/or posture, and resistance to removal, palpebral closure, lacrimation, pupil size, pupil reactivity, salivation, muscle tone, extensor thrust response, reactivity to handling, level of ambulatory activity including rearing, responsiveness to sharp noise, touch, tail pinch, gait evaluation and quantity of urine and fecal pellets voided, behavior, skin or hair coat, respiration, muscle movements, eyes, urine or feces, soiling, general abnormalities and posture, rectal temperature, hindlimb/forelimb grip strength and landing foot splay. No neurobehavioral effects were seen (Klimisch 1, reliable without restriction) (Unnamed study 2002, 001 Key). *ToxServices identified a NOAEL of 1,000 mg/kg/day, the highest dose tested, based on the lack of effects. Due to the short duration of the study (28-29 days), these values are compared to tripled guidance values of 30 and 300 mg/kg/day.*
  - *Oral***:** In the previously described GLP-compliant extended one-generation reproductive toxicity study with F2 generation and both developmental, neuro-, and immunotoxicity examinations conducted according to OECD Guideline 443, Crl:CD(SD) rats (10-24/sex/dose) were administered methyltrimethoxysilane (purity not specified) in corn oil at doses of 0, 100, 300, or 1,000 mg/kg/day via gavage for two weeks before pairing, throughout pairing and up to necropsy after the F1 litters were weaned (males) or two weeks before pairing, throughout pairing up to necropsy on Day 28 of lactation (females). Developmental neurotoxicity was examined in Cohort 2A and 2B animals, which were sacrificed at 75 and 21/22 days old, respectively. There were no effects observed in the behavioral functional tests that included auditory startle response, motor activity tests, observations of behavior, and reactivity tests. Authors identified a NOAEL of 1,000 mg/kg/day for developmental neurotoxicity (Klimisch 1, reliable without restriction) (Unnamed study 2023, 001 Key). *Due to the short duration of the studied cohort (up to 75 days), these values are compared to duration-adjusted guidance values of 12 and 120 mg/kg/day (e.g., 100 mg/kg/day * 90 days / 75 days = 120 mg/kg/day).*
  - *Inhalation*: In the previously described GLP-compliant subchronic inhalation toxicity study according to OECD Guideline 413 in Crl: CD® (SD) IGS BR VAF/Plus® rats, clinical observations included an evaluation of autonomic and central nervous systems, motor activity, and behavior patterns. No effects were reported (Klimisch 1, reliable without restriction) (Unnamed study 2008, 001 Key). *ToxServices identified a NOAEC of 8.9 mg/L,*

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

the highest concentration tested.

Skin Sensitization (SnS) (Group II*) Score (H, M, or L): L

Methyltrimethoxysilane was assigned a score of Low for skin sensitization based on a negative local lymph node assay (LLNA) in mice and a Buehler assay in guinea pigs. Although a second Buehler assay was positive, the results were determined to be not reliable due to positive reactions in the negative control group and the inconsistent signs of irritation observed across samples. GreenScreen® criteria classify chemicals as a Low hazard for skin sensitization when adequate data are available and negative, there are no structural alerts, and they are not classified under GHS (CPA 2026). The confidence in the score is high as it is based on high quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA CHEM, CAS #1185-55-3, 2026
  - Methyltrimethoxysilane (purity not specified) was not sensitizing in a GLP-compliant mouse LLNA conducted according to OECD Guideline 429 in female CBA mice (5/dose). Animals received 0, 10, 25, and 50 % w/w test substance in acetone/olive oil (4:1 v/v). The Stimulation Index (SI) scores for the 10, 20, and 50% groups were 0.6, 0.6, and 0.7, respectively. As all SI values were lower than 3, authors concluded that the test material is not a skin sensitizer (Klimisch 1, reliable without restriction) (Unnamed study 2021, 001 Key).
  - Methyltrimethoxysilane was negative in a GLP-compliant Buehler test in male Dunkin-Hartley guinea pigs (20/test, 10/control) that were induced and challenged with a 50% solution. No positive responses were seen. The study had a restriction, as the starting concentration for induction was not the highest to cause mild-moderate skin irritation (Klimisch 2, reliable with restrictions) (Unnamed study 2013, 003 Supporting).
  - Methyltrimethoxysilane (purity not specified) was sensitizing in a GLP-compliant Buehler test conducted according to OECD Guideline 406 in male Dunkin-Hartley guinea pigs (20/test, 10/control). Animals were topically induced with a 50% solution and challenged with 25% solution for the 1st challenge and a 15% of 25% solution for the rechallenge. At challenge, positive responses were seen in 95% of animals at 24 hours and 45% of animals at 48 hours. However, positive responses were seen in 100% of negative controls at 24 hours, and 80% of negative controls at 48 hours. Positive responses were seen in 30% and 20% of test animals at 24 and 48 hours after rechallenge with the 25% solution. No positive responses were seen in negative controls. No positive responses were seen upon rechallenge with the 15% solution. Authors concluded that this substance is sensitizing by EU criteria. The REACH dossier notes that the irritation potential was inconsistent between the preliminary and main study, and negative controls showed positive reactions in the first challenge (Klimisch 2, reliable with restrictions) (Unnamed study 2009, 003 Supporting).
  - Not a single case of suspected contact dermatitis was reported during > 20 years of production, handling and use of methyltrimethoxysilane in a chemical plant.
- ECHA 2018
  - The ECHA Risk Assessment Committee (RAC) evaluated methyltrimethoxysilane for a proposed Cat. 1B classification for this endpoint, but decided not to classify based on the weight of evidence from the available data. They noted that the Buehler test with a positive result had low reliability due to the high incidence of skin responses in the first challenge in the negative control group and the inconsistency of results between the challenge and the re-challenge at the same concentration.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Respiratory Sensitization (SnR) (Group II*) Score (H, M, or L): *L*

Methyltrimethoxysilane was assigned a score of Low for respiratory sensitization based on the lack of dermal sensitization potential according to ECHA's guideline. GreenScreen® criteria classify chemicals as a Low hazard for respiratory sensitization when adequate data are available and negative, and they are not classified under GHS (CPA 2026). The confidence in the score is low as this evaluation does not include non-immunologic mechanisms of respiratory sensitization, and no specific data are available for respiratory sensitization.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- OECD 2026, Appendix F
  - Methyltrimethoxysilane does not contain any structural alerts for respiratory sensitization.
- Based on the weight of evidence and guidance from ECHA regarding assessment of respiratory sensitization potential, a score of Low was assigned. The guidance from ECHA states that the mechanisms leading to respiratory sensitization are essentially similar to those leading to skin sensitization (ECHA 2017). ECHA recommended that if a chemical is not a dermal sensitizer based on high quality data, it is unlikely to be a respiratory sensitizer. ECHA also noted that this rationale does not cover respiratory hypersensitivity caused by non-immunological mechanisms, for which human experience is the main evidence of activity (ECHA 2017). As methyltrimethoxysilane was not sensitizing to the skin (see skin sensitization section above), and a literature search did not find any human evidence of respiratory sensitization by methyltrimethoxysilane, and as methyltrimethoxysilane does not contain any structural alerts for respiratory sensitization (OECD 2026), methyltrimethoxysilane is not expected to be a respiratory sensitizer.

Skin Irritation/Corrosivity (IrS) (Group II) Score (vH, H, M, or L): L

Methyltrimethoxysilane was assigned a score of Low for skin irritation/corrosivity based on negative results in two dermal irritation studies in rabbits. GreenScreen® criteria classify chemicals as a Low hazard for skin irritation/corrosivity when adequate data are available and do not warrant GHS classification for skin irritation (CPA 2026). The confidence in the score is high as it is based on high quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA CHEM, CAS #1185-55-3, 2026
  - Methyltrimethoxysilane (purity not reported) was not irritating in a dermal irritation study similar to OECD Guideline 404 in 6 New Zealand White rabbits (sex not specified). Following a 24-hour occlusive administration of an unspecified amount of neat substance to intact skin, the mean scores at 24 and 72 hours were 1 and 0 for erythema and 0 and 0 for edema. The mean scores for abraded skin at 24 and 72 hours were 1 and 0 for erythema and 0.33 and 0.33 for edema (Klimisch 2, reliable with restrictions) (Unnamed study 1966, 001 Key).
  - Methyltrimethoxysilane (purity not reported) was not irritating in a GLP-compliant dermal irritation study conducted according to OECD Guideline 404 in 6 New Zealand White rabbits (sex not specified). Following a 4-hour semi-occlusive administration of 0.5 mL neat substance to the shaved skin of rabbits, two animals had mean scores at 24, 48, and 72 hours of 0.33 for erythema. The mean scores at 24, 48, and 72 hours for the other four animals were 0 for erythema. All six animals had mean scores of 0 for edema at 24, 48, and 72 hours (Klimisch 2, reliable with restrictions) (Unnamed study 1992, 004 Supporting).

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Eye Irritation/Corrosivity (IrE) (Group II) Score (vH, H, M, or L): L
Methyltrimethoxysilane was assigned a score of Low for eye irritation/corrosivity based on negative results in a GLP-compliant ocular irritation study in rabbits. GreenScreen® criteria classify chemicals as a Low hazard for eye irritation/corrosivity when adequate data are available and do not warrant GHS classification for eye irritation (CPA 2026). The confidence in the score is high as it is based on high quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* GHS – New Zealand – Eye irritation category 2; GHS – Japan – H320 – Causes eye irritation [Serious eye damage/eye irritation – Category 2B].
- ECHA CHEM, CAS #1185-55-3, 2026
  - Methyltrimethoxysilane (purity not reported) was not irritating in a GLP-compliant ocular irritation study conducted according to OECD Guideline 405 in 3 New Zealand White rabbits (sex not specified). The mean scores at 24, 48, and 72 hours were 0 for the cornea, iris, conjunctiva, chemosis, and discharge in all individual animals. Mild to moderate conjunctival redness and discharge were seen in all animals 1 hour after instillation, but resolved by the 24-hour observation (Klimisch 1, reliable without restriction) (Unnamed study 1991, 001 Key).
  - Methyltrimethoxysilane (purity not reported) was not irritating in an ocular irritation study similar to OECD Guideline 405 in 6 albino white rabbits (sex not specified). Slight conjunctival irritation was seen in all animals and resolved by the third day. No ocular irritation scores were provided. Terminal fluorescein stain confirmed the absence of corneal damage. Authors concluded that the substance is not irritating (Klimisch 1, reliable without restriction) (Unnamed study 1966, 002 Supporting).
  - Diffuse corneal necrosis was seen in the eyes of 5 rabbits (sex and strain not specified) when 0.5 mL undiluted methyltrimethoxysilane (purity not reported) was instilled into the eye for 24 hours. The response was graded as a score of 2/10 for corneal necrosis. The notifier notes that an excessive amount of test substance (0.5 mL rather than 0.1 mL) was used in this study (Klimisch 2, reliable with restrictions) (Unnamed study 1963, 004 Supporting).
- Based on the weight of evidence, a score of Low was assigned. The Category 2 classifications in New Zealand and Japan are not supported by available data. With the exception of one study that involved instillation of an excessive amount of test substance (0.5 mL rather than 0.1 mL), studies report mild irritation that resolved by 24 hours. No irritation at 24, 48, and 72 hours was seen in the GLP-compliant OECD Guideline 405 study in rabbits. Therefore, a score of Low was assigned.

Ecotoxicity (Ecotox)

Acute Aquatic Toxicity (AA) Score (vH, H, M, or L): L
Methyltrimethoxysilane was assigned a score of Low for acute aquatic toxicity based on LC/EC_{50} values of > 100 mg/L in all three trophic levels. GreenScreen® criteria classify chemicals as a Low hazard for acute aquatic toxicity when the most conservative LC/EC_{50} values are greater than 100 mg/L (CPA 2026). The confidence in the score is high as it is based on high quality studies .

