



Material Safety Data Sheet

DOW CHEMICAL KOREA LIMITED

Product name: SYL-OFF™ SD 7226 Dispersion

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DOW CHEMICAL KOREA LIMITED encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: SYL-OFF™ SD 7226 Dispersion

Recommended use of the chemical and restrictions on use

Identified uses: Coatings

Uses advised against: We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

COMPANY IDENTIFICATION

DOW CHEMICAL KOREA LIMITED
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SEOUL TEUGBYEOLSI 06170
SOUTH KOREA

Customer Information Number:

82-(0)2-3490-0700
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 080-369-2436

Local Emergency Contact: 080-369-2436

2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids	: Category 2
Skin corrosion/irritation	: Category 2
Reproductive toxicity	: Category 2
Specific target organ toxicity - single exposure	: Category 3 (Central nervous system)
Specific target organ toxicity - repeated exposure	: Category 2
Chronic aquatic toxicity	: Category 3

GHS label elements

Hazard pictograms



Signal word	: Danger
Hazard statements	: H225 Highly flammable liquid and vapour. H315 Causes skin irritation. H336 May cause drowsiness or dizziness. H361 Suspected of damaging fertility or the unborn child. H373 May cause damage to organs through prolonged or repeated exposure. H412 Harmful to aquatic life with long lasting effects.
Precautionary statements	: 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. P240 Ground/bond container and receiving equipment. P241 Use explosion-proof electrical/ ventilating/ lighting equipment. P242 Use only non-sparking tools. P243 Take precautionary measures against static discharge. P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. P264 Wash the contact area thoroughly after handling. P271 Use only outdoors or in a well-ventilated area. P273 Avoid release to the environment. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. Response: P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell. P308 + P313 IF exposed or concerned: Get medical advice/ attention. P321 Specific treatment (see supplemental first aid instructions on this label). P332 + P313 If skin irritation occurs: Get medical advice/ attention. P362 + P364 Take off contaminated clothing and wash it before reuse. P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish. Storage: P403 + P233 Store in a well-ventilated place. Keep container tightly closed. P403 + P235 Store in a well-ventilated place. Keep cool. P405 Store locked up. Disposal: P501 Dispose of contents and container according to wastes control act.

Other hazards

May generate flammable hydrogen gas. Avoid contact with water, alcohols, acidic, basic, or oxidizing materials.

Static-accumulating flammable liquid.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	Common Name	CASRN	Concentration	KECI Number
Toluene	Benzene, methyl-	108-88-3	>= 70.0 - < 80.0 %	KE-33936 97-1-298
Dimethyl, methylvinyl siloxane, hydroxy-terminated	No data available	67923-19-7	>= 20.0 - < 30.0 %	KE-31163
Dimethyl, methylvinyl siloxane, hydroxy-, vinyl-terminated	No data available	257602-54-3	>= 1.0 - < 10.0 %	KE# Not Available.
Siloxanes and Silicones, di-Me, Me vinyl, vinyl group-terminated	No data available	68083-18-1	>= 1.0 - < 10.0 %	KE-31168

4. FIRST AID MEASURES

Description of first aid measures**General advice:**

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

Skin contact: Wash off with plenty of water. Suitable emergency safety shower facility should be available in work area.

Eye contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a

physician, preferably an ophthalmologist. Suitable emergency eye wash facility should be available in work area.

Ingestion: No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed

Notes to physician: Maintain adequate ventilation and oxygenation of the patient. Alcohol consumed before or after exposure may increase adverse effects. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. No specific antidote. Skin contact may aggravate preexisting dermatitis.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water spray Alcohol-resistant foam Carbon dioxide (CO₂)

Unsuitable extinguishing media: Dry chemical High volume water jet Do not use direct water stream.

Special hazards arising from the substance or mixture

Hazardous combustion products: Carbon oxides Silicon oxides Formaldehyde

Unusual Fire and Explosion Hazards: Flash back possible over considerable distance. Applying foam will release significant amounts of hydrogen gas that can be trapped under the foam blanket. Exposure to combustion products may be a hazard to health. Vapours may form explosive mixtures with air.

Advice for firefighters

Fire Fighting Procedures: Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Do not use a solid water stream as it may scatter and spread fire.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Do not allow extinguishing medium to contact container contents. Most fire extinguishing media will cause hydrogen evolution, and once the fire is put out, may accumulate in poorly ventilated or confined areas and result in flash fire or explosion if ignited. Remove undamaged containers from fire area if it is safe to do so. Evacuate area.

Special protective equipment for firefighters: In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Remove all sources of ignition. Ventilate the area. Use personal protective equipment. Follow safe handling advice and personal protective equipment recommendations.

