ARTDESHINE GRAPHENE SEAL V2

ARTDESHINE PTE LTD

SECTION 1 Identification of the substance / mixture and of the company / undertaking

1.1. Product Identifier

Product name: ARTDESHINE GRAPHENE SEAL V2
Synonyms: Not Available
Chemical formula: Not Applicable
Other means of identification: UFI:NU00-D0KF-X001-PW0M

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: Automotive care. Use according to manufacturer's directions.
Uses advised against: No specific uses advised against are identified.

1.3. Details of the manufacturer or supplier of the safety data sheet

Registered company name	**ARTDESHINE PTE LTD**
Address	7 SOON LEE ST, #01-40 Singapore 627608 Singapore
Telephone	+65 81283734
Fax	Not Available
Website	www.artdeshine.co
Email	hello@artdeshine.co

1.4. Emergency telephone number

Association / Organisation	**ARTDESHINE PTE LTD**	**CHEMWATCH EMERGENCY RESPONSE**
Emergency telephone numbers	+65 81283734 (Mon-Fri 1pm-8pm)	+49 32 211121704
Other emergency telephone numbers	Not Available	+61 3 9573 3188

Once connected and if the message is not in your preferred language then please dial 01

SECTION 2 Hazards identification

2.1. Classification of the substance or mixture

NFPA 704 diamond

Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health Red = Fire Yellow = Reactivity White = Special (Oxidizer or water reactive substances)

Classification according to regulation (EC) No 1272/2008 [CLP] and amendments [1]	H315 - Skin Corrosion/Irritation Category 2, H319 - Serious Eye Damage/Eye Irritation Category 2
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI*

2.2. Label elements

Hazard pictogram(s)

Signal word: **Warning**

Hazard statement(s)

H315: Causes skin irritation.
H319: Causes serious eye irritation.

Supplementary statement(s)

EUH019: May form explosive peroxides.
EUH208: Contains 1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane. May produce an allergic reaction.

Precautionary statement(s) Prevention

P280: Wear protective gloves, protective clothing, eye protection and face protection.
P264: Wash all exposed external body areas thoroughly after handling.

Precautionary statement(s) Response

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.
P302+P352: IF ON SKIN: Wash with plenty of water.

Precautionary statement(s) Storage
Not Applicable

Precautionary statement(s) Disposal
Not Applicable

2.3. Other hazards
REACH - Art.57-59: The mixture does not contain Substances of Very High Concern (SVHC) at the SDS print date.

SECTION 3 Composition / information on ingredients

3.1.Substances
See 'Composition on ingredients' in Section 3.2

3.2.Mixtures

1.CAS No 2.EC No 3.Index No 4.REACH No	%[weight]	Name	Classification according to regulation (EC) No 1272/2008 [CLP] and amendments	SCL / M-Factor	Nanoform Particle Characteristics
1.63148-62-9 2.Not Available 3.Not Available 4.Not Available	<60	polydimethylsiloxane	Not Applicable	Not Available	Not Available
1.60676-86-0 2.262-373-8 3.Not Available 4.01-2119486866-17-XXXX|01-2119379499-16-XXXX	<30	silica amorphous	Not Applicable	Not Available	Not Available
1.126-80-7 2.204-803-9 3.Not Available 4.01-2120049183-61-XXXX	<1	1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane	Skin Corrosion/Irritation Category 2, Serious Eye Damage/Eye Irritation Category 2, Sensitisation (Skin) Category 1, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3; H315, H319, H317, H335, EUH019, EUH205 [1]	Not Available	Not Available
1.9046-10-0 2.Not Available 3.Not Available 4.01-2119557899-12-XXXX	<1	bis(2-aminopropyl ether) propoxylated	Acute Toxicity (Oral and Dermal) Category 4, Skin Corrosion/Irritation Category 1A, Serious Eye Damage/Eye Irritation Category 1, Hazardous to the Aquatic Environment Long-Term Hazard Category 3; H302+H312, H314, H318, H412 [1]	Not Available	Not Available
Not Available	balance	Ingredients determined not to be hazardous	Not Applicable	Not Applicable	Not Available

Legend: *1. Classified by Chemwatch; 2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 3. Classification drawn from C&L; * EU IOELVs available; [e] Substance identified as having endocrine disrupting properties*

SECTION 4 First aid measures

4.1. Description of first aid measures
Eye Contact
If this product comes in contact with the eyes:
– Wash out immediately with fresh running water.
– Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
– Seek medical attention without delay; if pain persists or recurs seek medical attention.
– Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact
If skin contact occurs:
– Immediately remove all contaminated clothing, including footwear.
– Flush skin and hair with running water (and soap if available).
– Seek medical attention in event of irritation.

