

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Product Name: roVa™ Shield Hydrophobic Coating

Synonyms: Silica aerogel material

Use of the Substance/Preparation: High performance hydrophobic material

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2. HAZARDS IDENTIFICATION**Emergency Overview****Caution:**

Flammable liquid and vapor. Causes eye, skin, and respiratory tract irritation. Ingestion may cause gastric disturbances. Can enter lungs and cause damage.

Appearance: Turbid
Odor: Alcohol odor

Primary Routes of Exposure:

Primary routes of exposure for liquids include skin and eye contact, inhalation, and ingestion.

Potential Health Effects**Skin contact:**

Causes moderate skin irritation. May cause cyanosis of the extremities.

Eye contact:

Causes severe eye irritation. May cause painful sensitization to light. May cause chemical conjunctivitis and corneal damage.

Inhalation:

Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma.

Ingestion:

May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause systemic toxicity with acidosis.

Target Organ Effects:

Kidneys, heart, central nervous system, liver, lungs, eyes, skin.

Medical Condition Aggravated By Exposure:

Prolonged exposure may cause liver, kidney, and heart damage.

Potential Health Effects

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS Number	Percent	EINECS Number
Polyurethane	68227-93-0	10~20	
N-Heptane	64-17-5	40~60	200-578-6
Ethyl Alcohol Anhydrous	142-82-5	20~30	205-563-8
Trimethylsilylated Silica (amorphous silica)	7631-86-9	1~10	262-373-8
Proprietary Additive	NA	1~10	Not assigned

4. FIRST AID MEASURES**Eye Contact:**

Immediately wash with large amounts of water for at least 15 minutes, occasionally lifting lids. Remove contact lenses if worn and continue to wash with water. If irritation occurs and persists, get medical treatment.

Skin Contact:

Remove contaminated clothing and footwear. Immediately wash with large amounts of water for at least 20 minutes. If irritation occurs and persists, get medical treatment. Wash clothing before reuse. Flush skin with plenty of soap and water.

Ingestion:

Seek immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Inhalation:

Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation.

5. FIRE-FIGHTING MEASURES**Flash Point:**

- 4 °C (24.8 °F)

Autoignition Temperature:

203.89 °C (399 °F) - 223 °C (433 °F)

Explosion Limits:

Lower: 1.05%, Upper: 6.7%

Hazardous combustion products:

Calcium hypochlorite, silver oxide and ammonia to react slowly as there is danger of fire and explosion. Silver nitrate, mercury nitrate, magnesium perchlorate reacts violently with strong oxidizing agents such as nitric acid causing fire and explosion hazard.

Unusual Fire and Explosion Hazards:

Containers may explode when exposed to extreme heat.

Extinguishing Media:

For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water.

Protective Equipment for Fire-fighting:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

6. ACCIDENTAL RELEASE MEASURES**Personal Precautions:**

Use personal protection recommended in Section 8.

Environmental Precautions:

A leakage of the material may cause contamination. Prevent flowing into waterways, sewers, basements or confined spaces.

Methods and Materials for Containment and Cleaning Up:

Eliminate ignition sources. Soak up with inert absorbent such as sand, earth or vermiculite. Put in closed container for prompt disposal. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

7. HANDLING AND STORAGE**Precautions for Safe Handling:**

Wear personal protective gear (rubber gloves, protection uniform, activated carbon mask, etc.) and avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Use only in a well-ventilated area. Use spark-proof tools and explosion proof equipment. Practice good industrial hygiene and safety guidelines. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with heat, sparks and flame. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. When operating continuously for long periods, the aerosol container can become very cold. Care should be taken to avoid skin burns.

Conditions for Safe Storage:

Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. Do not store near perchlorates, peroxides, chromic acid or nitric acid. Pressurized container: protect from sunlight and do not expose to temperatures exceeding 120°F (50°C).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Occupational Exposure Limits**

Chemical Name	ACGH	NIOSH	OSHA – Final PELs
Ethyl alcohol	1000 ppm TWA	1000 ppm TWA; 1900 mg/m ³ TWA 3300 ppm IDLH	1000 ppm TWA; 1900 mg/m ³ TWA
n-Heptane	400 ppm TWA; 500 ppm STEL	85 ppm TWA; 350 mg/m ³ TWA 750 ppm IDLH	500 ppm TWA; 2000 mg/m ³ TWA
Methylcyclohexane	400 ppm TWA	400 ppm TWA; 1600 mg/m ³ TWA 1200 ppm IDLH	500 ppm TWA; 2000 mg/m ³ TWA

