



ADVANCED
CHEMICAL
TECHNOLOGIES, INC.

SAFETY DATA SHEET

SECTION 1

MATERIAL IDENTIFICATION

PRODUCT NAME / DESCRIPTION: DECK-SIL® PS 1700
DECK-SIL® Product for Use under U. S. Patent No. 9,242,269.

DISTRIBUTED / MANUFACTURED BY:

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SECTION 2

HAZARD IDENTIFICATION

CLASSIFICATION:

Flammable Liquid:	Category 3
Skin Irritation:	Category 2
Specific Target Organ Systemic Toxicity – Single Exposure:	Category 3

SIGNAL WORD:

WARNING!

HAZARD STATEMENTS:

Flammable liquid and vapor.
Causes skin irritation.
May cause drowsiness or dizziness.



PRECAUTIONARY STATEMENTS

Prevention:

Keep away from heat/sparks/ open flames/hot surfaces. No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/eye protection/face protection.

Response:

IF ON SKIN (OR HAIR): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

If skin irritation occurs: Get medical advice/attention.
 Take off contaminated clothing and wash it before reuse.
 Storage:
 Store in a well-ventilated place. Keep cool.
 Store locked up.
 Disposal:
 Dispose of contents/container to an approved waste disposal plant.

Other hazards:
 Vapors may form explosive mixture with air.
 Static-accumulating flammable liquid.

SECTION 3 HEALTH HAZARDS

Substance name: Isobutyl trimethoxysilane
CAS No.: 18395-30-7
Chemical nature: Alkoxysilane

Hazardous ingredients	CAS No.	Concentration%
<u>Chemical name</u> Isobutyl trimethoxysilane	18395-30-7	>=90 - <=100
Methanol	67-56-1	>=0.1 - <1

SECTION 4 FIRST AID

Eye Contact: In case of contact, immediately flush eyes with cool running water. Get medical attention if irritation develops and persists.
Skin Contact: In case of skin contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
Ingestion: DO NOT induce vomiting. Get medical attention if symptoms occur. Rinse mouth thoroughly with water.

SECTION 5 FIRE FIGHTING MEASURES

Fire Hazard Classification (OSHA/NFPA): 3
Suitable extinguishing media: Water spray
 Alcohol resistant foam
 Carbon dioxide (CO2)
 Dry chemical.
Unsuitable extinguishing media: High volume water jet
Hazardous combustion products: Carbon oxides
 Silicon oxides
 Formaldehyde
Specific hazards during fire fighting: Do not use a solid stream as it may scatter and spread fire.
 Flash back possible over considerable distance.
 Vapors may form explosive mixtures with air.
 Exposure to combustion products may be a hazard to health.
Specific extinguishing methods: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
 Use water spray to cool unopened containers.
 Remove undamaged containers from fire area if it is safe to do so.
 Evacuate area.
Special protective equipment for fire-fighters: In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

SECTION 6**ACCIDENTAL RELEASE MEASURES**

Personal Precautions, PPE, and Emergency Procedures:	Remove all sources of ignition. Use personal protective equipment. Follow safe handling advice and personal protective equipment recommendations.
Environmental precautions:	Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up:	Non sparking tools should be used. Soak up with inert absorbent material. Suppress (knock down) gases/vapors/mists with a water spray jet. For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and disposal of material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.

SECTION 7**HANDLING AND STORAGE**

Technical measures:	Ensure all equipment is electrically grounded before beginning transfer operations. This material can accumulate static charge due to inherent physical properties and can therefore cause an electrical ignition source to vapors. In order to prevent a fire hazard, as bonding and grounding may be insufficient to remove static electricity, it is necessary to provide an inert gas purge before beginning transfer operations. Restrict flow velocity in order to reduce the accumulation of static electricity.
Local/Total ventilation:	Use with local exhaust ventilation.
Advice on safe handling:	Use only in an area equipped with explosion proof exhaust ventilation. Do not get on skin or clothing. Do not breathe vapors or spray mist. Do not swallow. Avoid contact with eyes. Handle in accordance with good industrial hygiene and safety practice. Non-sparking. Tools should be used. Keep container tightly closed. Keep away from water. Protect from moisture. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Take care to prevent spills, waste and minimize release to the environment.
Conditions for safe storage:	Keep in properly labeled containers. Store locked up. Keep tightly closed. Keep in cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition.
Materials to avoid:	Do not store with the following product types: Strong oxidizing agents Organic peroxides Flammable solids Pyrophoric liquids Pyrophoric solids Self-heating substances and mixtures Substances and mixtures which in contact with water emit flammable gases