Environmental precautions: Do not release the product to the aquatic environment above defined regulatory levels. 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/vapours/mists with a water spray jet. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, Clean up remaining materials from spill with suitable absorbent. Materials in contact with water, moisture, acids or bases have the potential to generate hydrogen gas. Recovered material should be stored in a vented container. Sections 13 and 15 of this SDS provide information regarding certain local or national requirements. Recovered material should be stored in a vented container. The vent must prevent the ingress of water as further reaction with spilled materials can take place which could lead to overpressurization of the container. See sections: 7, 8, 11, 12 and 13.

7. HANDLING AND STORAGE

Precautions for safe handling: Do not get on skin or clothing. Do not breathe vapours or spray mist. Do not swallow. Avoid contact with eyes. 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. Non-sparking tools should be used. Handle in accordance with good industrial hygiene and safety practice.

Use with local exhaust ventilation. Use only in an area equipped with explosion proof exhaust ventilation. Ensure all equipment is electrically grounded before beginning transfer operations. This material can accumulate static charge due to its 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. Ground and bond container and receiving equipment.

Conditions for safe storage: Keep in properly labelled containers. Store in original container. Store locked up. Keep tightly closed. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition. Product may evolve minute quantities of flammable hydrogen gas which can accumulate. Adequately ventilate to maintain vapors well below flammability limits and exposure guidelines. Do not repackage. Clogged container vents may increase pressure build up. Store in a closed container.

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.

Unsuitable materials for containers: Do not store in or use containers except the original product package.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value/Notation
Toluene	ACGIH	TWA	20 ppm
	KR OEL	TWA	50 ppm
	KR OEL	STEL	150 ppm

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Toluene	108-88-3	Toluene	In blood	Prior to last shift of workweek	0.02 mg/l	ACGIH BEI
		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI
		o-Cresol	Urine	End of shift (As soon as possible after exposure ceases)	0.3 mg/g Creatinine	ACGIH BEI

Exposure controls

Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. Examples of acceptable glove barrier materials include: Natural rubber ("latex"). NOTICE: The selection of a specific glove for a particular application

and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

The following should be effective types of air-purifying respirators: Organic vapor cartridge.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	viscous liquid
Color	colourless
Odor	solvent-like
Odor Threshold	No data available
pH	No data available
Melting point/range	No data available
Freezing point	No data available
Boiling point (760 mmHg)	> 100 °C
Flash point	Seta closed cup 5.00 °C
Evaporation Rate (Butyl Acetate = 1)	No data available
Flammability (solid, gas)	Not applicable
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapor Pressure	No data available
Relative Vapor Density (air = 1)	No data available
Relative Density (water = 1)	0.9
Water solubility	No data available
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Dynamic Viscosity	18,000 cP

Kinematic Viscosity	No data available
Explosive properties	Not explosive
Oxidizing properties	The substance or mixture is not classified as oxidizing.
Molecular weight	No data available
Particle size	Not applicable

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: Not classified as a reactivity hazard.

Chemical stability: Stable under normal conditions.

Possibility of hazardous reactions: Can react with strong oxidizing agents. When heated to temperatures above 150 °C (300 °F) in the presence of air, product can form formaldehyde vapours. Safe handling conditions may be maintained by keeping vapour concentrations within the occupational exposure limit for formaldehyde. Vapours may form explosive mixture with air. Product may evolve flammable hydrogen gas on contact with water, alcohols, acidic or basic materials, many metals or metallic compounds and can form explosive mixtures in air. Hazardous decomposition products will be formed at elevated temperatures. Highly flammable liquid and vapour.

Conditions to avoid: Heat, flames and sparks.

Incompatible materials: Oxidizing agents

Hazardous decomposition products: Formaldehyde.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Information on the likely route of exposure

Please refer to the information below.

Acute toxicity

Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.
As product: Single dose oral LD50 has not been determined.

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.
As product: The dermal LD50 has not been determined.

Acute inhalation toxicity

Vapor concentrations are attainable which could be hazardous on single exposure. May cause respiratory irritation and central nervous system depression. Symptoms may include

headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.
Alcohol consumption and exertion may increase the adverse effects of toluene.
As product: The LC50 has not been determined.

Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.
Prolonged contact may cause moderate skin irritation with local redness.
May cause drying and flaking of the skin.

Serious eye damage/eye irritation

May cause slight eye irritation.
May cause slight temporary corneal injury.
Vapor may cause eye irritation experienced as mild discomfort and redness.
Vapor may cause lacrimation (tears).

Skin and Respiratory Sensitization

For skin sensitization:
Contains component(s) which did not cause allergic skin sensitization in guinea pigs.