Inhalation
– If fumes or combustion products are inhaled remove from contaminated area.
– Lay patient down. Keep warm and rested.
– Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
– Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
– Transport to hospital, or doctor, without delay.

Ingestion
– Immediately give a glass of water.
– First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

4.2 Most important symptoms and effects, both acute and delayed
See Section 11

4.3. Indication of any immediate medical attention and special treatment needed
Treat symptomatically.

Continued...

SECTION 5 Firefighting measures

5.1. Extinguishing media

The product contains a substantial proportion of water, therefore there are no restrictions on the type of extinguishing media which may be used. Choice of extinguishing media should take into account surrounding areas.
Though the material is non-combustible, evaporation of water from the mixture, caused by the heat of nearby fire, may produce floating layers of combustible substances.

5.2. Special hazards arising from the substrate or mixture

Fire Incompatibility

None known.

5.3. Advice for firefighters

Fire Fighting

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves in the event of a fire.
- Prevent, by any means available, spillage from entering drains or water courses.

Fire/Explosion Hazard

- The material is not readily combustible under normal conditions.
- However, it will break down under fire conditions and the organic component may burn.
- Not considered to be a significant fire risk.

Decomposes on heating and produces toxic fumes of:
carbon dioxide (CO_2)
nitrogen oxides (NOx)
silicon dioxide (SiO_2)
other pyrolysis products typical of burning organic material.
May emit poisonous fumes.
May emit corrosive fumes.
CARE: Water in contact with hot liquid may cause foaming and a steam explosion with wide scattering of hot oil and possible severe burns. Foaming may cause overflow of containers and may result in possible fire.

SECTION 6 Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

See section 8

6.2. Environmental precautions

See section 12

6.3. Methods and material for containment and cleaning up

Minor Spills

Environmental hazard - contain spillage.

- In the event of a spill of a reactive diluent, the focus is on containing the spill to prevent contamination of soil and surface or ground water.
- If irritating vapors are present, an approved air-purifying respirator with organic vapor canister is recommended for cleaning up spills and leaks.
- For small spills, reactive diluents should be absorbed with sand.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact with the substance, by using protective equipment.

Major Spills

Environmental hazard - contain spillage.

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Silicone fluids, even in small quantities, may present a slip hazard.
- It may be necessary to rope off area and place warning signs around perimeter.
- Clean up area from spill, with suitable absorbant, as soon as practically possible.

Industrial spills or releases of reactive diluents are infrequent and generally contained. If a large spill does occur, the material should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements.
An approved air-purifying respirator with organic-vapor canister is recommended for emergency work.

6.4. Reference to other sections

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 Handling and storage

7.1. Precautions for safe handling

Safe handling

- **DO NOT** allow clothing wet with material to stay in contact with skin
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.

Fire and explosion protection

See section 5

Other information

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.

7.2. Conditions for safe storage, including any incompatibilities

Suitable container

200ML/500ML PET BTL 5L HDPE JUG

- Polyethylene or polypropylene container.
- Packing as recommended by manufacturer.

Continued...

– Check all containers are clearly labelled and free from leaks.

Storage incompatibility

– Avoid strong acids, bases.
– Avoid cross contamination between the two liquid parts of product (kit).
– If two part products are mixed or allowed to mix in proportions other than manufacturer's recommendation, polymerisation with gelation and evolution of heat (exotherm) may occur.
– This excess heat may generate toxic vapour
– Avoid reaction with amines, mercaptans, strong acids and oxidising agents

Hazard categories in accordance with Regulation (EC) No 1272/2008

Not Available

Qualifying quantity (tonnes) of dangerous substances as referred to in Article 3(10) for the application of