Explosives
Gases

SECTION 8

PERSONAL PROTECTION / EXPOSURE CONTROLS

Ingredients with workplace control parameters

Ingredients	CAS-No.	Value Type (form of exposure)	Control Parameter / Permissible concentration	Basis
Methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m ³	NIOSH REL
		ST	250 ppm 325 mg/m ³	NIOSH REL
		TWA	200 ppm 260 mg/m ³	OSHA Z-1

Hazardous components without workplace control parameters

Ingredients	CAS-No.	Value Type (form of exposure)	Control Parameter / Permissible concentration	Basis
Isobutyl trimethoxysilane	18395-30-7			

Occupational exposure limits of decomposition products

Ingredients	CAS-No.	Value Type (form of exposure)	Control Parameter / Permissible concentration	Basis
Methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m ³	NIOSH REL
		ST	250 ppm 325 mg/m ³	NIOSH REL
		TWA	200 ppm 260 mg/m ³	OSHA Z-1

Biological occupational exposure limits

Ingredients	CAS-No.	Control Parameter	Biological Specimen	Sampling time	Permissible concentration	Basis
Methanol	67-56-1	Methanol	Urine	End of shift (as soon as possible after shift ends)	15 mg/l	ACCGIH BEI

Engineering measures::

Processing may form hazardous compounds.
Minimize workplace exposure concentrations.
Use only in an area equipped with explosion proof exhaust ventilation.
Use with local exhaust ventilation.

Personal Protective Equipment

Respiratory Protection:

General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand Protection:

Material
Material
Material
Remarks

Antistatic gloves
Impervious gloves
Flame retardant gloves
Choose gloves to protect hands against chemicals depending on the concentration

specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of the workday.

Eye protection:

Wear the following personal protective equipment:

Safety glasses

Skin and body protection:

Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.

Wear the following personal protective equipment:

Flame retardant antistatic protective clothing

Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc.).

Hygiene measures:

Ensure that eye flushing systems and safety showers are located close to the working place.

When using, do not eat, drink or smoke.

Wash contaminated clothing before re-use.

These precautions are for room temperature handling. Use at elevated temperature or aerosol spray applications may require added precautions.

For further information regarding use of silicones/organic oils in consumer aerosol applications, please refer to the guidance document regarding the use of these types of materials in consumer aerosol applications that has been developed by the silicone industry (www.SEHSC.com)

SECTION 9

TYPICAL PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Liquid
Color:	Colorless
Odor:	Slight
Odor Threshold:	No data available
pH:	No data available
Melting point/Freezing point:	No data available
Initial boiling point and boiling range:	155.5° C
Flash Point:	32° C
	Method: Tag closed cup
Evaporation Rate:	No data available
Flammability (solid, gas):	Not applicable
Upper Explosion Limit (UEL):	16%(V)
Lower Explosion Limit (LEL):	0.92%(V)
Vapor Pressure:	No data available
Relative Vapor Density:	No data available
Relative Density:	0.92
Solubility(ies) - Water solubility:	No data available
Partition Coefficient: n-octanol/water	No data available
Auto-ignition Temperature:	267° C
Decomposition Temperature:	No data available
Viscosity, kinematic:	1 cSt
Explosive properties:	Not explosive
Oxidizing properties:	The substance or mixture is not classified as oxidizing
Molecular weight:	No data available

SECTION 10

STABILITY AND REACTIVITY

Reactivity:	Not classified as a reactivity hazard
Chemical stability:	Stable under normal conditions
Possibility of hazardous reactions:	Flammable liquid and vapor. Vapors may form explosive mixture with air. Use at elevated temperatures may form highly hazardous

	compounds. Can react with strong oxidizing agents. Hazardous decomposition products will be formed upon contact with water or humid air. Hazardous decomposition products will be formed at elevated temperatures.
Conditions to avoid:	Exposure to moisture. Handling operations that can promote accumulation of static charges.
Incompatible materials:	Heat, flames, sparks. Oxidizing agents Water
Hazardous decomposition products:	
Contact with water or humid air:	Methanol
Thermal decomposition:	Formaldehyde

SECTION 11

TOXICOLOGICAL PROPERTIES

Information on likely routes of exposure

Inhalation
Skin contact
Ingestion
Eye Contact

Acute toxicity

Not classified based on available information

Product:

Acute oral toxicity:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method
Acute inhalation toxicity:	Acute toxicity estimate: > 40 mg/l Exposure time: 4 h Test atmosphere: vapor Method: Calculation method
Acute dermal toxicity:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method

Ingredients:

Isobutyl trimethoxysilane

Acute oral toxicity:	LD50 (rat): 10,000 mg/kg Assessment: The substance or mixture has no acute oral toxicity Remarks: Based on test data
Acute inhalation toxicity:	LD50 (rat): >1525 ppm Exposure time: 4 h Test atmosphere: vapor Assessment: The substance or mixture has no acute inhalation toxicity Remarks: Based on test data