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA CHEM, CAS #1185-55-3, 2026
  - 96-hour LC_{50} (*Oncorhynchus mykiss*, rainbow trout) > 110 mg/L (measured) (GLP, OECD Guideline 203) (Klimisch 1, reliable without restriction) (Unnamed study 2007, 001 Key)

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

- 48-hour EC_{50} (*Daphnia magna*, water flea) > 122 mg/L (measured) (GLP, OECD Guideline 202) (Klimisch 1, reliable without restriction) (Unnamed study 2007, 001 Key)
- 72-hour biomass and growth rate EC_{50} (*Raphidocelis subcapitata*, green algae) > 3.6 mg/L (measured) (GLP, OECD Guideline 203) (Klimisch 1, reliable without restriction) (Unnamed study 2007, 001 Key)
  - The nominal EC_{50} is > 120 mg/L. The large difference between nominal and measured is due to rapid hydrolysis, resulting in likely exposure to mostly the hydrolysis product. The EC_{50} expressed in terms of concentration of the silanol hydrolysis product, methylsilanetriol is > 83 mg/L (nominal).

Chronic Aquatic Toxicity (CA) Score (vH, H, M, or L): *L*
Methyltrimethoxysilane was assigned a score of Low for chronic aquatic toxicity based on NOEC values > 10 mg/L in daphnia and algae for the surrogate and the target chemical, respectively. GreenScreen® criteria classify chemicals as a Low hazard for chronic aquatic toxicity when the most conservative NOEC values are greater than 10 mg/L (CPA 2026). The confidence in the score is low as there are no measured data for fish.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA CHEM, CAS #1185-55-3, 2026
  - 72-hour growth rate NOEC (*R. subcapitata*, green algae) > 3.6 mg/L (measured) (GLP, OECD Guideline 203) (Klimisch 1, reliable without restriction) (Unnamed study 2007, 001 Key)
    - The nominal NOEC is > 120 mg/L. The large difference between nominal and measured is due to rapid hydrolysis, resulting in likely exposure to mostly the hydrolysis product. The NOEC expressed in terms of concentration of the silanol hydrolysis product, methylsilanetriol is > 83 mg/L (nominal).
  - <u>*Surrogate: Methylsilanetriol (CAS #2445-53-6)*</u>: 21-day growth and reproduction NOEC (*D. magna*, water flea) = 10 mg/L (measured) (GLP, OECD Guideline 211) (Klimisch 1, reliable without restriction) (Unnamed study 2018, 001 Key)
- U.S. EPA 2022, Appendix I
  - Methyltrimethoxysilane belongs to the Neutral Organics and Alkoxy Silanes ECOSAR chemical classes. The most conservative predicted chronic values (ChVs) are 1.15 mg/L in fish, 0.730 mg/L in daphnia, and 2.28 mg/L in green algae. *ToxServices did not weigh the modeled data heavily as the target chemical undergoes rapid hydrolysis.*

<u>Environmental Fate (Fate)</u>

Persistence (P) Score (vH, H, M, L, or vL): L
Methyltrimethoxysilane was assigned a score of Low for persistence based on its rapid hydrolysis (half-life < 2.2 hours) and the low aquatic toxicity of its hydrolysis products, which indicates that it meets the GHS rapid degradability criteria. GreenScreen® criteria classify chemicals as a Low hazard for persistence when the chemical mainly partitions to water, soil or sediment, and meets the GHS criteria for rapid degradability (CPA 2026). The confidence in the score is high because it is based on experimental hydrolysis data and acute aquatic toxicity data for the hydrolysis products.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* EC – CEPA DSL – Persistent.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

- ECHA CHEM, CAS #1185-55-3, 2026
    - In a GLP-compliant test according to OECD Guideline 111 (Hydrolysis as a Function of pH), methyltrimethoxysilane had a measured hydrolysis half-life of <0.033 hours, 2.2 hours and 0.11 hours at pH 4, 7 and 9, respectively. Authors concluded that the substance is hydrolytically unstable (Klimisch 1, reliable without restriction) (Unnamed study 2004, 001 Key).
- U.S. EPA 2026b, Appendix J
    - The BIOWIN modeling Ready Biodegradable Predictor indicates that methyltrimethoxysilane is not expected to be readily biodegradable. Fugacity modeling (MCI method) predicts 72.2% will partition to soil with a half-life of 30 days, 20.1% will partition to water with a half-life of 15 days, 7.43% will partition to air with a half-life of 4.05 days, and 0.282% will partition to sediment with a half-life of 135 days.
- Based on the weight of evidence, a score of Low was assigned. The biodegradation of methyltrimethoxysilane could not be determined due to its rapid hydrolysis in water with a half-life of <2.2 hours under environmental conditions. The hydrolysis product methanol is readily biodegradable, while the second hydrolysis product, methylsilanetriol, is not expected to be readily biodegradable. However, both methanol and methyltrimethoxysilane have low aquatic toxicities, as the measured acute and chronic aquatic toxicity values for methyltrimethoxysilane are in fact indicative of the toxicities of the hydrolysis products due to the rapid hydrolysis rate of the parent compound. According to the GHS criteria, data on primary degradability can be used to demonstrate rapid degradability only when the degradation products are not classifiable as hazardous to the aquatic environment. Based on the rapid hydrolysis and low toxicity of hydrolysis products, methyltrimethoxysilane meets the GHS criteria for rapid degradability. The predicted half-life of 30 days in the predicted major compartment, soil, supports a Moderate score (16-60 days). However, it is not clear if EPI Stuie™ takes into account the rapid hydrolysis in the prediction, and measured data take precedence over modeled data in the scoring process and GHS classification. Therefore, a score of Low was assigned based on measured hydrolysis data and aquatic toxicity data.

Bioaccumulation (B) Score (vH, H, M, L, or vL): *vL*
Methyltrimethoxysilane was assigned a score of Very Low for bioaccumulation based on a modeled BCF of 3.162. GreenScreen® criteria classify chemicals as a Very Low hazard for bioaccumulation when the BCF is less than 100 (CPA 2026). The confidence in the score is low as it is based on modeling.

- Authoritative and Screening Lists
    - *Authoritative:* Not present on any authoritative lists for this endpoint.
    - *Screening:* Not present on any screening lists for this endpoint.
- U.S. EPA 2026b, Appendix J
    - BCFBAF predicts a BCF of 3.162 using the regression based model based on a modeled log K_{ow} of 0.53, and a BCF of 1.209 using the Arnot-Gobas model for the upper trophic level, taking metabolism into consideration.

Physical Hazards (Physical)

Reactivity (Rx) Score (vH, H, M, or L): *L*
Methyltrimethoxysilane was assigned a score of Low for reactivity based on a NFPA instability rating of 1 and structural analysis indicating that it is not an explosive, self-reactive, oxidizing or a substance that may produce flammable gases on contact with water. GreenScreen® criteria classify chemicals as a

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Low hazard for reactivity when available data indicate that the chemical does not warrant GHS classification for any of the reactivity sub-endpoints (CPA 2026). The confidence in the score was low based on lack of measured data.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA CHEM, CAS #1185-55-3, 2026
  - ECHA dossier authors concluded that methyltrimethoxysilane contains no chemical groups associated with explosive or oxidizing properties.
- Thermo Fisher Scientific Chemicals, Inc. 2025
  - Methyltrimethoxysilane has a NFPA instability rating of 1, meaning "normally stable but may become unstable if heated."

Flammability (F) Score (vH, H, M, or L): H
Methyltrimethoxysilane was assigned a score of High for flammability based on its flash point of 7.7°C and boiling point of 102°C. GreenScreen® criteria classify chemicals as a High hazard for flammability when available data indicate that GHS Category 2 classification is warranted (CPA 2026). The confidence in the score was high as it is based on high quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* GHS – Japan – H225 – Highly flammable liquid and vapour [Flammable liquids – Category 2]; GHS – New Zealand – Flammable liquids category 2.
- ECHA CHEM, CAS #1185-55-3, 2026
  - Methyltrimethoxysilane has a flash point of 7.7°C in a test conducted according to ASTM D 3828-87 (equilibrium method closed cup).
  - Methyltrimethoxysilane has a boiling point of 102°C.
- Based on the weight of evidence, a score of High was assigned. Methyltrimethoxysilane has a flash point of 7.7°C and boiling point of 102°C. Therefore, GHS Category 2 classification, which corresponds to chemicals with a flash point < 23°C and initial boiling point > 35°C, is appropriate. This is consistent with GHS classification in New Zealand and Japan, and corresponds to a score of High.

Climate Impact

Ozone Depletion Potential (ODP) Score (H, M, L, or NA): DG
Methyltrimethoxysilane was assigned a score of Data Gap for ozone depletion potential because, although it is not a gas or vapor under normal conditions, it has a high vapor pressure and may volatilize. No ODP data were identified for methyltrimethoxysilane. GreenScreen® criteria assign Data Gap for ODP when a substance is a gas/vapor, is not on any of the specified ODP lists, and quantitative data do not exist for assessment (CPA 2026).

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA CHEM, CAS #1185-55-3, 2026
  - Methyltrimethoxysilane is a clear liquid with a vapor pressure of 3,000 Pa (22.5 mmHg) at 20°C.
- No data on ODP were identified.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Global Warming Potential (GWP) Score (H, M, L, or NA): DG

Methyltrimethoxysilane was assigned a score of Data Gap for global warming potential because, although it is not a gas or vapor under normal conditions, it has a high vapor pressure and may volatilize. No GWP data were identified for methyltrimethoxysilane. GreenScreen® criteria assign Data Gap for GWP when a substance is a gas/vapor, is not on any of the specified GWP lists, and quantitative data do not exist for assessment (CPA 2026).

- ECHA CHEM, CAS #1185-55-3, 2026
    - Methyltrimethoxysilane is a clear liquid with a vapor pressure of 3,000 Pa (22.5 mmHg) at 20°C.
- No data on GWP were identified.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Use of New Approach Methodologies (NAMs)[16] in the Assessment, Including Uncertainty Analyses of Input and Output

New Approach Methodologies (NAMs) used in this GreenScreen® include use of modeling for carcinogenicity, respiratory sensitization, chronic aquatic toxicity, persistence, and bioaccumulation, and use of *in vitro* assays for mutagenicity and endocrine activity. NAMs are non-animal alternatives that can be used alone or in combination to provide information for safety assessment (Madden et al. 2020). At present, there is not a uniformly accepted framework on how to report and apply individual NAMs (U.S. EPA 2020, OECD 2020). The expanded application of NAMs greatly amplifies the need to communicate uncertainties associated with their use. As defined by EFSA (2018), uncertainty is "a general term referring to all types of limitations in available knowledge that affect the range and probability of possible answers to an assessment question." The quality, utility, and accuracy of NAM predictions are greatly influenced by two primary types of uncertainties (OECD 2020):

- Type I: Uncertainties related to the input data used
- Type II: Uncertainties related to extrapolations made

As shown in Table 5, Type I (input data) uncertainties in methyltrimethoxysilane's NAMs dataset include limited carcinogenicity data and no experimental respiratory sensitization data, and lack of validated test methods for respiratory sensitization. Methyltrimethoxysilane's Type II (extrapolation output) uncertainties include lack of defined applicability domains for OECD Toolbox structural alerts, the compound being out of domain for VEGA, Danish (Q)SAR database, and OncoLogic™, *in vitro* mutagenicity assays being unable to fully account for *in vivo* metabolism and focusing on a few events in the complex mutagenesis process, endocrine screening assays lacking consideration of metabolism and other toxicokinetic factors, and respiratory sensitization evaluation of structural alerts not accounting for non-immunologic mechanisms. Some of methyltrimethoxysilane's type II uncertainties were alleviated by the use of *in vitro* test batteries and/or in combination of *in vivo* data.