Not Available

7.3. Specific end use(s)

See section 1.2

SECTION 8 Exposure controls / personal protection

8.1. Control parameters

Ingredient	DNELs Exposure Pattern Worker	PNECs Compartment
silica amorphous	Inhalation 0.3 mg/m³ (Local, Chronic)	Not Available
bis(2-aminopropyl ether) propoxylated	Dermal 2.5 mg/kg bw/day (Systemic, Chronic) Inhalation 1.36 mg/m³ (Systemic, Chronic)	0.015 mg/L (Water (Fresh)) 0.014 mg/L (Water - Intermittent release) 0.15 mg/L (Water (Marine)) 0.132 mg/kg sediment dw (Sediment (Fresh Water)) 0.125 mg/kg sediment dw (Sediment (Marine)) 0.018 mg/kg soil dw (Soil) 7.5 mg/L (STP) 6.93 mg/kg food (Oral)

* Values for General Population

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
European Union Directive (EU) 2017/2398 amending Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work	silica amorphous	Not Available	0,1 mg/m3	Not Available	Not Available	(TWA (8) Respirable fraction.)
Germany TRGS 900 - Limit Values for the Workplace Atmosphere	silica amorphous	Kieselsäuren, amorphe	4 mg/m3	Not Available	Not Available	(Limit value mg/m3 (E))
Germany TRGS 900 - Limit Values for the Workplace Atmosphere	silica amorphous	Kieselgur, ungebrannt	4 mg/m3	Not Available	Not Available	(Limit value mg/m3 (E))
Germany TRGS 900 - Limit Values for the Workplace Atmosphere	silica amorphous	Kieselglas	0,3 mg/m3	Not Available	Not Available	(Limit value mg/m3 (A))
Germany TRGS 900 - Limit Values for the Workplace Atmosphere	silica amorphous	Kieselrauch	0,3 mg/m3	Not Available	Not Available	(Limit value mg/m3 (A))
Germany Recommended Exposure Limits - MAK Values	silica amorphous	Silica, amorphous a) synthetic colloidal amorphous silica including pyrogenic and wet process synthetic silica (precipitated silica, silica gel) and diatomaceous earth (uncalcined) (respirable fraction)	0.02 mg/m3	4 mg/m3	Not Available	changed after review period; see Section V; Preg gr: C
Germany Recommended Exposure Limits - MAK Values	silica amorphous	Silica, amorphous a) synthetic colloidal amorphous silica including pyrogenic and wet process synthetic silica (precipitated silica, silica gel) and diatomaceous earth (uncalcined) (respirable fraction)	0.02 mg/m3	4 mg/m3	Not Available	changed after review period; see Section V; Preg gr: C
Germany Recommended Exposure Limits - MAK Values	silica amorphous	Silica, amorphous b) quartz glass, fused silica, silica fume (calcined), diatomaceous earth (respirable fraction)	0.3 mg/m3	Not Available	Not Available	see Section V; Preg gr: C
Germany Recommended Exposure Limits - MAK Values	silica amorphous	Silica, amorphous b) quartz glass, fused silica, silica fume (calcined), diatomaceous earth (respirable fraction)	0.3 mg/m3	Not Available	Not Available	see Section V; Preg gr: C
Germany Recommended Exposure Limits - MAK Values	silica amorphous	Silica, amorphous a) synthetic colloidal amorphous silica including pyrogenic and wet process synthetic silica (precipitated silica, silica gel) and diatomaceous earth (uncalcined) (respirable fraction)	0.02 mg/m3	4 mg/m3	Not Available	changed after review period; see Section V; Preg gr: C
Germany Recommended Exposure Limits - MAK Values	silica amorphous	Silica, amorphous b) quartz glass, fused silica, silica fume (calcined), diatomaceous earth (respirable fraction)	0.3 mg/m3	Not Available	Not Available	see Section V; Preg gr: C
Germany Recommended Exposure Limits - MAK Values	silica amorphous	Silica, amorphous a) synthetic colloidal amorphous silica including pyrogenic and wet process synthetic silica (precipitated silica, silica gel) and diatomaceous earth (uncalcined) (respirable fraction)	0.02 mg/m3	4 mg/m3	Not Available	changed after review period; see Section V; Preg gr: C

Continued...

Occupational Exposure Banding

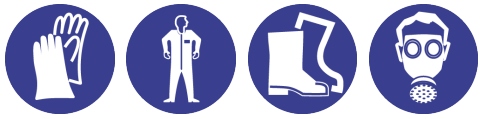
Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit
1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane	E	≤ 0.1 ppm
Notes:	*Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.*	

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
The basic types of engineering controls are:
Process controls which involve changing the way a job activity or process is done to reduce the risk.