Methanol

Acute oral toxicity:	Acute toxicity estimate (Humans): 300 mg/kg Method: Expert judgment
Acute inhalation toxicity:	Acute toxicity estimate (Humans): 3 mg/l Test atmosphere: vapor Method: Expert judgment
Acute dermal toxicity:	Acute toxicity estimate (Humans): 300 mg/kg Method: Expert judgment

Skin corrosion/irritation

Causes skin irritation

Ingredients:

Isobutyl trimethoxysilane

Species: Rabbit
Result: Skin irritation
Remarks: Based on test data

Methanol

Species: Rabbit
Result: No skin irritation

Serious eye damage/eye irritation

Not classified based on available information

Ingredients:**Isobutyl trimethoxysilane**

Species: Rabbit
Result: No eye irritation
Remarks: Based on test data

Methanol

Species: Rabbit
Result: No eye irritation

Respiratory or skin sensitization

Skin sensitization: Not classified based on available information

Respiratory sensitization: Not classified based on available information

Ingredients:**Isobutyl trimethoxysilane**

Assessment: Does not cause skin irritation
Test Type: Skin: test type not specified
Remarks: No known sensitizing effect
Result: Based on test data

Methanol

Test Type: Maximization Test (GPMT)
Routes of exposure: Skin contact
Species: Guinea pig
Result: Negative

Germ cell mutagenicity

Not classified based on available information

Ingredients:**Isobutyl trimethoxysilane**

Genotoxicity in vitro:
Test type: Bacterial reverse mutation assay (AMES)
Result: Negative
Remarks: Based on test data

Methanol

Genotoxicity in vitro:
Test type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: Negative

Genotoxicity in vivo:

Test type: Mammalian erythrocyte micronucleus test (in vivo cytogenic assay)
Species: Mouse
Application route: Intraperitoneal injection
Result: Negative

Carcinogenicity

Not classified based on available information

Ingredients:**Methanol**

Species: Mouse

Application route:	Inhalation (vapor)
Exposure time:	18 months
Method:	OECD Test Guideline 453
Result:	Negative
IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by OSHA.
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by NTP.

Reproductive toxicity

Not classified based on available information

Ingredients:

Methanol

Effects on fertility

Test type:	Fertility/early embryonic development
Species:	Mouse
Application route:	Ingestion
Result:	Negative

Effects on fetal development

Test type:	Embryo-fetal development
Species:	Mouse
Application route:	Ingestion
Method:	OECD Test Guideline 414
Result:	Positive
Remarks:	The effects were seen only in maternally toxic doses

STOT – single exposure

May cause drowsiness or dizziness

Ingredients:

Isobutyl trimethoxysilane

Routes of exposure:

Inhalation (vapor)
 May cause drowsiness or dizziness
 Information taken from reference works and the literature

Assessment:

Remarks:

Methanol

Target Organs:

Eyes, Central Nervous System
 Causes damage to organs

Assessment:

STOT – repeated exposure

Not classified based on available information

Ingredients:

Methanol

Species:	Rat
NOAEL:	1.06 mg/l
Application route:	Inhalation (vapor)
Exposure time:	90 d

Aspiration toxicity

Not classified based on available information

SECTION 12

ECOLOGICAL INFORMATION

Ecotoxicity

Ingredients:

Isobutyl trimethoxysilane

Toxicity to fish

LC50 (Dani rerio (zebra fish)): > 100 mg/l

Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates

EC50 (Daphnia sp.): >864 mg/l

Exposure time: 48 h

Toxicity to algae

EC50 (Scenedesmus subspicatus): 1,170 mg/l

Exposure time: 72 h

Methanol

Toxicity to fish

LC50 (Lepomis macrochirus (Bluegill sunfish)): >15,400 mg/l

Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates

EC50 (Daphnia magna (Water flea)): >10,000 mg/l

Exposure time: 48 h

Toxicity to algae

EC50 (Pseudokirchneriella subcapitata (green algae)): 22,000 mg/l

Exposure time: 96 h

Method: OPPTS 850.5400

Toxicity to fish (Chronic toxicity)

NOEC (Oryzias latipes (Orange-red killfish)): 15,800 mg/l

Exposure time: 200 h

Toxicity to bacteria

EC50: 20,000 mg/l

Exposure time: 15 h

Persistence and degradability**Ingredients:****Isobutyl trimethoxysilane**

Biodegradability:

Result:

Not readily biodegradable

Biodegradation:

36 – 47%

Exposure time:

28 d

Method:

OECD Test Guideline 301B

Stability in water:

Degradation half life: 4.6 h pH:7

Methanol

Biodegradability:

Result:

Readily biodegradable

Biodegradation:

95%

Exposure time:

20 d

Bioaccumulation:**Ingredients:****Isobutyl trimethoxysilane**

Partition coefficient:

n-octanol/water:

Log Pow: -0.77

Mobility in soil:

No data available

Other adverse effects:

No data available

SECTION 13**DISPOSAL CONSIDERATIONS****Disposal methods**

Resource Conservation and Recovery Act (RCRA):

When a decision is made to discard this material as supplied, it is classified as a RCRA hazardous waste.