For respiratory sensitization:
No relevant information found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Contains component(s) which are classified as specific target organ toxicant, single exposure, category 3.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Contains component(s) which have been reported to cause effects on the following organs in animals:
Central nervous system.
Excessive exposure may cause neurologic signs and symptoms.
Toluene has caused hearing loss in laboratory animals upon exposure to high concentrations.
Intentional misuse by deliberately inhaling toluene may cause nervous system damage, hearing loss, liver and kidney effects and death.

Carcinogenicity

Contains component(s) which did not cause cancer in laboratory animals.

Teratogenicity

In laboratory animals, toluene has been toxic to the fetus at doses toxic to the mother; it has caused birth defects in mice when administered orally, but not by inhalation.

Reproductive toxicity

For the minor component(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. In animal studies, has been shown to interfere with fertility.

Mutagenicity

The majority and most reliable of the many genetic toxicity studies on toluene, both in vitro and in animals, indicate that it is not genetically toxic.

Aspiration Hazard

Based on physical properties, not likely to be an aspiration hazard.

COMPONENTS INFLUENCING TOXICOLOGY:

Toluene

Acute oral toxicity

LD50, Rat, 5,580 mg/kg

Acute dermal toxicity

LD50, Rabbit, 12,267 mg/kg

Acute inhalation toxicity

Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness. Alcohol consumption and exertion may increase the adverse effects of toluene. LC50, Rat, male, 4 Hour, vapour, 25.7 mg/l

LC50, Rat, female, 4 Hour, vapour, 30 mg/l

Dimethyl, methylvinyl siloxane, hydroxy-terminated

Acute oral toxicity

LD50, Rat, > 48,500 mg/kg

Acute dermal toxicity

Based on data from similar materials LD50, Rabbit, > 2,000 mg/kg

Acute inhalation toxicity

The LC50 has not been determined.

Dimethyl, methylvinyl siloxane, hydroxy-, vinyl-terminated

Acute oral toxicity

LD50, Rat, > 20,720 mg/kg

Acute dermal toxicity

Based on data from similar materials LD50, Rat, > 2,000 mg/kg

Acute inhalation toxicity

No adverse effects expected from single exposure.

The LC50 has not been determined.

Siloxanes and Silicones, di-Me, Me vinyl, vinyl group-terminated

Acute oral toxicity

Based on data from similar materials LD50, Rat, > 50 ml/kg

Acute dermal toxicity

Based on data from similar materials LD50, Rabbit, > 2,000 mg/kg

Acute inhalation toxicity

The LC50 has not been determined.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Ecotoxicity

Toluene

Acute toxicity to fish

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 Hour, 5.8 mg/l

Acute toxicity to aquatic invertebrates

LC50, water flea Ceriodaphnia dubia, semi-static test, 48 Hour, 3.78 mg/l

Acute toxicity to algae/aquatic plants

EbC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Biomass, 12.5 mg/l, OECD Test Guideline 201

Toxicity to bacteria

IC50, Bacteria, 16 Hour, 29 mg/l

Chronic toxicity to fish

NOEC, Fish, flow-through test, 40 d, growth, 1.4 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, Ceriodaphnia dubia (water flea), 7 d, number of offspring, 0.74 mg/l

Toxicity to soil-dwelling organisms

LC50, Eisenia fetida (earthworms), 150 - 280 mg/kg

Dimethyl, methylvinyl siloxane, hydroxy-terminated

Acute toxicity to fish

Based on information for a similar material:
No toxicity at the limit of solubility

Chronic toxicity to fish

No toxicity at the limit of solubility

Chronic toxicity to aquatic invertebrates

No toxicity at the limit of solubility

Dimethyl, methylvinyl siloxane, hydroxy-, vinyl-terminated

Acute toxicity to fish

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50, Fish, 96 Hour, > 100 mg/l

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna (Water flea), 48 Hour, > 100 mg/l

Acute toxicity to algae/aquatic plants

EC50, algae, 14 d, > 2,000 mg/l

Chronic toxicity to fish

NOEC, Cyprinodon variegatus (sheepshead minnow), 33 d, 91 mg/l

Toxicity to Above Ground Organisms

oral LD50, Colinus virginianus (Bobwhite quail), > 5,000 mg/kg

Siloxanes and Silicones, di-Me, Me vinyl, vinyl group-terminated

Acute toxicity to fish

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Based on data from similar materials

LC50, Fish, 96 Hour, > 100 mg/l

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna (Water flea), Static, 48 Hour, > 10,000 mg/l, Test substance: Water Accommodated Fraction

Acute toxicity to algae/aquatic plants

Based on data from similar materials

EC50, algae, 14 d, > 2,000 mg/l

Chronic toxicity to fish

Based on data from similar materials

NOEC, Cyprinodon variegatus (sheepshead minnow), 33 d, 91 mg/l

Persistence and degradability

Toluene

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Not applicable

Biodegradation: 100 %

Exposure time: 14 d

Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 3.13 mg/mg Calculated.