8.2.2. Personal protection



Eye and face protection

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants.

Skin protection

See Hand protection below

Hands/feet protection

NOTE:

- The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.
- Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.
When handling liquid-grade epoxy resins wear chemically protective gloves , boots and aprons.
The performance, based on breakthrough times ,of:
· Ethyl Vinyl Alcohol (EVAL laminate) is generally excellent
· Butyl Rubber ranges from excellent to good
· Nitrile Butyl Rubber (NBR) from excellent to fair.
· Neoprene from excellent to fair
· Polyvinyl (PVC) from excellent to poor
As defined in ASTM F-739-96
· Excellent breakthrough time > 480 min
· Good breakthrough time > 20 min
· Fair breakthrough time < 20 min
· Poor glove material degradation
Gloves should be tested against each resin system prior to making a selection of the most suitable type.

Body protection

See Other protection below

Other protection

- Overalls.
- P.V.C apron.
- Barrier cream.

8.2.3. Environmental exposure controls

See section 12

SECTION 9 Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance: Slightly brown milky emulsion with a slight odour; mixes with water. Brown

Physical state	Liquid	**Relative density (Water = 1)**	1.0
Odour	Slight	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	Not Applicable
pH (as supplied)	Not Available	**Decomposition temperature (°C)**	Not Available
Melting point / freezing point (°C)	Not Available	**Viscosity (cSt)**	Not Available
Initial boiling point and boiling range (°C)	Not Available	**Molecular weight (g/mol)**	Not Applicable
Flash point (°C)	Not Applicable	**Taste**	Not Available
Evaporation rate	Not Available	**Explosive properties**	Not Available
Flammability	Not Applicable	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Applicable	**Surface Tension (dyn/cm or mN/m)**	Not Available
Lower Explosive Limit (%)	Not Applicable	**Volatile Component (%vol)**	Not Available
Vapour pressure (kPa)	Not Available	**Gas group**	Not Available
Solubility in water	Miscible	**pH as a solution (1%)**	Not Available

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Vapour density (Air = 1)	Not Available	**VOC g/L**	Not Available
Nanoform Solubility	Not Available	**Nanoform Particle Characteristics**	Not Available
Particle Size	Not Available		

9.2. Other information

Not Available

SECTION 10 Stability and reactivity

10.1.Reactivity: See section 7.2

10.2. Chemical stability :

- Unstable in the presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

10.3. Possibility of hazardous reactions : See section 7.2

10.4. Conditions to avoid : See section 7.2

10.5. Incompatible materials : See section 7.2

10.6. Hazardous decomposition products : See section 5.3

SECTION 11 Toxicological information

11.1. Information on toxicological effects

Inhaled

The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.
Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.
In animal testing, exposure to aerosols of reactive diluents (especially o-cresol glycidyl ether, CAS RN:2210-79-9) has been reported to affect the adrenal gland, central nervous system, kidney, liver, ovaries, spleen, testes, thymus and respiratory tract.
Vapours of silicones are generally fairly well tolerated, however very high concentrations can cause death within minutes due to respiratory failure. At high temperatures, the fumes and oxidation products can be irritating and toxic and can cause depression leading to death in very high doses.

Ingestion

Silicone fluids do not have a high acute toxicity. They may have a laxative effect and produce central nervous system depression.
Reactive diluents exhibit a range of ingestion hazards. Small amounts swallowed incidental to normal handling operations are not likely to cause injury. However, swallowing larger amounts may cause injury.
The material has **NOT** been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence.

Skin Contact

This material can cause inflammation of the skin on contact in some persons.
The material may accentuate any pre-existing dermatitis condition
Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions.
Low molecular weight silicone fluids may exhibit solvent action and may produce skin irritation.
Skin contact with reactive diluents may cause slight to moderate irritation with local redness. Repeated or prolonged skin contact may cause burns.
Open cuts, abraded or irritated skin should not be exposed to this material
Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
Excessive use or prolonged contact may lead to defatting, drying and irritation of sensitive skin

Eye

Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals. Prolonged eye contact may cause inflammation characterised by a temporary redness of the conjunctiva (similar to windburn).
Eye exposure to silicone fluids causes temporary irritation of the conjunctiva. Injection into the specific structures of the eye, however, causes corneal scarring, permanent eye damage, allergic reactions and cataract, and may lead to blindness.
Eye contact with reactive diluents may cause slight to severe irritation with the possibility of chemical burns or moderate to severe damage to the cornea.