Waste Code:

D001: Ignitability

Waste from residues:

Dispose of in accordance with local regulations.

Contaminated packaging:

Dispose of as unused product.

Empty containers should be taken to an approved waste handling site for recycling or disposal.

Do not burn, or use cutting torch on, the empty drum.

SECTION 14**TRANSPORT INFORMATION****International Regulation****UNRTDG**

UN number: UN 1993
 Proper shipping name: FLAMMABLE LIQUID, N.O.S.
 (Isobutyl trimethoxysilane, Methanol)
 Class: 3
 Packing group: III
 Labels: 3

IATA-DGR

UN/ID No. UN 1993
 Proper shipping name: FLAMMABLE LIQUID, N.O.S.
 (Isobutyl trimethoxysilane, Methanol)
 Class: 3
 Packing group: III
 Labels: Flammable Liquids
 Packing instruction (cargo aircraft): 366
 Packing instruction (passenger aircraft): 355

IMDG-Code

UN number: UN 1993
 Proper shipping name: FLAMMABLE LIQUID, N.O.S.
 (Isobutyl trimethoxysilane, Methanol)
 Class: 3
 Packing group: III
 Labels: 3
 EmS Code: F-E, S-E
 Marine pollutant: No

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation**49 CFR**

UN/ID/NA number: UN 1993
 Proper shipping name: FLAMMABLE LIQUID, N.O.S.
 (Isobutyl trimethoxysilane, Methanol)
 Class: 3
 Packing group: III
 Labels: FLAMMABLE LIQUID
 ERG Code: 128
 Marine pollutant: No

SECTION 15**REGULATORY INFORMATION****EPCRA – Emergency Planning and Community Right-to-Know****CERCLA Reportable Quantity**

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Methanol	67-56-1	5000	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA – Superfund Amendments and Reauthorization Act**SARA 304 Extremely Hazardous Substances Reportable Quantity**

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards:

Fire hazard
Acute health Hazard

SARA 302:

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313:

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations

Pennsylvania Right-to know:

Isobutyl trimethoxysilane	18395-30-7	90 – 100%
Methanol	67-56-1	0.1 – 1%

New Jersey Right-to know:

Isobutyl trimethoxysilane	18395-30-7	90 – 100%
Methanol	67-56-1	0.1 – 1%

California Prop 65

Methanol
WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.
67-56-1

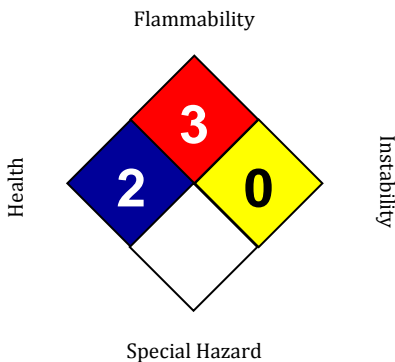
The ingredients in this product are reported in the following inventories:

NZIoC (New Zealand):	One or more ingredients are not listed or exempt.
REACH (European Union):	All ingredients (pre-)registered or exempt.
TSCA (United States of America):	All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances.
AICS (Australia):	All ingredients listed or exempt.
IECSC (China):	All ingredients listed or exempt.
ENCS/ISHL (Japan):	All components are listed on ENCS/ISHL or exempted from inventory listing.
KECI (Korea):	All ingredients listed, exempt or notified.
PICCS (Philippines):	All ingredients listed or exempt.
DSL (Canada):	All chemical substances in this product comply with the CEPA 1999 and NSNR and are on or exempt from listing on the Canadian Domestic Substances List (DSL).

SECTION 16

OTHER INFORMATION

NFPA:	HMIS III:
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HEALTH	2
FLAMMABILITY	3
PHYSICAL HAZARD	0

- 0 = not significant**
- 1 = slight**
- 2 = moderate**
- 3 = high**
- 4 = extreme**
- * = chronic**

THIS INFORMATION IS OFFERED IN GOOD FAITH AS TYPICAL V A PRODUCT SPECIFICATION. NO WARRANTY, EXPRESSED OR IMPLIED, IS HEREBY MADE. THE RECOMMENDED INDUSTRIAL HYGIENE AND SAFE HANDLING PROCEDURES ARE BELIEVED TO BE GENERALLY APPLICABLE. HOWEVER, EACH USER SHOULD REVIEW THESE RECOMMENDATIONS IN THE SPECIFIC CONTEXT OF THE INTENDED USE AND DETERMINE WHETHER THEY ARE APPROPRIATE.