Table 5: Summary of NAMs Used in the GreenScreen® Assessment, Including Uncertainty Analyses	
Uncertainty Analyses (OECD 2020)	
Type I Uncertainty: Data/Model Input	**Carcinogenicity**: Only limited experimental data are available. **Respiratory sensitization**: No experimental data are available and there are no validated test methods.
Type II Uncertainty: Extrapolation Output	**Carcinogenicity**: OECD QSAR Toolbox only identifies structural alerts (Sas), and no applicability domain can be defined (OECD 2026). The VEGA tool did not produce any reliable predictions (VEGA 2026). Danish (Q)SAR database did not produce any reliable predictions (DTU 2026). The target compound was out of the applicability domain of OncoLogic™. **Genotoxicity:** The bacterial reverse mutation assay (as defined in OECD Guideline 471) only tests point-mutation inducing activity in

[16] NAMs refers to any non-animal technology, methodology, approach, or combination thereof that inform chemical hazard and risk assessments. NAMs include *in silico*/computational tools, *in vitro* biological profiling (e.g., cell cultures, 2,3-D organotypic culture systems, genomics/transcriptomics, organs on a chip), and frameworks (i.e., adverse outcome pathways (AOPs), defined approaches (DA), integrated approaches to testing and assessment (IATA).

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

	non-mammalian cells, and the exogenous metabolic activation system does not entirely mimic *in vivo* conditions[17]. The mammalian cell gene mutation assay (as defined in OECD Guideline 476) only detects gene mutations, and the exogenous metabolic activation system does not entirely mirror *in vivo* metabolism (i.e., the liver S9 mix contains enzymes present in the endoplasmic reticulum but not the cytosol of liver cells).[18] The *in vitro* chromosome aberration assay (OECD Guideline 473) does not measure aneuploidy and it only measures structural chromosomal aberrations. The exogenous metabolic activation system does not entirely mirror *in vivo* metabolism[19]. **Endocrine activity:** ToxCast models don't define applicability domain; the *in vivo* relevance of EDSP Tox 21 screening assays is unknown due to lack of consideration of metabolism and other toxicokinetic factors. EDSP Tox 21 assays do not cover all critical endocrine pathways. **Respiratory sensitization**: The OECD Toolbox only identifies structural alerts, and does not define applicability domains. Additionally, the ECHA guidance (2017), on which the use of OECD Toolbox structural alerts is based, does not evaluate non-immunologic mechanisms for respiratory sensitization.	
Endpoint	**NAMs Data Available and Evaluated? (Y/N)**	**Types of NAMs Data (*in silico* modeling/*in vitro* biological profiling/frameworks)**
Carcinogenicity	Y	*In silico* modeling: VEGA/ OncoLogic™/OECD Toolbox/Danish QSAR
Mutagenicity	Y	*In vitro* data: Bacterial reverse mutation assay/*in vitro* gene mutation assay/*in vitro* chromosome aberration assay
Reproductive toxicity	N	
Developmental toxicity	N	
Endocrine activity	Y	*In vitro* high throughput data: EDSP Tox 21 screening assays
Acute mammalian toxicity	N	
Single exposure systemic toxicity	N	

[17] https://www.oecd-ilibrary.org/docserver/9789264071247-en.pdf?expires=1614097593&id=id&accname=guest&checksum=89925F80B9F4BD2FFC6E90F94A0EE427
[18] https://www.oecd-ilibrary.org/docserver/9789264264809-en.pdf?expires=1614097800&id=id&accname=guest&checksum=C0DE371FB9C5A878E66C9AB7F84E6BBE
[19] https://www.oecd-ilibrary.org/docserver/9789264264649-en.pdf?expires=1614098015&id=id&accname=guest&checksum=6A4F9CE52EA974F5A74793DD54D54352

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Repeated exposure systemic toxicity	N	
Single exposure neurotoxicity	N	
Repeated exposure neurotoxicity	N	
Skin sensitization	N	
Respiratory sensitization	Y	*In silico* modeling: OECD Toolbox structural alerts
Skin irritation	N	
Eye irritation	N	
Acute aquatic toxicity	N	
Chronic aquatic toxicity	Y	*In silico* modeling: ECOSAR
Persistence	Y	*In silico* modeling: EPI Suite™
Bioaccumulation	Y	*In silico* modeling: EPI Suite™

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

References

Clean Production Action (CPA). 2023. GreenScreen® Terms of Use. May 2, 2023. Available: https://www.greenscreenchemicals.org/about/greenscreen-terms-of-use

Clean Production Action (CPA). 2026. The GreenScreen® for Safer Chemicals Guidance. Version 1.5a Guidance. Dated April, 2026. Available: https://www.greenscreenchemicals.org/images/ee_images/uploads/resources/GreenScreen_Guidance_v1_5a_2026_04_Final.pdf

Danish Technical University (DTU). 2026. National Food Institute. Danish QSAR Database. Available: http://qsar.food.dtu.dk/.

European Chemicals Agency (ECHA). 2017. Guidance on information requirements and Chemical Safety Assessment. Chapter R.7a: Endpoint specific guidance. Version 6.0. Dated: July 2017. Available: https://echa.europa.eu/documents/10162/17224/information_requirements_r7a_en.pdf/e4a2a18f-a2bd-4a04-ac6d-0ea425b2567f?t=1500286622893

European Chemicals Agency (ECHA). 2018. Committee for Risk Assessment RAC Opinion proposing harmonised classification and labelling at EU level of Trimethoxy(methyl)silane. CLH-O-0000001412-86-234/F. Dated: September 14, 2018. Available: https://echa.europa.eu/documents/10162/8d8c9525-669e-61fa-d687-d34678716c89

European Chemicals Agency Chemicals Database (ECHA CHEM). 2026. Information on chemicals. Available: https://chem.echa.europa.eu/

European Food Safety Authority (EFSA). 2018. Guidance on uncertainty analysis in scientific assessments. *EFSA J.* 16(1): e05123. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7009727/

Gad, S. 2016. QSAR Tools for Drug Safety. Chapter 10. In, Drug Safety Evaluation. Third Edition. New York: Wiley. 209-224.

Madden, J.C., S.J. Enoch, A. Paini, and M.T.D. Cronin. 2020. A review of *in silico* tools as alternatives to animal testing: principles, resources, and applications. *Alt. Lab. Animals.* 1-27. Available: https://journals.sagepub.com/doi/pdf/10.1177/0261192920965977

National Institute of Technology and Evaluation (NITE). 2013. GHS classification result for trimethoxy(methyl)silane (CAS #1185-55-3). Available: https://www.chem-info.nite.go.jp/chem/english/ghs/13-mhlw-0014e.html

National Institute of Technology and Evaluation (NITE). 2022. GHS classification result for trimethoxy(methyl)silane (CAS #1185-55-3). Available: https://www.chem-info.nite.go.jp/chem/english/ghs/22-jniosh-2082e.html

Organisation for Economic Co-operation and Development (OECD). 2009. SIDS Initial Assessment Profile for Trimethoxy(methyl)silane (MTMS). SIAM 28, 15-17 April 2009. Available: https://hpvchemicals.oecd.org/UI/handler.axd?id=24520564-5d4b-4718-83ed-25be1d33f549

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Organisation for Economic Co-operation and Development (OECD). 2020. Overview of Concepts and Available Guidance related to Integrated Approaches to Testing and Assessment (IATA), Series on Testing and Assessment, No. 329, Environment, Health and Safety, Environment Directorate. Available: https://www.oecd.org/chemicalsafety/risk-assessment/concepts-and-available-guidance-related-to-integrated-approaches-to-testing-and-assessment.pdf

Organisation for Economic Co-operation and Development (OECD). 2026. OECD QSAR Toolbox for Grouping Chemicals into Categories Version 4.9. Available: https://qsartoolbox.org/download/

Pharos. 2026. Pharos chemical and material library entry for methyltrimethoxysilane (CAS #1185-55-3). Available: http://www.pharosproject.net/material/.

PubChem. 2026. Methyltrimethoxysilane (CAS #1185-55-3). United States National Library of Medicine. Available: https://pubchem.ncbi.nlm.nih.gov/

Sahigara, F. 2007. Defining the Applicability Domain of QSAR models: An overview. Available: http://www.moleculardescriptors.eu/tutorials/T7_moleculardescriptors_ad.pdf

Thermo Fisher Scientific Chemicals, Inc. 2025. Safety data sheet for Methyltrimethoxysilane. Revision Number 4. Dated: December 22, 2025. Available: https://www.fishersci.com/store/msds?partNumber=AAB23594&productDescription=keyword&vendorId=VN00024248&countryCode=US&language=en

ToxServices. 2021. SOP 1.37: GreenScreen® Hazard Assessments. Dated: May 24, 2021.

United Nations (UN). 2025. Globally Harmonized System of Classification and Labelling of Chemicals (GHS). Eleventh revised edition.

United States Department of Transportation (U.S. DOT). 2008a. Chemicals Listed with Classification. 49 CFR § 172.101. Available: http://www.gpo.gov/fdsys/pkg/CFR-2008-title49-vol2/pdf/CFR-2008-title49-vol2-sec172-101.pdf.

United States Department of Transportation (U.S. DOT). 2008b. Classification Criteria. 49 CFR § 173. Available: http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title49/49cfr173_main_02.tpl

United States Environmental Protection Agency (U.S. EPA). 2020. New Approach Methods Workplan. Office of Research and Development. Office of Chemical Safety and Pollution Prevention. EPA 615B20001. June 2020. Available: https://www.epa.gov/sites/default/files/2020-06/documents/epa_nam_work_plan.pdf

United States Environmental Protection Agency (U.S. EPA). 2022. ECOSAR 2.2. Washington, DC, USA. Available: http://www.epa.gov/oppt/newchems/tools/21ecosar.htm/.

United States Environmental Protection Agency (U.S. EPA). 2024a. Safer Choice Standard. Available: https://www.epa.gov/saferchoice/standard

United States Environmental Protection Agency (U.S. EPA). 2024b. OncoLogic™. Version 9.4 Washington, DC, USA.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

United States Environmental Protection Agency (U.S. EPA). 2026a. Safer Chemical Ingredients List (SCIL). Available: https://www.epa.gov/saferchoice/safer-ingredients

United States Environmental Protection Agency (U.S. EPA). 2026b. Estimation Programs Interface (EPI) Suite™ Windows, v4.11. Washington, DC, USA. Available: https://www.epa.gov/tsca-screening-tools/epi-suitetm-estimation-program-interface

United States Environmental Protection Agency (U.S. EPA). 2026c. CompTox Dashboard. Available: https://comptox.epa.gov/dashboard

Virtual Models for Evaluating the Properties of Chemicals within a Global Architecture (VEGA). 2026. Predictive Model Platform version 1.2.6. Available: https://www.vegahub.eu/download/vega-qsar-download/

Workplace Environmental Exposure Level (WEEL) Committee, and Occupational Alliance for Risk Science (OARS) Toxicology Excellence for Risk Assessment (TERA). 2025. Methyltrimethoxysilane (MTMS). Toxicology and Industrial Health Volume 41, Issue 4, April 2025, Pages 195-203. Available: https://journals.sagepub.com/doi/epub/10.1177/07482337241301523

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

APPENDIX A: Hazard Classification Acronyms
(in alphabetical order)

(AA) Acute Aquatic Toxicity

(AT) Acute Mammalian Toxicity

(B) Bioaccumulation

I Carcinogenicity

(CA) Chronic Aquatic Toxicity

(D) Developmental Toxicity

I Endocrine Activity

(F) Flammability

(GWP) Global Warming Potential

(IrE) Eye Irritation/Corrosivity

(IrS) Skin Irritation/Corrosivity

(M) Mutagenicity and Genotoxicity

(N) Neurotoxicity

(ODP) Ozone Depletion Potential

(P) Persistence

I Reproductive Toxicity

(Rx) Reactivity

(SnS) Sensitization- Skin

(SnR) Sensitization- Respiratory

(ST) Systemic/Organ Toxicity

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

APPENDIX B: Data Sources Searched

Table 6: Sources Searched for Relevant Chemical, Health Effects, and Ecotoxicity Data		
Mandatory Sources to Search	**Website**	**Notes**
PubChem	https://pubchem.ncbi.nlm.nih.gov/	Checked
eChemPortal	https://www.echemportal.org/echemportal/	Checked
ECHA/ECHACHEM	https://echa.europa.eu/information-on-chemicals	Checked for lead dossier in Active and Inactive dossiers tabs if data is missing from active dossier
ECHA's Substance Evaluation Portal	https://chem.echa.europa.eu/activity-lists/substanceEvaluation	Checked
CIR	https://cir-reports.cir-safety.org/	Checked
Pharos	https://pharos.habitablefuture.org/	Checked
Google	www.google.com	Searched by chemical name, CAS# and toxicity
EPA ChemView	https://chemview.epa.gov/chemview/	Note: if there are a lot of TSCA submissions, check NTIS NTRL for quick summaries
NTIS National Technical Reports Library (NTRL)	https://ntrl.ntis.gov/NTRL/	Checked
RIFM's Fragrance Material Safety Assessment Database	https://fragrancematerialsafetyresource.elsevier.com/	Not checked
OECD Toolbox	Use Version 4.8.2 (or more recent version if requested by senior staff) https://qsartoolbox.org/download/	Only search if you don't find data from other sources
RTECS	https://www.ccohs.ca/ccinfoweb	Only search if you don't find data from other sources
GESTIS Substance Database	https://gestis-database.dguv.de/	Only search if you don't find data from other sources