Chronic

Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems.
Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population.
This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects.
Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.
There is some evidence from animal testing that exposure to this material may result in toxic effects to the unborn baby.
Glycidyl ethers can cause genetic damage and cancer.
For some reactive diluents, prolonged or repeated skin contact may result in absorption of potentially harmful amounts or allergic skin reactions.
Exposure to some reactive diluents (notably, neopentylglycol diglycidyl ether, CAS RN: 17557-23-2) has caused cancer in some animal testing.
Silica in this material is bound in a rubbery soft matrix and does not present an inhalation exposure hazard. There is sufficient evidence to suggest that this material directly causes cancer in humans.

ARTDESHINE GRAPHENE SEAL V2	**TOXICITY** / **IRRITATION** Not Available / Not Available
polydimethylsiloxane	**TOXICITY** / **IRRITATION** Dermal (rabbit) LD50: >3000 mg/kg[2] / Eye (rabbit): 100 mg/1h - mild Oral (Rat) LD50: >35000 mg/kg[2] /
silica amorphous	**TOXICITY** / **IRRITATION** dermal (rat) LD50: >2000 mg/kg[1] / Eye (rabbit): non-irritating ** [Grace] Inhalation(Rat) LC50: >0.09<0.84 mg/l4h[1] / Eye: no adverse effect observed (not irritating)[1] Oral (Rat) LD50: >1000 mg/kg[1] / Skin (rabbit): non-irritating *

Continued...

	Skin: no adverse effect observed (not irritating)[1]
1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane	**TOXICITY** / **IRRITATION** Not Available / Not Available
bis(2-aminopropyl ether) propoxylated	**TOXICITY** / **IRRITATION** Dermal (rabbit) LD50: 250 mg/kg[2] / Eye (rabbit): 100 mg - SEVERE Oral (Rat) LD50: 242 mg/kg[2] / Eye (rabbit): SEVERE *** 94/110 / Eye: adverse effect observed (irreversible damage)[1] / Skin (rabbit): SEVERE *** 6.8/8.0 / Skin: adverse effect observed (corrosive)[1]

Legend: *1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*

POLYDIMETHYLSILOXANE

No toxic response noted during 90 day subchronic inhalation toxicity studies The no observable effect level is 450 mg/m3. Non-irritating and non-sensitising in human patch test. [Xerox]*
The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

SILICA AMORPHOUS

Reports indicate high/prolonged exposures to amorphous silicas induced lung fibrosis in experimental animals; in some experiments these effects were reversible. [PATTYS]
For silica amorphous:
Derived No Adverse Effects Level (NOAEL) in the range of 1000 mg/kg/d.
In humans, synthetic amorphous silica (SAS) is essentially non-toxic by mouth, skin or eyes, and by inhalation. Epidemiology studies show little evidence of adverse health effects due to SAS. Repeated exposure (without personal protection) may cause mechanical irritation of the eye and drying/cracking of the skin.
When experimental animals inhale synthetic amorphous silica (SAS) dust, it dissolves in the lung fluid and is rapidly eliminated.
The substance is classified by IARC as Group 3:
NOT classifiable as to its carcinogenicity to humans.
Evidence of carcinogenicity may be inadequate or limited in animal testing.

1,3-BIS(3-GLYCIDYLOXYPROPYL)TETRAMETHYLDISILOXANE

The following information refers to contact allergens as a group and may not be specific to this product.
Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. No significant acute toxicological data identified in literature search.

