

## Safety Data Sheet (SDS)

**Product name: Solar Panel Shield - Inorganic Antifouling and Defog Coating**

### 1. Product and corporate information

Product name:	Solar Panel Shield - Inorganic Antifouling and Defog Coating
Product code:	SPS-01
Company name:	Granite Marketing Inc.
Address:	8194 W. Deer Valley Rd. Ste. 106-260 Peoria, AZ 85382
Division in charge:	Product Development Division /Safety Technical Group
Telephone:	480-272-0619
Facsimile:	860-371-3133
Classification No.:	12001-1-A

### 2. Hazards identification

GHS classification	Flammable liquids	Category 2
	Acute toxicity	Category 5 (Oral) Category 5 (Dermal)
	Skin corrosion/irritation	Category 3
	Serious eye damage/eye irritation	Category 2
	Toxic to reproduction	Category 1
	Specific target organ toxicity (Single exposure)	Category 1 (central nervous system, blood vessel, optic organ, kidney, systemic toxicity) Category 2 (alimentary canal) Category 3 (respiratory tract irritation, anesthetic action)
	Specific target organ toxicity (Repeated exposure)	Category 1 (central nervous system, optic organ, liver) Category 2 (blood vessel, kidney, spleen, respiratory organs)
	Aspiration hazard	Category 2

#### GHS label elements

Pictograms or symbols:



Signal words:

Danger

Hazard statement

H225 Highly flammable liquid and vapor

H303 May be harmful if swallowed

H313 May be harmful in contact with skin

Precautionary statements

- H316 Causes mild skin irritation  
H319 Causes serious eye irritation  
H360 May damage fertility or an unborn child  
H370 Causes damage to organs (central nervous system, blood vessel, optic organ, kidney, systemic toxicity)  
H371 May cause damage to organ (alimentary canal)  
H335+H336  
May cause respiratory irritation; or may cause drowsiness or dizziness  
H372 Causes damage to organs (central nervous system, optic organ, liver)  
H373 May cause damage to organs (blood vessel, kidney, spleen, respiratory organs)  
H305 May be harmful if swallowed and enters airways
- 【Prevention】**  
P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat/sparks/open flames/hot surfaces.-No smoking.  
P233 Keep container tightly closed.  
P241 Use explosion-proof  
Electrical/ventilating/lighting equipment.  
P243 Take precautionary measures against static discharge.  
P260 Do not breathe mists, vapor or spray.  
P264 Wash your hands thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P280 Wear protective gloves/eye protection/face protection.  
P281 Use personal protective equipment as required.
- 【Response】**  
P303+P352+P361  
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Gently wash with plenty of soap and water.  
P332+P313  
If skin irritation occurs: Get medical advice/ attention.  
P305+P351+P338  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337+P313  
If eye irritation persists: Get medical advice/attention.  
P308+P313  
IF exposed or concerned: Get medical advice/attention.

P309+P311

IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

P301+P310+P331

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do Not induce vomiting.

P370+P378

In case of fire: Use appropriate media for extinction.

**【Storage】**

P403+P233

Store in a well-ventilated place. Keep container tightly closed. Keep cool.

P405

Store locked up.

**【Disposal】**

P501

Entrust disposition of contents/container to waste dealer approved by governor.

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### 3. Composition/ information on ingredients

Classification of chemical  
substance/mixture:

Mixture

Components and contents

Substance name	Content (%)	Poisonous and Deleterious Substances Control Law No.	Industrial Safety and Health Law No.	PRTR Law No.	CAS No.
Methanol	40-45	Not applicable(※1)	560	Not applicable	67-56-1
Isopropyl alcohol	35-40	Not applicable	319	Not applicable	67-63-0
Ethanol	5-10	Not applicable	61	Not applicable	64-17-5
Silicon compound-1	1-5	Not applicable	Not disclosed(☆1)	Not applicable	Not disclosed(☆1)
Silicon compound-2	1-5	Not applicable	Not disclosed(☆1)	Not applicable	Not disclosed(☆1)
Not disclosed	5>	Not applicable	Not applicable	Not applicable	Not disclosed
Not disclosed	1>	Not applicable	Not applicable	Not applicable	Not disclosed
Not disclosed	0.1>	Not applicable	Not applicable	Not applicable(※2)	Not disclosed
Not disclosed	0.1>	Not applicable(※3)	Not applicable(※4)	Not applicable	Not disclosed
Not disclosed	0.1>	Not applicable	Not applicable	Not applicable	Not disclosed
Not disclosed	0.1>	Not applicable	Not applicable	Not applicable	Not disclosed