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

APPENDIX C: Artificial Intelligence (A.I.)-Based Sources Accessed to Identify Use and Chemical Descriptive Information on Methyltrimethoxysilane (CAS #1185-55-3)

Chat GPT

Chemical hazard profile: Methyltrimethoxysilane
Substance: Methyltrimethoxysilane (MTMS)
CAS RN: 1185-55-3
Synonyms: Trimethoxy(methyl)silane; trimethoxymethylsilane; methyltrimethoxysilane
Formula: $C_4H_{12}O_3Si$
Molecular weight: 136.22 g/mol

1. Overall hazard assessment

Primary concern: HIGH flammability. MTMS is generally classified as a **Category 2 flammable liquid**, with the GHS signal word **Danger** and hazard statement **H225: Highly flammable liquid and vapor**. Current supplier SDSs also classify it for skin irritation, serious eye irritation, and respiratory-tract irritation.

Hazard endpoint	Assessment
Flammability	**High** — Flam. Liq. 2; flash point around **9–11 °C**
Skin	**Irritant** — Skin Irrit. 2 is reported
Eyes	**Serious eye irritation** — Eye Irrit. 2
Inhalation	**Respiratory irritation** possible — STOT SE 3
Skin sensitization	Reported in some ECHA notifications; classification is not consistent across all SDSs
Acute systemic toxicity	No strong evidence that acute systemic toxicity is the principal hazard at ordinary occupational exposures
Environmental hazard	Not generally classified as an environmental hazard in the cited SDSs, but releases should still be controlled
Reactivity	**Hydrolytically reactive**; reacts/decomposes with water to form methanol and silanol-containing products

2. Physical and fire hazards

MTMS is a volatile, flammable liquid. Reported physical-property data include a **boiling point around 102 °C**, density around **0.955 g/mL**, and flash point approximately **9 °C**.
Consequently:

- Vapors can readily form flammable mixtures with air.
- Ignition sources should be rigorously excluded.
- Static discharge is a significant consideration during transfer.
- Use bonding/grounding and appropriately rated electrical/ventilation equipment.
- Keep containers tightly closed and store in a cool, well-ventilated flammable-liquid storage area.

Transport SDS information identifies MTMS as **UN 1993, Flammable liquid, n.o.s., Class 3, Packing Group II**.

3. Health hazards

Skin: Contact can cause irritation. Some regulatory notifications additionally identify the substance as a **skin sensitizer (Skin Sens. 1B/H317)**, although this classification is not uniformly reported by

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

suppliers. PubChem's aggregation of ECHA notifications shows H317 among the reported classifications.
Eyes: MTMS is reported as causing **serious eye irritation (H319)**. Avoid splashes and use chemical splash goggles; a face shield is appropriate where there is significant splash potential.
Inhalation: Current SDS information classifies it as **STOT SE 3**, with the respiratory system as the target and **H335 (may cause respiratory irritation)**. Vapor exposure should therefore be minimized, particularly during open handling or spills.
Chronic toxicity/carcinogenicity: The available sources do **not identify carcinogenicity as a principal hazard** for MTMS. The major practical occupational hazards are flammability, irritation, and vapor exposure.

4. Important chemical-reactivity consideration: hydrolysis
The methoxy groups on MTMS are susceptible to hydrolysis. In the presence of water, the compound can generate **methanol** along with hydrolyzed silanol species and subsequently siloxane products. This matters because the hazard profile of a spill or aqueous mixture is not necessarily identical to that of neat MTMS. **Methanol is itself toxic and highly flammable**, so hydrolysis products should be considered when evaluating waste, spills, or process streams.
For this reason, MTMS should not simply be treated as an inert silicone fluid.

5. Recommended controls
For routine laboratory or industrial handling:

- **Engineering controls:** Use a functioning fume hood or local exhaust ventilation where vapor exposure can occur.
- **Ignition control:** No flames, sparks, smoking, or other ignition sources; use suitable electrical equipment.
- **Static control:** Bond and ground containers/equipment during bulk transfer.
- **Eye protection:** Chemical splash goggles; add a face shield for splash/pressure hazards.
- **Skin protection:** Compatible chemical-resistant gloves and protective clothing. Glove breakthrough data should be obtained from the glove manufacturer for the actual formulation and exposure conditions.
- **Respiratory protection:** Normally prioritize engineering controls. If adequate control cannot be achieved, a properly selected, fit-tested respirator program should be used rather than relying on an improvised cartridge.
- **Storage:** Cool, dry, well ventilated, tightly closed, and segregated from ignition sources and incompatible materials.

A current Fisher/Thermo Fisher SDS, for example, confirms the OSHA 2024 classification as **Flammable Liquid Category 2, Skin Irritation Category 2, Eye Irritation Category 2, and STOT-SE Category 3 (respiratory system)**.

6. Spill and fire considerations
For a spill, the immediate priorities are:

2. Eliminate ignition sources and restrict access.
3. Provide ventilation without creating an ignition hazard.
4. Prevent the liquid from entering drains or confined spaces.
5. Use appropriate non-sparking equipment and compatible absorbent.
6. Collect contaminated material into a suitable closed container for disposal.
7. Treat substantial releases as a **flammable-vapor hazard**, not merely as a liquid spill.

For fire, use an extinguishing agent appropriate for flammable liquids—typically **dry chemical, alcohol-resistant foam, or CO_2**, depending on the fire scenario and facility procedures. Containers

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

exposed to fire should be cooled from a safe distance because heating can produce dangerous pressure.

8. **Regulatory/classification caveat**

There is **some variation among SDSs and regulatory notifications**. PubChem's ECHA-derived aggregation shows the overwhelming majority of notifications reporting **Flam. Liq. 2**, while substantial fractions also report Skin Irrit. 2, Eye Irrit. 2A, STOT SE 3, and a smaller fraction Skin Sens. 1B.
This is why the **SDS for the specific commercial grade and supplier should control workplace labeling and PPE selection**. For example, Sigma-Aldrich currently lists the product primarily as **Flam. Liq. 2/H225**, whereas a current Thermo Fisher SDS applies the additional irritation and respiratory classifications.
Bottom line
Methyltrimethoxysilane should be managed as a highly flammable, volatile, irritating organosilane. The most important controls are ignition/static control, ventilation, splash protection, and prevention of uncontrolled contact with water/moisture. The current OSHA-oriented SDS classification supports **Flammable Liquid 2 + Skin Irritation 2 + Eye Irritation 2 + STOT-SE 3**, with skin sensitization appearing in some regulatory notifications.
PubChem — Methyltrimethoxysilane safety information

This is a hazard-screening profile, not a substitute for the SDS for the exact product, applicable OSHA requirements, or a site-specific risk assessment.

Google AI
Methyltrimethoxysilane (CAS #1185-55-3), also known as trimethoxymethylsilane or MTMS, is an organosilicon compound widely used as a cross-linking agent, surface modifier, and chemical intermediate.
A comprehensive summary of its chemical hazard profile according to global safety standardizations is outlined below:

⚠️ GHS Classification & Core Hazards

- **Signal Word:** Danger
- **GHS Pictograms:** Flame (GHS02), Exclamation Mark (GHS07)
- **Primary Hazard Statements:**
  - **H225:** Highly flammable liquid and vapor.
  - **H315:** Causes skin irritation.
  - **H319:** Causes serious eye irritation.
  - **H335:** May cause respiratory irritation.
  - **H373:** May cause damage to organs (specifically kidneys/urinary bladder) through prolonged or repeated exposure.

🔥 Physical & Chemical Hazards

- **Flammability:** It is a **Highly Flammable Liquid**. Vapors are heavier than air, can travel significant distances to an ignition source, and can form explosive mixtures with air.
- **Moisture Reactivity:** The chemical is highly moisture-sensitive. **Upon contact with water or moisture, it undergoes hydrolysis and liberates toxic, flammable methanol**.
- **Flash Point:** Approximately **11°C (52°F)**.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Health Effects & Toxicity

- **Acute Local Effects:** Direct exposure causes irritation to the skin, eyes, and mucous membranes. Because it reacts with the moisture in living tissue, it has a notable dehydrating and irritating effect.
- **Systemic Toxicity (Methanol Generation):** If ingested, inhaled in large quantities, or absorbed, its toxicity is severely compounded by the hydrolysis product, **methanol**. Methanol exposure can result in nausea, headache, central nervous system depression, metabolic acidosis, and severe visual impairment or blindness.
- **Chronic Toxicity:** Repeated exposure testing in animal models indicates potential long-term impacts on the kidneys and bladder (such as calculi formation and epithelial hyperplasia) caused by physical/chemical irritation. It is generally not classified as a carcinogen or mutagen.

Safe Handling & Preventative Measures

- **Engineering Controls:** Use only under a chemical fume hood or in highly ventilated environments. Equipment must be explosion-proof, grounded, and bonded during liquid transfers to prevent static discharge.
- **Personal Protective Equipment (PPE):** Wear chemical-resistant gloves (nitrile or butyl rubber), tight-fitting safety goggles, protective clothing, and a suitable organic vapor respirator if workplace exposure limits are exceeded.
- **Storage:** Store under an inert gas (such as nitrogen) in a cool, dry, and well-ventilated location. Keep tightly sealed and away from heat, sparks, open flames, water, strong acids, and strong oxidizing agents.

If you are incorporating this into a specific safety protocol, please let me know if you need information regarding **first-aid measures**, **spill clean-up protocols**, or specific **regulatory transport classifications** (such as UN numbers).

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

APPENDIX D: Pharos Output for Methyltrimethoxysilane (CAS #1185-55-3)



1185-55-3

Methyltrimethoxysilane

ALSO CALLED (1/4)x>>uEy(1/4)xNo>>u(1)ele, 1,1,1-trimethoxy-1-silaethane, 1061S3-30-4, 120250-60-4, 214-685-0, BF...