BIS(2-AMINOPROPYL ETHER) PROPOXYLATED

Convulsions, stomach ulceration, haemorrhage, respiratory tract changes, dermatitis after systemic administration recorded. * Reichard ** Bayer Inc. Canada *** Texaco ****Epoxylite
Polyethers (such as ethoxylated surfactants and polyethylene glycols) are highly susceptible to being oxidized in the air. They then form complex mixtures of oxidation products.
Animal testing reveals that whole the pure, non-oxidised surfactant is non-sensitizing, many of the oxidation products are sensitisers. The oxidization products also cause irritation.
The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
Overexposure to most of these materials may cause adverse health effects.
Many amine-based compounds can cause release of histamines, which, in turn, can trigger allergic and other physiological effects, including constriction of the bronchi or asthma and inflammation of the cavity of the nose. Whole-body symptoms include headache, nausea, faintness, anxiety, a decrease in blood pressure, rapid heartbeat, itching, reddening of the skin, urticaria (hives) and swelling of the face, which are usually transient.
There are generally four routes of possible or potential exposure: inhalation, skin contact, eye contact, and swallowing.
Inhalation: Inhaling vapours may result in moderate to severe irritation of the tissues of the nose and throat and can irritate the lungs. Higher concentrations of certain amines can produce severe respiratory irritation, characterized by discharge from the nose, coughing, difficulty in breathing and chest pain.

POLYDIMETHYLSILOXANE & 1,3-BIS(3-GLYCIDYLOXYPROPYL)TETRAMETHYLDISILOXANE

Siloxanes may impair liver and hormonal function, as well as the lung and kidney. They have not been found to be irritating to the skin and eyes. They may potentially cause cancer (tumours of the womb in females) and may cause impaired fertility or infertility.

1,3-BIS(3-GLYCIDYLOXYPROPYL)TETRAMETHYLDISILOXANE & BIS(2-AMINOPROPYL ETHER) PROPOXYLATED

Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant.

Acute Toxicity	✗	**Carcinogenicity**	✗
Skin Irritation/Corrosion	✓	**Reproductivity**	✗
Serious Eye Damage/Irritation	✓	**STOT - Single Exposure**	✗
Respiratory or Skin sensitisation	✗	**STOT - Repeated Exposure**	✗
Mutagenicity	✗	**Aspiration Hazard**	✗

Legend:
✗ *– Data either not available or does not fill the criteria for classification*
✓ *– Data available to make classification*

11.2 Information on other hazards

11.2.1. Endocrine Disruption Properties

No evidence of endocrine disrupting properties were found in the current literature.

11.2.2. Other Information

See Section 11.1

SECTION 12 Ecological information

12.1. Toxicity

ARTDESHINE GRAPHENE SEAL V2	**Endpoint**	**Test Duration (hr)**	**Species**	**Value**	**Source**
	Not Available	Not Available	Not Available	Not Available	Not Available

Continued...

polydimethylsiloxane	**Endpoint** / **Test Duration (hr)** / **Species** / **Value** / **Source**: Not Available / Not Available / Not Available / Not Available / Not Available
silica amorphous	**Endpoint** / **Test Duration (hr)** / **Species** / **Value** / **Source**: EC0(ECx) / 24h / Crustacea / >=10000mg/l / 1; EC50 / 96h / Algae or other aquatic plants / 217.576mg/l / 2; EC50 / 72h / Algae or other aquatic plants / 14.1mg/l / 2; LC50 / 96h / Fish / 1033.016mg/l / 2; EC50 / 48h / Crustacea / >86mg/l / 2
1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane	**Endpoint** / **Test Duration (hr)** / **Species** / **Value** / **Source**: Not Available / Not Available / Not Available / Not Available / Not Available
bis(2-aminopropyl ether) propoxylated	**Endpoint** / **Test Duration (hr)** / **Species** / **Value** / **Source**: NOEC(ECx) / 72h / Algae or other aquatic plants / 0.32mg/l / 2; EC50 / 72h / Algae or other aquatic plants / 2.1mg/l / 2; EC50 / 48h / Crustacea / 80mg/l / 2; LC50 / 96h / Fish / 772.14mg/l / 2

Legend: *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*

Toxic to bees.
For Siloxanes:
Environmental Fate: Siloxanes are used in cosmetics, wax, polishes, and to a minor extent in several other applications.
Atmospheric Fate: In the presence of nitrate ions, short chain siloxanes are broken down by sunlight to the level of silicate within days. The main source atmospheric siloxane release to the air is via evaporation.
Reactive diluents generally have a low to moderate potential for bioconcentration (tendency to accumulate in the food chain) and a high to very high potential for mobility in soil. Small amounts that escape to the atmosphere will photodegrade.
They would not be expected to persist in the environment.
DO NOT discharge into sewer or waterways.