※1-4: Not applicable due to each content amount of the regulation value or less.

☆1: We disclose these confidential information when the dealings start.

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### 4. First aid

Inhalation

Move to a location where fresh air is available, allow the subject to rest and keep the subject warm. If you feel unwell, then seek medical attention.

Skin contact:

Thoroughly rinse the affected area with a plenty of water

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	and soap. Immediately remove all contaminated clothing. If a problematic symptom occurs, then seek medical attention.
Eye contact:	Thoroughly rinse eye with a plenty of clean running water, and then seek medical attention. Remove contact lenses if present and easy to do. continue rinsing.
swallowing:	Do not force the victim to vomit: immediately seek medical attention. If the victim's mouth is contaminated, thoroughly rinse with a plenty of water.

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## 5. Fire-fighting measures

Fire-extinguishing means:	For a small-scale fire, use powder, CO <sub>2</sub> , dry chemicals, sprinkle water or alcohol-resistant foam. For a large-scale fire, use water jet, water spraying; or alcohol-resistant fire-extinguishing medium.
Fire-extinguishing means that must not be used:	Straight stream
The unique hazardous in fire emergency:	It's extremely flammable and may be caught fire easily with heat, spark or fire. Containers may be exploded by heating. Irritant, corrosive or toxic gas may be generate in fire emergency.
Fire-fighting practice unique to the material:	Stand upwind from the fire. After successful extinguishing of fire, thoroughly cool down the container with a plenty of water. Remove the container or combustibles available immediately to the safe area. If the case of fire spread may be possible by the water splinkle, use the appreciate media.
Protection of fire-fighting people:	Wear effective protective equipment (heat-resistant clothing, protective gloves, respiratory aid, etc.)

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## 6. Control of the spilt or leaked material

- If leakage has occurred indoors, open the windows and door and allow the room to be thoroughly ventilated.
- Close the leakage area to unauthorized people with rope.
- Operators should wear adequate protective equipment (heat-resistant clothing, protective gloves, respiratory aid, etc.)
- Operate on upwind side and evacuate people from downwind side.
- Prevent washed water from flowing on the ground or into the drain.
- Strictly prevent spilt material from flowing into a sewerage system.
- For a smaller amount of spill, allow it to be absorbed in soil and/or pieces of factory cloth, and collect in a vacant container which can be sealed.
- For a large amount of spill, prevent flowing-away with sandbags, etc., and recover into a vacant container after being leaded to a safety place.

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- Immediately remove a nearby fire source or combustible objects.
  - Waste should be treated on the base of related treatment laws.
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## 7. Precautions for handling and storage

### Handling

Safe handling practice:

Use in a well-ventilated place.  
Wear appropriate protective equipment that protects skin, eyes and respiratory organ.  
Avoid breathing vapor or mist.  
Do not smoke when using this product.  
Avoid using fire, spark and high-temperature object in the vicinity of the material in question.  
After handling the material, thoroughly rinse hands, mouth and face, and change the work clothing if contaminated.

### Storage

Appropriate storage conditions:

Securely close the container every time after the material has been used. Avoid a place that is exposed to direct sunlight or high temperature (40°C) and high humidity. Store the container in a cool, dark well-ventilated place. Avoid a place where there is a fire source or spark in the vicinity or where the material in question can come into contact with a high-temperature object. Stock apart from the strong oxidizing compound.