View all synonyms (22)

SHARE PROFILE

HAZARDS | PROPERTIES | FUNCTIONAL USES | PROCESS CHEMISTRY | RESOURCES

All Hazards View

Show List Hazard Summary | Show PubMed Results | ADD TO COMPARISON

		Group I Human					Group II and II* Human								Ecotox			Fate		Physical		Mult	Non-GSLT			
	GREENSCREEN®	C	M	R	D	E	AT	ST	ST	N	N	SnS	SnR	IrS	IrE	AA	CA	ATB	P	B	Rx	F	Mult	PBT	GW	O	Other
GreenScreen® Assessment™	BM-1tp	L	M	L	L	M	L	L	M	M	L	M	DG	L	L	L	L	-	M	vL	L	H	-	-	-	-	R
List Hazard Summary	LT-UNK	-	-	-	-	-	M	M	-	-	-	pC	-	pC	H	pC	-	-	vH-H	-	-	H	M	-	-	-	R

Hazard Lists

DOWNLOAD LISTS

ENDPOINT	HAZARD LEVEL	GREENSCREEN®	LIST NAME	HAZARD DESCRIPTION	OTHER LISTS
Acute Mammalian Toxicity	M	LT-UNK	GHS - Japan	H332 - Harmful if inhaled [Acute toxicity (inhalation: vapor) - Category 4]	+1
	pC	NoGS	EU - Manufacturer REACH hazard submissions	H302 - Harmful if swallowed (unverified) [Acute toxicity (oral) - Category 4]	
Systemic Toxicity/Organ Effects-Single Exposure	M	LT-UNK	GHS - Japan	H336 - May cause drowsiness or dizziness [Specific target organ toxicity - Single exposure - Category 3 (Narcotic effects)]	+1
	pC	NoGS	EU - Manufacturer REACH hazard submissions	H335 - May cause respiratory irritation (unverified) [Specific target organ toxicity - single exposure; Respiratory tract irritation - Category 3]	
Skin Sensitization	pC	NoGS	EU - Manufacturer REACH hazard submissions	H317 - May cause an allergic skin reaction (unverified) [Skin sensitization - Category 1]	
Skin Irritation/Corrosivity	pC	NoGS	EU - Manufacturer REACH hazard submissions	H315 - Causes skin irritation (unverified) [Skin corrosion/irritation - Category 2]	
Eye Irritation/Corrosivity	H	LT-UNK	GHS - New Zealand	Eye irritation category 2	+2
	M	NoGS	GHS - Japan	H320 - Causes eye irritation [Serious eye damage/eye irritation - Category 2B]	
	pC	NoGS	EU - Manufacturer REACH hazard submissions	H319 - Causes serious eye irritation (unverified) [Serious eye damage/eye irritation - Category 2A]	
Acute Aquatic Toxicity	pC	NoGS	DK-EPA - Danish Advisory List	Aquatic Acute1 - Very toxic to aquatic life (modeled)	

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Persistence	vH-H	LT-UNK	EC - CEPA DSL	Persistent	
Flammability	H	LT-UNK	GHS - Japan	H225 - Highly flammable liquid and vapour [Flammable liquids - Category 2]	+3
	H	LT-UNK	GHS - New Zealand	Flammable liquids category 2	
	pC	NoGS	EU - Manufacturer REACH hazard submissions	H221 - Flammable gas (unverified) [Flammable gases - Category 2]	
	pC	NoGS	EU - Manufacturer REACH hazard submissions	H225 - Highly flammable liquid and vapour (unverified) [Flammable liquids - Category 2]	
Systemic Toxicity/Organ Effects [Repeated Exposure] and/or Neurotoxicity [Repeated Exposure]	M	LT-UNK	GHS - Japan	H373 - May cause damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 2]	

Restricted Substance Lists (6)

- CPA - Chemical Footprint CoHC v3 (effective 2024): GreenScreen BM-1s and LT-1s
- ECHA - Community Rolling Action Plan (CoRAP): Substance evaluation - CoRAP
- EU - PACT-RMOA Substances: Assessment of regulatory needs
- EU - PACT-RMOA Substances: Data generation and assessment
- EU - PACT-RMOA Substances: Regulatory risk management
- TSCA Chemical Substantial Risk Notices: TSCA - Substantial Risk Notices

Positive Lists (1)

- TCO Certified potential candidate list (tentative - awaiting assessment): TCO Certified potential candidate list (tentative - awaiting assessment)

Known Use Lists (2)

- Australia - National Industrial Chemicals Notification and Assessments (NICNAS): NICNAS
- Food Contact Chemicals Database (FCCdb): Food Contact Chemicals Database Version 5.0

Country Inventory Lists (8)

- EC - CEPA DSL: DSL-all
- Korea Existing Chemicals List: Existing Chemicals List
- New Zealand Inventory of Chemicals: New Zealand Inventory of Chemicals (NZIoC)
- Philippine Inventory of Chemicals: Philippine Inventory of Chemicals
- Taiwan Existing Chemical Substance Inventory: Taiwan Existing Chemical Substance Inventory
- The Australian Inventory of Industrial Chemicals: The Australian Inventory of Industrial Chemicals
- The Inventory of Existing Chemical Substance in China - 2013: IECSC-2013
- TSCA Chemical Substance Inventory (Active-Inactive): TSCA Commercially Active

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

APPENDIX E: Results of Automated GreenScreen® Score Calculation for Methyltrimethoxysilane (CAS #1185-55-3)[20]

TOXSERVICES
TOXICOLOGY RISK ASSESSMENT CONSULTING

GreenScreen® Score Inspector

Table 1: Hazard Table

			Group I Human					Group II and II* Human								Ecotox		Fate		Physical	
			Carcinogenicity	Mutagenicity/Genotoxicity	Reproductive Toxicity	Developmental Toxicity	Endocrine Activity	Acute Toxicity	Systemic Toxicity		Neurotoxicity		Skin Sensitization*	Respiratory Sensitization*	Skin Irritation	Eye Irritation	Acute Aquatic Toxicity	Chronic Aquatic Toxicity	Persistence	Bioaccumulation	Reactivity	Flammability
Table 2: Chemical Details									S	R *	S	R *	*	*								
Inorganic Chemical?	Chemical Name	CAS#	C	M	R	D	E	AT	STs	STr	Ns	Nr	SNS*	SNR*	IrS	IrE	AA	CA	P	B	Rx	F
No	Methyltrimethoxysilane	1185-55-3	*L*	L	L	L	M	L	L	*M*	M	L	L	*L*	L	L	L	*L*	L	*vL*	*L*	H

Table 3: Hazard Summary Table

Benchmark	a	b	c	d	e	f	g
1	No	No	No	No	No		
2	No	No	No	No	Yes	No	Yes
3	STOP						
4	STOP						

Table 4

Chemical Name	Preliminary GreenScreen® Benchmark Score
Methyltrimethoxysilane	2

Note: Chemical has not undergone a data gap assessment. Not a Final GreenScreen™ Score

Table 6

Chemical Name	Final GreenScreen® Benchmark Score
Methyltrimethoxysilane	2

After Data gap Assessment
Note: No Data gap Assessment Done if Preliminary GS Benchmark Score is 1.

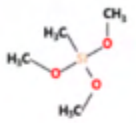
Table 5: Data Gap Assessment Table

Datagap Criteria	a	b	c	d	e	f	g	h	i	j	bm4	End Result
1												
2	Yes	Yes	Yes	Yes	Yes							2
3												
4												

[20] Climate impact endpoints do not affect version 1.5a Benchmark scores and are not included in the GreenScreen® Score Inspector. Future versions of the Inspector will be updated to incorporate climate impact endpoints when they impact a chemical's Benchmark score.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

APPENDIX F: OECD Toolbox Results for Methyltrimethoxysilane (CAS #1185-55-3)

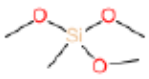
Filter endpoint tree...	1 [target]
Structure	
Structure info	
Additional Ids	EC Number:2146850
CAS Number	1185-55-3
CAS-SMILES relation	High
Chemical name(s)	Methyltrimethoxysilane
Identity	Sources:12
Molecular formula	C4H12O3Si
Predefined substance type	Mono constituent
SMILES	CO[Si](C)(OC)OC
Profiling	
Endpoint Specific	
Carcinogenicity (genotox and nongen...	No alert found
Respiratory sensitisation	No alert found

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

APPENDIX G: VEGA Carcinogenicity Results for Methyltrimethoxysilane (CAS #1185-55-3)

1. Prediction Summary

Prediction for compound Molecule 0 -



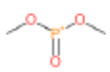
Prediction: Reliability:

Prediction is Carcinogen, but the result may be not reliable. A check of the information given in the following section should be done, paying particular attention to the following issues:
- Only moderately similar compounds with known experimental value in the training set have been found
- A prominent number of atom centered fragments of the compound have not been found in the compounds of the training set or are rare fragments (3 unknown fragments found)

Compound: Molecule 0
Compound SMILES: O(C)[Si](OC)(OC)C
Experimental value: -
Predicted Carcinogen activity: Carcinogen
P(Carcinogen): 0.945
P(NON-Carcinogen): 0.055
Reliability: The predicted compound is outside the Applicability Domain of the model
Remarks:
none

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

3.1 Applicability Domain:
Similar Compounds, with Predicted and Experimental Values



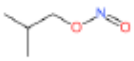
Compound #1

CAS: 868-85-9
Dataset id:264 (Training Set)
SMILES: O=[P+](OC)OC
Similarity: 0.749
Experimental value : Carcinogen
Predicted value : Carcinogen



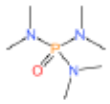
Compound #2

CAS: 4164-28-7
Dataset id:277 (Training Set)
SMILES: O=[N+]([O-])N(C)C
Similarity: 0.721
Experimental value : Carcinogen
Predicted value : Carcinogen



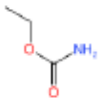
Compound #3

CAS: 542-56-3
Dataset id:400 (Training Set)
SMILES: O=NOCC(C)C
Similarity: 0.717
Experimental value : Carcinogen
Predicted value : NON-Carcinogen



Compound #4

CAS: 680-31-9
Dataset id:366 (Training Set)
SMILES: O=P(N(C)C)(N(C)C)N(C)C
Similarity: 0.715
Experimental value : Carcinogen
Predicted value : Carcinogen



Compound #5

CAS: 51-79-6
Dataset id:792 (Training Set)
SMILES: O=C(OCC)N
Similarity: 0.708
Experimental value : Carcinogen
Predicted value : Carcinogen



Compound #6

CAS: 123-91-1
Dataset id:282 (Training Set)
SMILES: O1CCOCC1
Similarity: 0.699
Experimental value : Carcinogen
Predicted value : Carcinogen

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

3.2 Applicability Domain:
Measured Applicability Domain Scores

✖	Global AD Index AD index = 0.343 Explanation: The predicted compound is outside the Applicability Domain of the model
⚠	Similar molecules with known experimental value Similarity index = 0.734 Explanation: Only moderately similar compounds with known experimental value in the training set have been found.
✔	Accuracy of prediction for similar molecules Accuracy index = 1 Explanation: Accuracy of prediction for similar molecules found in the training set is good.
✔	Concordance for similar molecules Concordance index = 1 Explanation: Similar molecules found in the training set have experimental values that agree with the predicted value.
✔	Model's descriptors range check Descriptors range check = True Explanation: Descriptors for this compound have values inside the descriptor range of the compounds of the training set.
✖	Atom Centered Fragments similarity check ACF index = 0.4 Explanation: A prominent number of atom centered fragments of the compound have not been found in the compounds of the training set or are rare fragments (3 unknown fragments found).
✔	Model class assignment reliability Pos/Non-Pos difference = 0.89 Explanation: model class assignment is well defined.
✔	Neural map neurons concordance Neurons concordance = 1 Explanation: predicted value agrees with experimental values of training set compounds laying in the same neuron.

Symbols explanation:

✔ The feature has a good assessment, model is reliable regarding this aspect.

⚠ The feature has a non optimal assessment, this aspect should be reviewed by an expert.