12.2. Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
silica amorphous	LOW	LOW
1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane	HIGH	HIGH

12.3. Bioaccumulative potential

Ingredient	Bioaccumulation
silica amorphous	LOW (LogKOW = 0.5294)
1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane	MEDIUM (LogKOW = 4.2746)

12.4. Mobility in soil

Ingredient	Mobility
silica amorphous	LOW (KOC = 23.74)
1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane	LOW (KOC = 22.01)

12.5. Results of PBT and vPvB assessment

	P	B	T
Relevant available data	Not Available	Not Available	Not Available
PBT	✗	✗	✗
vPvB	✗	✗	✗

PBT Criteria fulfilled?	No
vPvB	No

12.6. Endocrine Disruption Properties

No evidence of endocrine disrupting properties were found in the current literature.

12.7. Other adverse effects

No evidence of ozone depleting properties were found in the current literature.

SECTION 13 Disposal considerations

13.1. Waste treatment methods

Product / Packaging disposal

– Containers may still present a chemical hazard/ danger when empty.
– Return to supplier for reuse/ recycling if possible.

Otherwise:

– If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.

Continued...

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

- **DO NOT** allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Recycle wherever possible.
- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
- Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or incineration in a licensed apparatus (after admixture with suitable combustible material).

Waste treatment options

Not Available

Sewage disposal options

Not Available

SECTION 14 Transport information

Labels Required

Marine Pollutant

NO

Land transport (ADR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

14.1. UN number: **Not Applicable**
14.2. UN proper shipping name: **Not Applicable**
14.3. Transport hazard class(es):
Class: **Not Applicable**
Subrisk: **Not Applicable**
14.4. Packing group: **Not Applicable**
14.5. Environmental hazard: **Not Applicable**
14.6. Special precautions for user:
Hazard identification (Kemler): **Not Applicable**
Classification code: **Not Applicable**
Hazard Label: **Not Applicable**
Special provisions: **Not Applicable**
Limited quantity: **Not Applicable**
Tunnel Restriction Code: **Not Applicable**

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

14.1. UN number: **Not Applicable**
14.2. UN proper shipping name: **Not Applicable**
14.3. Transport hazard class(es):
ICAO/IATA Class : **Not Applicable**
ICAO / IATA Subrisk : **Not Applicable**
ERG Code: **Not Applicable**
14.4. Packing group: **Not Applicable**
14.5. Environmental hazard: **Not Applicable**
14.6. Special precautions for user:
Special provisions: **Not Applicable**
Cargo Only Packing Instructions: **Not Applicable**
Cargo Only Maximum Qty / Pack: **Not Applicable**
Passenger and Cargo Packing Instructions: **Not Applicable**
Passenger and Cargo Maximum Qty / Pack: **Not Applicable**
Passenger and Cargo Limited Quantity Packing Instructions: **Not Applicable**
Passenger and Cargo Limited Maximum Qty / Pack: **Not Applicable**

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

14.1. UN number: **Not Applicable**
14.2. UN proper shipping name: **Not Applicable**
14.3. Transport hazard class(es):
IMDG Class : **Not Applicable**
IMDG Subrisk : **Not Applicable**
14.4. Packing group: **Not Applicable**
14.5. Environmental hazard: **Not Applicable**
14.6. Special precautions for user:
EMS Number: **Not Applicable**
Special provisions: **Not Applicable**
Limited Quantities: **Not Applicable**

Inland waterways transport (ADN): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

14.1. UN number: **Not Applicable**
14.2. UN proper shipping name: **Not Applicable**
14.3. Transport hazard class(es):
Not Applicable: **Not Applicable**

Continued...

14.4. Packing group: **Not Applicable**
14.5. Environmental hazard: **Not Applicable**
14.6. Special precautions for user:
Classification code: **Not Applicable**
Special provisions: **Not Applicable**
Limited quantity: **Not Applicable**
Equipment required: **Not Applicable**
Fire cones number: **Not Applicable**

14.7. Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

14.8. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
polydimethylsiloxane	Not Available
silica amorphous	Not Available
1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane	Not Available
bis(2-aminopropyl ether) propoxylated	Not Available

14.9. Transport in bulk in accordance with the ICG Code

Product name	Ship Type
polydimethylsiloxane	Not Available
silica amorphous	Not Available
1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane	Not Available
bis(2-aminopropyl ether) propoxylated	Not Available