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## 8. Prevention of exposure and measure for protection

Protection by equipment:

Keep good ventilation indoors  
Provide a local ventilation system for a location where ventilation efficiency is poor or much vapor can occur.  
Use explosion-proof electrical, ventilating and lighting equipment.  
Please make sure there is no naked fire and enclose the vapor source.  
Take measures to prevent electrostatic buildup.  
Provide an anti-electrostatic discharge measure.

Administrative control level:

200ppm (Methanol)  
200ppm (Isopropyl alcohol)

Allowable concentration

The Japan Society for Occupational Health (2010 ver.):

200ppm, 260mg/m<sup>3</sup> (methanol)  
400ppm, 980mg/m<sup>3</sup> (maximum allowable concentration/ isopropyl alcohol)  
2mg/m<sup>3</sup> (inhalable dust / silicon compound-1)  
10ppm, 85mg/m<sup>3</sup> (silicon compound-2)

ACGIH (2007 ver.):

TLV-TWA; 200ppm, TLV-STEL; 250ppm (methanol)  
TLV-TWA; 200ppm, TLV-STEL; 400ppm (IPA)

	TLV-STEL; 1000ppm (ethanol)
	TLV-TWA; 2.0mg/m <sup>3</sup> (fume/ silicon compound-1)
	TLV-TWA; 10ppm (silicon compound-2)
	TLV-TWA; 2mg/m <sup>3</sup> , TLA-STEL; 6mg/m <sup>3</sup> (inorganic acid)
Protective equipment	
Respiratory protection:	Gas mask against organic gas
Hand protection:	Protective gloves
Eye protection:	Protective goggles

## 9. Physical and chemical properties

Appearance:	Slightly milky liquid
Odor:	Alcoholic odor
pH:	2.2
Melting point/solidifying point:	No data available
Boiling point, initial boiling point and boiling range:	65°C
Flash point:	13°C
Ignition point:	No data available
Range of inflammability or range of explosion:	No data available
Vapor pressure:	No data available
Vapor density:	No data available
Specific gravity:	0.82
Solubility:	Easy soluble
Octanol water partition coefficient:	No data available
Decomposition temperature:	No data available

## 10. Stability and reactivity

Stability:	Stable under ordinary handling conditions
Possibility of hazardous reaction:	Strong oxidant Explosive gas by mixing to the air Corrosion of aluminum at high temperature
Conditions to be avoided:	Exposure to high temperature
Dangerous mixed melting materials:	Strong oxidizing and reducing agent
Dangerous or hazardous decomposition products:	None

## 11. Hazard information

<As Methanol>	
Serious eye damage/eye irritation	Draize test (rabbit): after testing for 24, 48 and 72h, the averaged score of conjunctivitis is 2 or more.
Toxic to reproduction	Have been described to have fetal resorption, prolapsus cerebri or cleft palate by aspiration exposure of pregnant mouse. The same case is possible to human.

Specific target organ toxicity (Single exposure)	Have been described to have the restrain of central nervous system, and come down with visual disturbance, lose eyesight or headache.
Specific target organ toxicity (Repeated exposure)	Have been described to cause loss eyesight, headache, dizziness or gastrointestinal injury by exposure vocationally.
<As Isopropyl alcohol>	
Specific target organ toxicity (Single exposure)	‘The activity of rat decreased when inhalation exposure’ was reported and in human case the irritation to alimentary canal, the lowering of blood pressure and body temperature, CNS disease and kidney damage was recognized when ingestion. Therefore, specific target organ is determined as CNS, kidney and systemic toxicity, and the category is as 1. Furthermore, in human case the irritation to nose and throat was recognized, so the respiratory tract irritation was determined as 3.
Specific target organ toxicity (Repeated exposure)	‘In rat’s inhalation test for 86 days or 4 months, the influence to blood vessel, liver and spleen was recognized’ was reported, therefore the specific target organ is determined as blood vessel, liver and spleen and the category is as 2.
Aspiration hazard	There is no data for human case, but in rat’s intratracheal administration the death by cardiopulmonary arrest within 24h was recognized. Furthermore, the kinetic coefficient of viscosity is about 1.6, so the category is determined as 2.
<As ethanol>	
Germ cell mutagenicity	The dominant lethal test by oral administration to rat and mouse (in mouse case is also intraperitoneal administration) was positive, so the category is determined as 1.
Specific target organ toxicity (Repeated exposure)	‘In human case, the long term high intake affects to almost organs badly. The most impact is to liver and the progress of disorder is beginning from fatty degeneration through necrosis and fibrosis and reach to cirrhosis.’ was reported. Therefore the category is determined as 1.
<As silicon compound-1>	
Specific target organ toxicity (Single exposure)	On the inhalation exposure test of guinea pig, the severe anemia was recognized in range of guidance concentration figures of category 1.
Specific target organ toxicity (Repeated exposure)	On the inhalation exposure test of rat, the influences to kidney, liver and lung was recognized above the range of guidance concentration figures of category 2. Furthermore, on the same test of mouse, the influences to kidney or intranasal was recognized in the range of guidance concentration figures of category 2.