✖ The feature has a bad assessment, model is not reliable regarding this aspect.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

4.1 Reasoning:
Relevant Chemical Fragments and Moieties

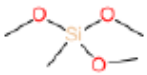
(Molecule 0) Reasoning on rare and missing Atom Centered Fragments .
The following Atom Centered Fragments have been found in the molecule, but they are not found or rarely found in the model's training set:

	Fragment defined by the SMILES: CO[Si] The fragment has never been found in the model's training set
	Fragment defined by the SMILES: C[Si](O)(O)O The fragment has never been found in the model's training set
	Fragment defined by the SMILES: C[Si] The fragment has never been found in the model's training set

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

1. Prediction Summary

Prediction for compound Molecule 0 -



Prediction: Reliability:

Prediction is NON-Carcinogen, but the result may be not reliable. A check of the information given in the following section should be done, paying particular attention to the following issues:
- Only moderately similar compounds with known experimental value in the training set have been found
- Accuracy of prediction for similar molecules found in the training set is not optimal
- Similar molecules found in the training set have experimental values that disagree with the predicted value
- A prominent number of atom centered fragments of the compound have not been found in the compounds of the training set or are rare fragments (3 unknown fragments found)

Compound: Molecule 0
Compound SMILES: O(C)[Si](OC)(OC)C
Experimental value: -
Predicted Carcinogen activity: NON-Carcinogen
Structural Alerts: -
Reliability: The predicted compound is outside the Applicability Domain of the model
Remarks:
none

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

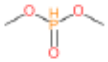
3.1 Applicability Domain:
Similar Compounds, with Predicted and Experimental Values



Compound #1

CAS: 756-79-6
Dataset id:739 (Training Set)
SMILES: O=P(OC)(OC)C
Similarity: 0.769
Experimental value : Carcinogen
Predicted value : Carcinogen

Alerts (not found also in the target): SA2 Alkyl (C<5) or benzyl ester of sulphonic or phosphonic acid



Compound #2

CAS: 868-85-9
Dataset id:620 (Training Set)
SMILES: O=P(OC)OC
Similarity: 0.756
Experimental value : Carcinogen
Predicted value : NON-Carcinogen



Compound #3

CAS: 13463-67-7
Dataset id:733 (Training Set)
SMILES: O=[Ti]=O
Similarity: 0.753
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen



Compound #4

CAS: 512-56-1
Dataset id:291 (Training Set)
SMILES: O=P(OC)(OC)OC
Similarity: 0.751
Experimental value : Carcinogen
Predicted value : Carcinogen

Alerts (not found also in the target): SA2 Alkyl (C<5) or benzyl ester of sulphonic or phosphonic acid



Compound #5

CAS: 66-27-3
Dataset id:288 (Training Set)
SMILES: O=S(=O)(OC)C
Similarity: 0.729
Experimental value : Carcinogen
Predicted value : Carcinogen

Alerts (not found also in the target): SA2 Alkyl (C<5) or benzyl ester of sulphonic or phosphonic acid

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

3.1 Applicability Domain:
Similar Compounds, with Predicted and Experimental Values



Compound #6

CAS: 62-50-0
Dataset id:286 (Training Set)
SMILES: O=S(=O)(OCC)C
Similarity: 0.728
Experimental value : Carcinogen
Predicted value : Carcinogen

Alerts (not found also in the target): SA2 Alkyl (C<5) or benzyl ester of sulphonic or phosphonic acid

3.2 Applicability Domain:
Measured Applicability Domain Scores

✖	Global AD Index AD index = 0 Explanation: The predicted compound is outside the Applicability Domain of the model
⚠	Similar molecules with known experimental value Similarity index = 0.762 Explanation: Only moderately similar compounds with known experimental value in the training set have been found.
⚠	Accuracy of prediction for similar molecules Accuracy index = 0.506 Explanation: Accuracy of prediction for similar molecules found in the training set is not optimal.
✖	Concordance for similar molecules Concordance index = 0 Explanation: Similar molecules found in the training set have experimental values that disagree with the predicted value.
✖	Atom Centered Fragments similarity check ACF index = 0.4 Explanation: A prominent number of atom centered fragments of the compound have not been found in the compounds of the training set or are rare fragments (3 unknown fragments found).

Symbols explanation:

✔ The feature has a good assessment, model is reliable regarding this aspect.
⚠ The feature has a non optimal assessment, this aspect should be reviewed by an expert.
✖ The feature has a bad assessment, model is not reliable regarding this aspect.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

4.1 Reasoning:
Relevant Chemical Fragments and Moieties

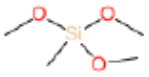
(Molecule 0) Reasoning on rare and missing Atom Centered Fragments .
The following Atom Centered Fragments have been found in the molecule, but they are not found or rarely found in the model's training set:

	Fragment defined by the SMILES: CO[Si] The fragment has never been found in the model's training set
	Fragment defined by the SMILES: C[Si](O)(O)O The fragment has never been found in the model's training set
	Fragment defined by the SMILES: C[Si] The fragment has never been found in the model's training set

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

1. Prediction Summary

Prediction for compound Molecule 0 -



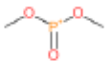
Prediction: Reliability:

Prediction is Possible NON-Carcinogen, but the result may be not reliable. A check of the information given in the following section should be done, paying particular attention to the following issues:
- Only moderately similar compounds with known experimental value in the training set have been found
- Similar molecules found in the training set have experimental values that disagree with the predicted value
- A prominent number of atom centered fragments of the compound have not been found in the compounds of the training set or are rare fragments (3 unknown fragments found)

Compound: Molecule 0
Compound SMILES: O(C)[Si](OC)(OC)C
Experimental value: -
Predicted Carcinogenic activity: Possible NON-Carcinogen
No. alerts for carcinogenicity: 0
Structural Alerts: -
Reliability: The predicted compound is outside the Applicability Domain of the model
Remarks:
none

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

3.1 Applicability Domain:
Similar Compounds, with Predicted and Experimental Values

	Compound #1 CAS: 756-79-6 Dataset id:575 (Training Set) SMILES: O=P(OC)(OC)C Similarity: 0.769 Experimental value : Carcinogen Predicted value : Carcinogen Alerts (not found also in the target): Carcinogenity alert no. 15
	Compound #2 CAS: 13463-67-7 Dataset id:708 (Training Set) SMILES: O=[Ti]=O Similarity: 0.753 Experimental value : NON-Carcinogen Predicted value : Possible NON-Carcinogen
	Compound #3 CAS: 512-56-1 Dataset id:234 (Training Set) SMILES: O=P(OC)(OC)OC Similarity: 0.751 Experimental value : Carcinogen Predicted value : Carcinogen Alerts (not found also in the target): Carcinogenity alert no. 15
	Compound #4 CAS: 868-85-9 Dataset id:512 (Training Set) SMILES: O=[P+](OC)OC Similarity: 0.749 Experimental value : Carcinogen Predicted value : Carcinogen Alerts (not found also in the target): Carcinogenity alert no. 15
	Compound #5 CAS: 66-27-3 Dataset id:231 (Training Set) SMILES: O=S(=O)(OC)C Similarity: 0.729 Experimental value : Carcinogen Predicted value : Carcinogen Alerts (not found also in the target): Carcinogenity alert no. 8

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

3.1 Applicability Domain: Similar Compounds, with Predicted and Experimental Values



Compound #6

CAS: 62-50-0
Dataset id:230 (Training Set)
SMILES: O=S(=O)(OCC)C
Similarity: 0.728
Experimental value : Carcinogen
Predicted value : Carcinogen

Alerts (not found also in the target): Carcinogenity alert no. 8

3.2 Applicability Domain: Measured Applicability Domain Scores

✖	Global AD Index AD index = 0.264 Explanation: The predicted compound is outside the Applicability Domain of the model
⚠	Similar molecules with known experimental value Similarity index = 0.757 Explanation: Only moderately similar compounds with known experimental value in the training set have been found.
✔	Accuracy of prediction for similar molecules Accuracy index = 1 Explanation: Accuracy of prediction for similar molecules found in the training set is good.
✖	Concordance for similar molecules Concordance index = 0.331 Explanation: Similar molecules found in the training set have experimental values that disagree with the predicted value.
✖	Atom Centered Fragments similarity check ACF index = 0.4 Explanation: A prominent number of atom centered fragments of the compound have not been found in the compounds of the training set or are rare fragments (3 unknown fragments found).

Symbols explanation:

✔ The feature has a good assessment, model is reliable regarding this aspect.

⚠ The feature has a non optimal assessment, this aspect should be reviewed by an expert.

✖ The feature has a bad assessment, model is not reliable regarding this aspect.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

4.1 Reasoning:
Relevant Chemical Fragments and Moieties

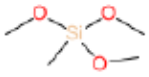
(Molecule 0) Reasoning on rare and missing Atom Centered Fragments .
The following Atom Centered Fragments have been found in the molecule, but they are not found or rarely found in the model's training set:

	Fragment defined by the SMILES: CO[Si] The fragment has never been found in the model's training set
	Fragment defined by the SMILES: C[Si](O)(O)O The fragment has never been found in the model's training set
	Fragment defined by the SMILES: C[Si] The fragment has never been found in the model's training set

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

1. Prediction Summary

Prediction for compound Molecule 0 -



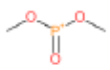
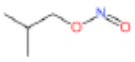
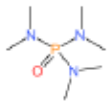
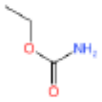
Prediction: Reliability:

Prediction is Possible NON-Carcinogen, but the result may be not reliable. A check of the information given in the following section should be done, paying particular attention to the following issues:
- Only moderately similar compounds with known experimental value in the training set have been found
- Similar molecules found in the training set have experimental values that disagree with the predicted value
- A prominent number of atom centered fragments of the compound have not been found in the compounds of the training set or are rare fragments (3 unknown fragments found)

Compound: Molecule 0
Compound SMILES: O(C)[Si](OC)(OC)C
Experimental value: -
Predicted Carcinogenic activity: Possible NON-Carcinogen
No. alerts for carcinogenicity: 0
Structural Alerts: -
Reliability: The predicted compound is outside the Applicability Domain of the model
Remarks:
none

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

3.1 Applicability Domain:
Similar Compounds, with Predicted and Experimental Values

	Compound #1 CAS: 868-85-9 Dataset id:264 (Training Set) SMILES: O=[P+](OC)OC Similarity: 0.749 Experimental value : Carcinogen Predicted value : Carcinogen Alerts (not found also in the target): Carcinogenity alert no. 98
	Compound #2 CAS: 4164-28-7 Dataset id:277 (Training Set) SMILES: O=[N+]([O-])N(C)C Similarity: 0.721 Experimental value : Carcinogen Predicted value : Carcinogen Alerts (not found also in the target): Carcinogenity alert no. 1; Carcinogenity alert no. 55; Carcinogenity alert no. 63; Carcinogenity alert no. 64
	Compound #3 CAS: 542-56-3 Dataset id:400 (Training Set) SMILES: O=NOCC(C)C Similarity: 0.717 Experimental value : Carcinogen Predicted value : Carcinogen Alerts (not found also in the target): Carcinogenity alert no. 63; Carcinogenity alert no. 64
	Compound #4 CAS: 680-31-9 Dataset id:366 (Training Set) SMILES: O=P(N(C)C)(N(C)C)N(C)C Similarity: 0.715 Experimental value : Carcinogen Predicted value : Carcinogen Alerts (not found also in the target): Carcinogenity alert no. 112
	Compound #5 CAS: 51-79-6 Dataset id:792 (Training Set) SMILES: O=C(OCC)N Similarity: 0.708 Experimental value : Carcinogen Predicted value : Carcinogen Alerts (not found also in the target): Carcinogenity alert no. 118

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

3.1 Applicability Domain:
Similar Compounds, with Predicted and Experimental Values



Compound #6

CAS: 123-91-1
Dataset id:282 (Training Set)
SMILES: O1CCOCC1
Similarity: 0.699
Experimental value : Carcinogen
Predicted value : Possible NON-Carcinogen

3.2 Applicability Domain:
Measured Applicability Domain Scores

✖	Global AD Index AD index = 0 Explanation: The predicted compound is outside the Applicability Domain of the model
⚠	Similar molecules with known experimental value Similarity index = 0.728 Explanation: Only moderately similar compounds with known experimental value in the training set have been found.
✔	Accuracy of prediction for similar molecules Accuracy index = 1 Explanation: Accuracy of prediction for similar molecules found in the training set is good.
✖	Concordance for similar molecules Concordance index = 0 Explanation: Similar molecules found in the training set have experimental values that disagree with the predicted value.
✖	Atom Centered Fragments similarity check ACF index = 0.4 Explanation: A prominent number of atom centered fragments of the compound have not been found in the compounds of the training set or are rare fragments (3 unknown fragments found).