Engineering Controls

Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protective Equipment

Respiratory Protection:

Avoid prolonged and/or deliberate breathing of spray mist.
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Eye Protection:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Hand Protection:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Hygiene Measures:

Wash hands and/or face thoroughly between breaks and at the end of the working period.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless
Odor:	Alcohol odor
pH:	6~8 (25 °C)
Freezing/Melting Point:	Not applicable
Boiling Point:	approximately 78 °C
Flashing Point:	16.6 °C (61.88 °F)
Evaporation Rate:	Not applicable
Vapor Pressure:	approximately 59.3 mm Hg @ 20 °C
Solubility in Water:	Negligible
Autoignition Temperature:	Not Determined
Viscosity:	30~100 mPa·s

10. STABILITY AND REACTIVITY

Chemical Stability:

Chemically stable under normal handling conditions.

Hazardous Reactions:

None under normal use

Conditions To Avoid:

Incompatible materials, ignition sources, excess heat, oxidizers..

Substances to Avoid:

Strong oxidizing agents, acids, alkali metals, ammonia, hydrazine, peroxides, sodium, acid anhydrides, calcium hypochlorite, chromyl chloride, nitrosyl perchlorate, bromine pentafluoride, perchloric acid, silver nitrate, mercuric nitrate, potassium-tert-butoxide, magnesium perchlorate, acid chlorides, platinum, uranium hexafluoride, silver oxide, iodine heptafluoride, acetyl bromide, disulfuryl difluoride, tetrachlorosilane + water, acetyl chloride, permanganic acid, ruthenium (VIII) oxide, uranyl perchlorate, potassium dioxide.

Hazardous Decomposition Products:

Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

11. TOXICOLOGICAL INFORMATION**Acute Toxicity****Oral**

mouse: LD50 = 3450 mg/kg;

rabbit: LD50 = 6300 mg/kg;

rat: LD50 = 7060 mg/kg;

Irritation/Corrosion

No information available.

Skin:

Draize test, rabbit: 20 mg/24H Moderate

Eye:

Draize test, rabbit: 500 mg Severe.

Neurotoxicity:

No information available.

Carcinogenicity:

CAS# 64-17-5: ACGIH: A4 - Not Classifiable as a Human Carcinogen.

CAS# 7732-18-5: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

CAS# 142-82-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 108-87-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 26635-64-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 28729-52-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Other information:

The information was derived from products of similar composition.

12. ECOLOGICAL INFORMATION

Fish

Goldfish: LC50 = 4.0 mg/L; 24 Hr.;
 Rainbow trout: LC50 = 12900-15300 mg/L; 96 Hr; Flow-through @ 24-24.3°C
 Rainbow trout: LC50 = 11200 mg/L; 24 Hr; Fingerling (Unspecified)
 ria: Photobacterium phosphoreum: EC50 = 34900 mg/L; 5-30 min;

Environmental:

When released to the atmosphere it will photodegrade in hours(polluted urban atmosphere) to an estimated range of 4 to 6 days in less polluted areas. Rainout should be significant.

Physical:

No information available.

Other:

No information available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal:

Dispose in an approved facility or through a licensed waste disposal contractor. Disposal of this product, solutions, and any byproducts should at all times comply with the requirements of environmental protection and waste disposal legislation. Do not discharge into waterways, drains, and sewers.

Container Disposal:

Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Follow Waste Disposal guidelines.

14. TRANSPORT INFORMATION

Ethyl alcohol

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	ETHANOL				No information available.
Hazard Class:	3				
UN Number:	UN1170				
Packing Group:	II				

n-Heptane

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	HEPTANES				HEPTANES
Hazard Class:	3				3
UN Number:	UN1206				UN1206
Packing Group:	II				II
Additional Info:					FLASHPOINT -4 C

15. REGULATORY INFORMATION



Material Safety Data Sheet

roVa™ Shield

Revision Date : 08/16/2018

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Clean Air Act:

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

WARNING:

This product contains Ethyl alcohol, a chemical known to the state of California to cause birth defects or other reproductive harm. California No Significant Risk Level: None of the chemicals in this product are listed.

Hazard Symbols:

F

16. OTHER INFORMATION

NFPA Rating

Health: 2

Flammability: 3

Physical Hazard: 0

DISCLAIMER

The Data set forth in these sheets are based on the information provided by the suppliers of the raw materials and chemicals used in the manufacturing of the aforementioned product. roVa corporation makes no warranty with respect to the accuracy of the information provided by their suppliers, and disclaims all liability of reliance thereon.

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