<As inorganic acid>

Specific target organ toxicity (Single exposure)

In human case, 'the disease of alimentary canal such as nausea, vomiting, stomachache and diarrhea and the CNS disease such as headache, fever and convulsion' or 'the irritation to upper respiratory tract', and in animal case, 'cyanosis, limbs rigid, convulsion and shock disease' were reported. Therefore the category is determined as 1 (CNS and alimentary canal).

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## 12. Environmental impact information

No data available

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## 13. Precautions for disposal

- Commission an authorized industrial waste disposal agent to do the disposal work.
- Prevent washed water from flowing on the ground or into the drain.
- Totally remove the contents from the container before disposal of the container.
- Strictly observe the currently effective environmental protection laws and regulations.

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## 14. Precautions for transportation

International regulation:

Enter the following information in the hazardous material statement and submit the statement to the maritime shipment agent or airline.

UN classification:

Class 3

UN number:

1139

Description of material:

Flammable Coating Solution

Container grade:

II

Marine pollutant:

Not applicable

Domestic regulations in Japan

Land transportation:

For transportation of the material in a quantity greater than that stipulated in the Fire Law of Japan, strictly observe the relevant laws and regulations.

Marine/air transportation:

In accordance with the provisions in the Ship Safety Law and the Civil Aeronautics Law of Japan.

Specific safety measures and conditions for transportation:

Observe the general instructions in the "Precautions for handling and storage" section.

Check leakage of containers. Load the containers in the transport means such that they will not fall, drop or be damaged, and secure them to positively prevent collapse of cargo.

Flammable liquid [No Fire].

Avoid heat when load the containers.

Emergency response guide No.:

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## 15. Applicable laws and regulations

Fire Law:

Alcohol product, category 4, Hazard Classification II

Poisonous and Deleterious Substances

Control Law:

Not applicable



Industrial Safety and Health Law:	Substance obligated of indication to the label (methanol, IPA)
	Substance obligated of indication to the MSDS(methanol, IPA, ethanol,silicon compound-1, silicon compound-2)
Ship Safety Law:	Flammable liquid or the like
Civil Aeronautics Law:	Flammable liquid
PRTR Law:	Not applicable

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## 16. Miscellaneous information

1. SDS's issued from the manufacturers of materials being mixed
2. SDS preparation guide rev. 2 (Japan Chemical Industry Association)
3. Relevant laws and regulations
4. Model SDS information about materials to be notified per Industrial Safety and Health Law (Japan Advanced Information Center of Safety and Health)

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The Material Safety Data Sheet (SDS) is offered to a user who handles a hazardous chemical product as reference information that helps the user be able to safely use the product in question.

Hazard information about a mixture product has been derived from the hazard information of individual raw materials.

The user of the chemical product is requested to utilize the SDS after understanding that the user has to make, relevant actions appropriate in accordance with the user's actual conditions of material handling at their own responsibility practice by referring to the SDS.

Therefore, this data sheet itself does not constitute a warranty for safety of the chemical product in question.