Symbols explanation:

✔ The feature has a good assessment, model is reliable regarding this aspect.
⚠ The feature has a non optimal assessment, this aspect should be reviewed by an expert.
✖ The feature has a bad assessment, model is not reliable regarding this aspect.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

4.1 Reasoning:
Relevant Chemical Fragments and Moieties

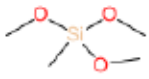
(Molecule 0) Reasoning on rare and missing Atom Centered Fragments .
The following Atom Centered Fragments have been found in the molecule, but they are not found or rarely found in the model's training set:

	Fragment defined by the SMILES: CO[Si] The fragment has never been found in the model's training set
	Fragment defined by the SMILES: C[Si](O)(O)O The fragment has never been found in the model's training set
	Fragment defined by the SMILES: C[Si] The fragment has never been found in the model's training set

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

1. Prediction Summary

Prediction for compound Molecule 0 -



Prediction: Reliability:

Prediction is Carcinogen, but the result may be not reliable. A check of the information given in the following section should be done, paying particular attention to the following issues:
- Only moderately similar compounds with known experimental value in the training set have been found
- A prominent number of atom centered fragments of the compound have not been found in the compounds of the training set or are rare fragments (2 unknown fragments and 1 infrequent_fragments found)

Compound: Molecule 0
Compound SMILES: O(C)[Si](OC)(OC)C
Experimental value: -
Predicted Oral Carcinogenic class: Carcinogen
Reliability: The predicted compound is outside the Applicability Domain of the model
Remarks:
none

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

3.1 Applicability Domain:
Similar Compounds, with Predicted and Experimental Values



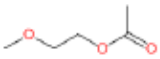
Compound #1

CAS: 756-79-6
Dataset id:121 (Training Set)
SMILES: O=P(OC)(OC)C
Similarity: 0.769
Experimental value : Carcinogen
Predicted value : Carcinogen



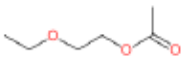
Compound #2

CAS: 512-56-1
Dataset id:308 (Training Set)
SMILES: O=P(OC)(OC)OC
Similarity: 0.751
Experimental value : Carcinogen
Predicted value : Carcinogen



Compound #3

CAS: 110-49-6
Dataset id:576 (Training Set)
SMILES: O=C(OCCOC)C
Similarity: 0.751
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen



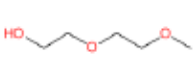
Compound #4

CAS: 111-15-9
Dataset id:499 (Training Set)
SMILES: O=C(OCCOCC)C
Similarity: 0.74
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen



Compound #5

CAS: 66-27-3
Dataset id:191 (Training Set)
SMILES: O=S(=O)(OC)C
Similarity: 0.729
Experimental value : Carcinogen
Predicted value : NON-Carcinogen



Compound #6

CAS: 111-77-3
Dataset id:496 (Training Set)
SMILES: OCCOCCOC
Similarity: 0.725
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

3.2 Applicability Domain:
Measured Applicability Domain Scores

✖	Global AD Index AD index = 0.296 Explanation: The predicted compound is outside the Applicability Domain of the model
⚠	Similar molecules with known experimental value Similarity index = 0.76 Explanation: Only moderately similar compounds with known experimental value in the training set have been found.
✔	Accuracy of prediction for similar molecules Accuracy index = 1 Explanation: Accuracy of prediction for similar molecules found in the training set is good.
✔	Concordance for similar molecules Concordance index = 1 Explanation: Similar molecules found in the training set have experimental values that agree with the predicted value.
✔	Model's descriptors range check Descriptors range check = True Explanation: Descriptors for this compound have values inside the descriptor range of the compounds of the training set.
✖	Atom Centered Fragments similarity check ACF index = 0.34 Explanation: A prominent number of atom centered fragments of the compound have not been found in the compounds of the training set or are rare fragments (2 unknown fragments and 1 infrequent_fragments found).

Symbols explanation:

✔ The feature has a good assessment, model is reliable regarding this aspect.

⚠ The feature has a non optimal assessment, this aspect should be reviewed by an expert.

✖ The feature has a bad assessment, model is not reliable regarding this aspect.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

4.1 Reasoning:
Relevant Chemical Fragments and Moieties

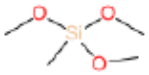
(Molecule 0) Reasoning on rare and missing Atom Centered Fragments .
The following Atom Centered Fragments have been found in the molecule, but they are not found or rarely found in the model's training set:

	Fragment defined by the SMILES: C[Si] The fragment has less than 3 occurrences in the model's training set
	Fragment defined by the SMILES: CO[Si] The fragment has never been found in the model's training set
	Fragment defined by the SMILES: C[Si](O)(O)O The fragment has never been found in the model's training set

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

1. Prediction Summary

Prediction for compound Molecule 0 -



Prediction: Reliability:

Prediction is NON-Carcinogen, but the result may be not reliable. A check of the information given in the following section should be done, paying particular attention to the following issues:
- Only moderately similar compounds with known experimental value in the training set have been found
- 1Descriptor(s) for this compound have values outside the descriptor range of the compounds of the training set.
- A prominent number of atom centered fragments of the compound have not been found in the compounds of the training set or are rare fragments (2 unknown fragments and 1 infrequent_fragments found)

Compound: Molecule 0
Compound SMILES: O(C)[Si](OC)(OC)C
Experimental value: -
Predicted Inhalation Carcinogenic class: NON-Carcinogen
Reliability: The predicted compound is outside the Applicability Domain of the model
Remarks:
none

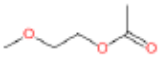
Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

3.1 Applicability Domain:
Similar Compounds, with Predicted and Experimental Values



Compound #1

CAS: 756-79-6
Dataset id:431 (Training Set)
SMILES: O=P(OC)(OC)C
Similarity: 0.769
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen



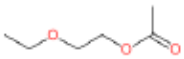
Compound #2

CAS: 110-49-6
Dataset id:555 (Test Set)
SMILES: O=C(OCCOC)C
Similarity: 0.751
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen



Compound #3

CAS: 512-56-1
Dataset id:730 (Test Set)
SMILES: O=P(OC)(OC)OC
Similarity: 0.751
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen



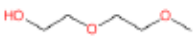
Compound #4

CAS: 111-15-9
Dataset id:471 (Training Set)
SMILES: O=C(OCCOCC)C
Similarity: 0.74
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen



Compound #5

CAS: 66-27-3
Dataset id:160 (Test Set)
SMILES: O=S(=O)(OC)C
Similarity: 0.729
Experimental value : Carcinogen
Predicted value : NON-Carcinogen



Compound #6

CAS: 111-77-3
Dataset id:468 (Training Set)
SMILES: OCCOCCOC
Similarity: 0.725
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

3.2 Applicability Domain:
Measured Applicability Domain Scores

✖	Global AD Index AD index = 0 Explanation: The predicted compound is outside the Applicability Domain of the model
⚠	Similar molecules with known experimental value Similarity index = 0.76 Explanation: Only moderately similar compounds with known experimental value in the training set have been found.
✔	Accuracy of prediction for similar molecules Accuracy index = 1 Explanation: Accuracy of prediction for similar molecules found in the training set is good.
✔	Concordance for similar molecules Concordance index = 1 Explanation: Similar molecules found in the training set have experimental values that agree with the predicted value.
✖	Model's descriptors range check Descriptors range check = False Explanation: 1Descriptor(s) for this compound have values outside the descriptor range of the compounds of the training set..
✖	Atom Centered Fragments similarity check ACF index = 0.34 Explanation: A prominent number of atom centered fragments of the compound have not been found in the compounds of the training set or are rare fragments (2 unknown fragments and 1 infrequent_fragments found).

Symbols explanation:

✔ The feature has a good assessment, model is reliable regarding this aspect.

⚠ The feature has a non optimal assessment, this aspect should be reviewed by an expert.

✖ The feature has a bad assessment, model is not reliable regarding this aspect.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

4.1 Reasoning:
Relevant Chemical Fragments and Moieties

(Molecule 0) Reasoning on rare and missing Atom Centered Fragments .
The following Atom Centered Fragments have been found in the molecule, but they are not found or rarely found in the model's training set:

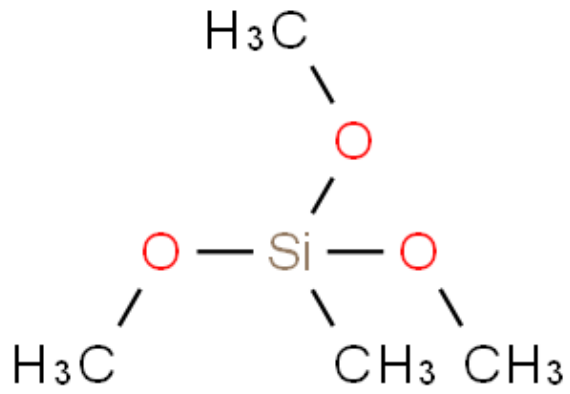
	Fragment defined by the SMILES: C[Si] The fragment has less than 3 occurrences in the model's training set
	Fragment defined by the SMILES: CO[Si] The fragment has never been found in the model's training set
	Fragment defined by the SMILES: C[Si](O)(O)O The fragment has never been found in the model's training set

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

APPENDIX H: Danish QSAR Carcinogenicity Results for Methyltrimethoxysilane (CAS #1185-55-3)

(Q)SAR predicted profile

Structure (as used for QSAR prediction):



SMILES (used for QSAR prediction): CO[Si](C)(OC)OC

ID

Registry Number	1185-55-3	PubChem CID	
REACH EC Number (pre-registration, by 2013)	214-685-0	REACH EC Number (registration, 2019 or 2022)	214-685-0
REACH registration (2022)	Yes	REACH registration cumulated minimum annual tonnage (2022)	1000
EU CLP Harmonized Classification*		DK-EPA / DTU QSAR-based CLP Advisory Classification	Aquatic Acute 1
EU Biocide active substances		EU Pesticide active substances	
EU EFSA Botanical substances		US TSCA (Oct. 2021)	Yes
Tox21 (2019)	Yes	ToxCast (Oct. 2021)	
Molecular Formula	C4 H12 O3 Si1	Molecular weight (g/mole)	136.22
Chemical Name	trimethoxy(methyl)silane		

(Annex VI to CLP up to and including the 9th ATP, and including Nordic Council of Minister SPIN list for group entries)

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Carcinogenicity

	CASE Ultra	Leadscope
FDA RCA Cancer Male Rat	INC_OUT	INC_OUT
FDA RCA Cancer Female Rat	INC_OUT	INC_OUT
FDA RCA Cancer Rat	INC_OUT	INC_OUT
FDA RCA Cancer Male Mouse	INC_OUT	INC_OUT
FDA RCA Cancer Female Mouse	INC_OUT	INC_OUT
FDA RCA Cancer Mouse	INC_OUT	INC_OUT
FDA RCA Cancer Rodent	INC_OUT	INC_OUT

Commercial models from CASE Ultra and Leadscope

FDA RCA: Data from US Food and Drug Administration as part of Research Cooperation Agreement

Carcinogenicity (genotox and nongenotox) alerts by ISS, alerts in:	
- parent only	No alert found
Oncologic Primary Classification, alerts in:	
- parent only	Silicone and Siloxane Type Compounds