SECTION 15 Regulatory information

15.1. Safety, health and environmental regulations / legislation specific for the substance or mixture

polydimethylsiloxane is found on the following regulatory lists

– Germany Classification of Substances Hazardous to Waters (WGK)

silica amorphous is found on the following regulatory lists

– Chemical Footprint Project - Chemicals of High Concern List
– EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances
– Europe EC Inventory
– European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)
– European Union Directive (EU) 2017/2398 amending Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work
– Germany Classification of Substances Hazardous to Waters (WGK)
– Germany Recommended Exposure Limits - MAK Values
– Germany Recommended Exposure Limits - MAK Values - Carcinogens
– Germany Recommended Exposure Limits - MAK Values - Pregnancy Risk Group Classifications & Germ Cell Mutagens
– Germany TRGS 900 - Limit Values for the Workplace Atmosphere
– International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
– International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane is found on the following regulatory lists

– Europe EC Inventory
– European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)

bis(2-aminopropyl ether) propoxylated is found on the following regulatory lists

– Germany Classification of Substances Hazardous to Waters (WGK)

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : Directives 98/24/EC, - 92/85/EEC, - 94/33/EC, - 2008/98/EC, - 2010/75/EU; Commission Regulation (EU) 2020/878; Regulation (EC) No 1272/2008 as updated through ATPs.

Information according to 2012/18/EU (Seveso III):

Seveso Category: Not Available

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

15.3. Classification of Substances and Mixtures into Water Hazard Classes

Preparation is WGK 1

Name	WGK	Score	Source
POLYDIMETHYLSILOXANE	1		From Regulation
SILICA AMORPHOUS	1		From Regulation
1,3-BIS(3-GLYCIDYLOXYPROPYL)TETRAMETHYLDISILOXANE	non-hazardous to waters	0	Calculated
BIS(2-AMINOPROPYL ETHER) PROPOXYLATED	2		From Regulation

National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	Yes
Canada - DSL	No (1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane)
Canada - NDSL	No (polydimethylsiloxane; bis(2-aminopropyl ether) propoxylated)

Continued...

National Inventory	Status
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	No (polydimethylsiloxane; bis(2-aminopropyl ether) propoxylated)
Japan - ENCS	Yes
Korea - KECI	Yes
New Zealand - NZIoC	No (1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane)
Philippines - PICCS	Yes
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	No (1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane)
Vietnam - NCI	No (1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane)
Russia - FBEPH	No (1,3-bis(3-glycidyloxypropyl)tetramethyldisiloxane)
Legend:	*Yes = All CAS declared ingredients are on the inventory* *No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.*

SECTION 16 Other information

Revision Date: 18/10/2021
Initial Date: 18/10/2021

Full text Risk and Hazard codes

H225: Highly flammable liquid and vapour.
H226: Flammable liquid and vapour.
H251: Self-heating: may catch fire.
H260: In contact with water releases flammable gases which may ignite spontaneously.
H300: Fatal if swallowed.
H301: Toxic if swallowed.
H302: Harmful if swallowed.
H302+H312: Harmful if swallowed or if contact with skin.
H303: May be harmful if swallowed.
H304: May be fatal if swallowed and enters airways.
H311: Toxic in contact with skin.
H312: Harmful in contact with skin.
H314: Causes severe skin burns and eye damage.
H317: May cause an allergic skin reaction.
H318: Causes serious eye damage.
H330: Fatal if inhaled.
H332: Harmful if inhaled.
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335: May cause respiratory irritation.
H340: May cause genetic defects.
H350: May cause cancer.
H351: Suspected of causing cancer.
H361: Suspected of damaging fertility or the unborn child.
H370: Causes damage to organs.
H371: May cause damage to organs.
H372: Causes damage to organs through prolonged or repeated exposure.
H373: May cause damage to organs through prolonged or repeated exposure.
H411: Toxic to aquatic life with long lasting effects.
H412: Harmful to aquatic life with long lasting effects.

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios.

For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:
EN 166 Personal eye-protection
EN 340 Protective clothing
EN 374 Protective gloves against chemicals and micro-organisms
EN 13832 Footwear protecting against chemicals
EN 133 Respiratory protective devices