OECD QSAR Toolbox v.4.2 profilers

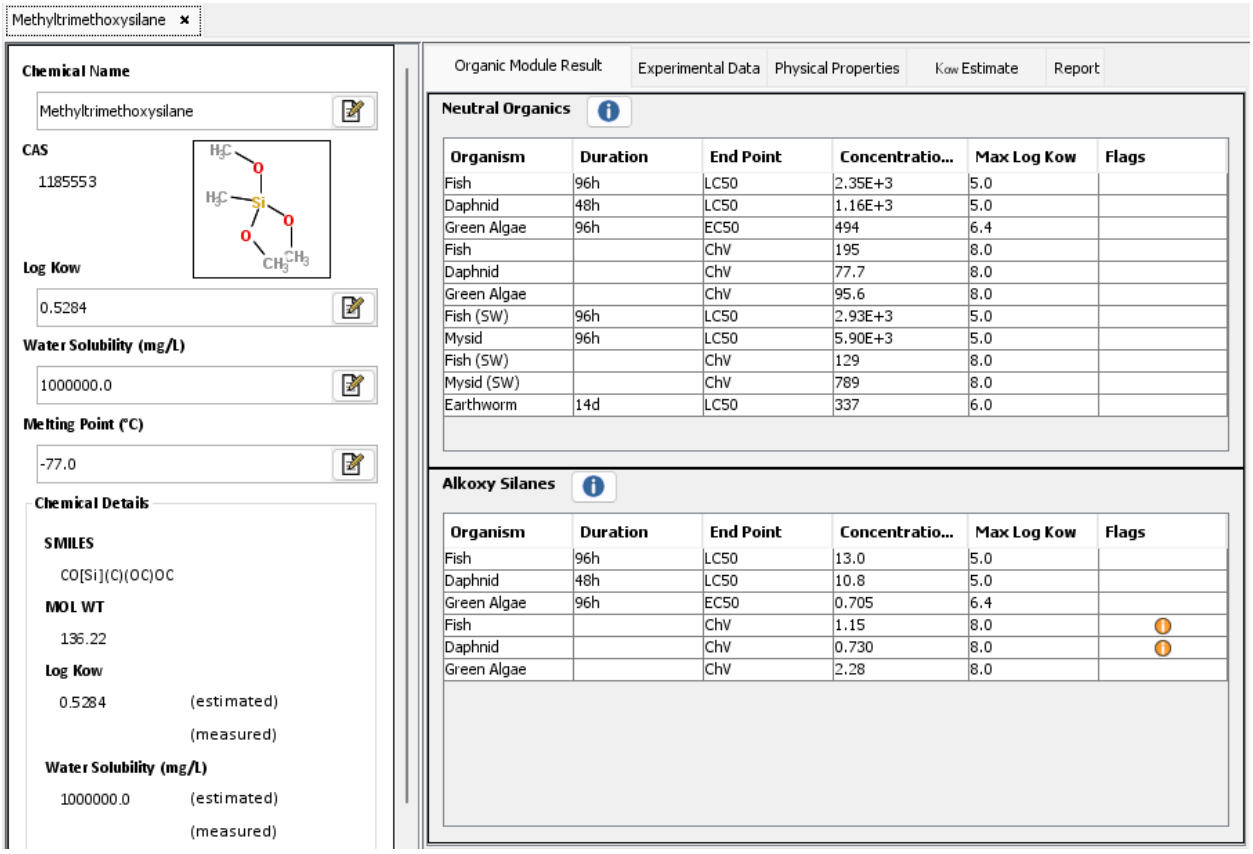
Profiler predictions are supporting information to be used together with the relevant QSAR predictions

	Exp	Battery	CASE Ultra	Leadscope	SciQSAR
Liver Specific Cancer in Rat or Mouse		INC_OUT	INC_OUT	NEG_OUT	NEG_OUT

DTU-developed models

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

APPENDIX I: ECOSAR Modeling Results for Methyltrimethoxysilane (CAS #1185-55-3)



Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

APPENDIX J: EPI Suite™ Modeling Results for Methyltrimethoxysilane (CAS #1185-55-3)

(Estimated values included in the GreenScreen® are highlighted and bolded)

CAS Number: 1185-55-3
SMILES : CO[Si](C)(OC)OC
CHEM : Methyltrimethoxysilane
MOL FOR: C4 H12 O3 Si1
MOL WT : 136.22
---------- EPI SUMMARY (v4.11) ----------
Physical Property Inputs:
Log Kow (octanol-water): ------
Boiling Point (deg C) : 102.00
Melting Point (deg C) : -77.00
Vapor Pressure (mm Hg) : 22.5
Water Solubility (mg/L): ------
Henry LC (atm-m3/mole) : ------

Log Octanol-Water Partition Coef (SRC):
Log Kow (KOWWIN v1.69 estimate) = 0.53

Boiling Pt, Melting Pt, Vapor Pressure Estimations (MPBPVP v1.43):
Boiling Pt (deg C): 98.41 (Adapted Stein & Brown method)
Melting Pt (deg C): -59.98 (Mean or Weighted MP)
VP(mm Hg,25 deg C): 34.4 (Mean VP of Antoine & Grain methods)
VP (Pa, 25 deg C) : 4.58E+003 (Mean VP of Antoine & Grain methods)
BP (exp database): 102.5 deg C

Water Solubility Estimate from Log Kow (WSKOW v1.42):
Water Solubility at 25 deg C (mg/L): 7.803e+004
log Kow used: 0.53 (estimated)
melt pt used: -77.00 deg C

Water Sol Estimate from Fragments:
Wat Sol (v1.01 est) = 41896 mg/L

ECOSAR Class Program (ECOSAR v1.11):
Class(es) found:
Alkoxy Silanes

Henrys Law Constant (25 deg C) [HENRYWIN v3.20]:
Bond Method : 3.70E-004 atm-m3/mole (3.75E+001 Pa-m3/mole)
Group Method: Incomplete
For Henry LC Comparison Purposes:
User-Entered Henry LC: not entered
Henrys LC [via VP/WSol estimate using User-Entered or Estimated values]:
HLC: 5.168E-005 atm-m3/mole (5.237E+000 Pa-m3/mole)
VP: 22.5 mm Hg (source: User-Entered)
WS: 7.8E+004 mg/L (source: WSKOWWIN)

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Log Octanol-Air Partition Coefficient (25 deg C) [KOAWIN v1.10]:
Log Kow used: 0.53 (KowWin est)
Log Kaw used: -1.820 (HenryWin est)
Log Koa (KOAWIN v1.10 estimate): 2.350
Log Koa (experimental database): None

Probability of Rapid Biodegradation (BIOWIN v4.10):
Biowin1 (Linear Model) : 0.6827
Biowin2 (Non-Linear Model) : 0.7454
Expert Survey Biodegradation Results:
Biowin3 (Ultimate Survey Model): 2.8981 (weeks)
Biowin4 (Primary Survey Model) : 3.6512 (days-weeks)
MITI Biodegradation Probability:
Biowin5 (MITI Linear Model) : 0.4993
Biowin6 (MITI Non-Linear Model): 0.5612
Anaerobic Biodegradation Probability:
Biowin7 (Anaerobic Linear Model): 0.5178
Ready Biodegradability Prediction: NO

Hydrocarbon Biodegradation (BioHCwin v1.01):
Structure incompatible with current estimation method!

Sorption to aerosols (25 Dec C)[AEROWIN v1.00]:
Vapor pressure (liquid/subcooled): 3E+003 Pa (22.5 mm Hg)
Log Koa (Koawin est): 2.350
Kp (particle/gas partition coef. (m3/ug)):
Mackay model : 1E-009
Octanol/air (Koa) model: 5.5E-011
Fraction sorbed to airborne particulates (phi):
Junge-Pankow model : 3.61E-008
Mackay model : 8E-008
Octanol/air (Koa) model: 4.4E-009

Atmospheric Oxidation (25 deg C) [AopWin v1.92]:
Hydroxyl Radicals Reaction:
OVERALL OH Rate Constant = 2.6452 E-12 cm3/molecule-sec
Half-Life = 4.044 Days (12-hr day; 1.5E6 OH/cm3)
Half-Life = 48.523 Hrs
Ozone Reaction:
No Ozone Reaction Estimation
Fraction sorbed to airborne particulates (phi):
5.81E-008 (Junge-Pankow, Mackay avg)
4.4E-009 (Koa method)
Note: the sorbed fraction may be resistant to atmospheric oxidation

Soil Adsorption Coefficient (KOCWIN v2.00):
Koc : 330.5 L/kg (MCI method)
Log Koc: 2.519 (MCI method)
Koc : 2.881 L/kg (Kow method)

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Log Koc: 0.460 (Kow method)

Aqueous Base/Acid-Catalyzed Hydrolysis (25 deg C) [HYDROWIN v2.00]:
Rate constants can NOT be estimated for this structure!

Bioaccumulation Estimates (BCFBAF v3.01):
Log BCF from regression-based method = 0.500 (BCF = 3.162 L/kg wet-wt)
Log Biotransformation Half-life (HL) = -0.7436 days (HL = 0.1805 days)
Log BCF Arnot-Gobas method (upper trophic) = 0.082 (BCF = 1.209)
Log BAF Arnot-Gobas method (upper trophic) = 0.082 (BAF = 1.209)
log Kow used: 0.53 (estimated)

Volatilization from Water:
Henry LC: 0.00037 atm-m3/mole (estimated by Bond SAR Method)
Half-Life from Model River: 3.038 hours
Half-Life from Model Lake : 131 hours (5.459 days)

Removal In Wastewater Treatment:
Total removal: 16.02 percent
Total biodegradation: 0.08 percent
Total sludge adsorption: 1.55 percent
Total to Air: 14.39 percent
(using 10000 hr Bio P,A,S)

Level III Fugacity Model: (MCI Method)

	Mass Amount (percent)	Half-Life (hr)	Emissions (kg/hr)
Air	**7.43**	**97.1**	**1000**
Water	**20.1**	**360**	**1000**
Soil	**72.2**	**720**	**1000**
Sediment	**0.282**	**3.24e+003**	**0**

Persistence Time: 391 hr

Level III Fugacity Model: (MCI Method with Water percents)

	Mass Amount (percent)	Half-Life (hr)	Emissions (kg/hr)
Air	7.43	97.1	1000
Water	20.1	360	1000
water	(20)		
biota	(3.4e-006)		
suspended sediment	(0.00994)		
Soil	72.2	720	1000
Sediment	0.282	3.24e+003	0

Persistence Time: 391 hr

Level III Fugacity Model: (EQC Default)

	Mass Amount (percent)	Half-Life (hr)	Emissions (kg/hr)
Air	22.7	97.1	1000

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Water 47.8 360 1000
water (47.8)
biota (8.11e-006)
suspended sediment (9.97e-005)
Soil 29.4 720 1000
Sediment 0.0903 3.24e+003 0
Persistence Time: 180 hr

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

APPENDIX K: Change in Benchmark Score

Table 7 provides a summary of changes to ToxServices' GreenScreen® Benchmark™ for methyltrimethoxysilane. The GreenScreen® Benchmark Score for methyltrimethoxysilane has changed over time. ToxServices performed the original GreenScreen® assessment in 2014 under version 1.2 criteria and ToxServices assigned a Benchmark 1_{TP} (BM-1_{TP}) score. The BM score changed to a BM-2 with a version 1.3 update in 2017 due to reclassification of the transformation product, methanol (LT-1), as not relevant due to its transient nature. Most recently, ToxServices maintained the GreenScreen® benchmark score of BM-2 despite reclassification of some hazard endpoints following a weight of evidence evaluation of this chemical's dataset.

Table 7: Change in ToxServices' GreenScreen® Benchmark™ for Methyltrimethoxysilane

Date	GreenScreen® Benchmark™	GreenScreen® Version	Comment
December 1, 2014	BM- 1_{TP}	v. 1.2	Original GreenScreen® assessment.
June 19, 2017	BM-2	v. 1.3	BM score changed to a BM-2 due to reclassification of the transformation product, methanol (LT-1), as not relevant due to its transient nature.
October 23, 2026	BM-2	v. 1.5a	BM score maintained as BM-2 despite reclassification of some hazard endpoints.

Template Copyright © (2014-2026) by Clean Production Action. All rights reserved.
Content Copyright © (2026) by ToxServices. All rights reserved.

Licensed GreenScreen® Profilers

Methyltrimethoxysilane GreenScreen® Evaluation Prepared/Updated by:

SIGNATURE BLOCK

John Lee, M.P.H.
Toxicologist
ToxServices LLC

SIGNATURE BLOCK

Jennifer Rutkiewicz, Ph.D.
Toxicologist
ToxServices LLC

SIGNATURE BLOCK

Bingxuan Wang, Ph.D.,
Toxicologist
ToxServices LLC

Methyltrimethoxysilane GreenScreen® Evaluation QC'd by:

SIGNATURE BLOCK

Jennifer Rutkiewicz, Ph.D.
Toxicologist
ToxServices LLC

SIGNATURE BLOCK

Bingxuan Wang, Ph.D., D.A.B.T.
Senior Toxicologist
ToxServices LLC