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitization: OH radicals

Atmospheric half-life: 2 d

Method: Estimated.

Dimethyl, methylvinyl siloxane, hydroxy-terminated

Biodegradability: Based on information for a similar material: Material is not readily biodegradable according to OECD/EEC guidelines.

Dimethyl, methylvinyl siloxane, hydroxy-, vinyl-terminated

Biodegradability: The product is not biodegradable.

Siloxanes and Silicones, di-Me, Me vinyl, vinyl group-terminated

Biodegradability: Based on information for a similar material: The product is not biodegradable.

Bioaccumulative potential

Toluene

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): 2.73 Measured

Bioconcentration factor (BCF): 13.2 - 90 Fish Measured

Dimethyl, methylvinyl siloxane, hydroxy-terminated

Bioaccumulation: Based on data from similar materials Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Partition coefficient: n-octanol/water(log Pow): >= 4

Dimethyl, methylvinyl siloxane, hydroxy-, vinyl-terminated

Bioaccumulation: No bioconcentration is expected because of the relatively high molecular weight (MW greater than 1000).

Siloxanes and Silicones, di-Me, Me vinyl, vinyl group-terminated

Bioaccumulation: Based on information for a similar material: No bioconcentration is expected because of the relatively high molecular weight (MW greater than 1000).

Mobility in Soil

Toluene

Potential for mobility in soil is very high (Koc between 0 and 50).

Partition coefficient (Koc): 37 - 178 Estimated.

Dimethyl, methylvinyl siloxane, hydroxy-terminated

No relevant data found.

Dimethyl, methylvinyl siloxane, hydroxy-, vinyl-terminated

Expected to be relatively immobile in soil (Koc > 5000).

Siloxanes and Silicones, di-Me, Me vinyl, vinyl group-terminated

Based on information for a similar material:

Expected to be relatively immobile in soil (Koc > 5000).

Results of PBT and vPvB assessment

Toluene

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Dimethyl, methylvinyl siloxane, hydroxy-terminated

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Dimethyl, methylvinyl siloxane, hydroxy-, vinyl-terminated

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Siloxanes and Silicones, di-Me, Me vinyl, vinyl group-terminated

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Other adverse effects

Toluene

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Dimethyl, methylvinyl siloxane, hydroxy-terminated

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Dimethyl, methylvinyl siloxane, hydroxy-, vinyl-terminated

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Siloxanes and Silicones, di-Me, Me vinyl, vinyl group-terminated

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler. Reclaimer. Incinerator or other thermal destruction device. For additional information, refer to: Handling & Storage Information, MSDS Section 7 Stability & Reactivity Information, MSDS Section 10 Regulatory Information, MSDS Section 15

Disposal precautions: Empty containers should be recycled or otherwise disposed of by an approved waste management facility. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. Do not re-use containers for any purpose.

Contaminated packaging: All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations.

This product when disposed of in its unused and uncontaminated state should be treated as a hazardous waste.

14. TRANSPORT INFORMATION

Classification for ROAD and Rail transport:

UN number

UN 1294

Proper shipping name	TOLUENE SOLUTION
Class	3
Packing group	II
Environmental hazards	Not applicable
Special precautions for user	No data available.

Classification for SEA transport (IMO-IMDG):

UN number	UN 1294
Proper shipping name	TOLUENE SOLUTION
Class	3
Packing group	II
Marine pollutant	No
Special precautions for user	EmS: F-E, S-D
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

UN number	UN 1294
Proper shipping name	Toluene solution
Class	3
Packing group	II
Special precautions for user	No data available.

Further information:

VENTED PACKAGES ARE FORBIDDEN FOR AIR TRANSPORT.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

Regulation under the Occupational Safety and Health Act

The product is classified as hazardous by ISHL in Korea.

Harmful Substances Prohibited from Manufacturing

Not applicable

Harmful Substances Required Permission for Manufacture

Not applicable

Harmful Agents to be kept below Occupational Exposure Limits

Components	CASRN
Toluene	108-88-3

Harmful Agents Required to be kept below Permission Levels

Not applicable

Hazardous substances requiring management

Components	CASRN
Toluene	108-88-3

Controlled Substances Subject to Environment Monitoring

Components	CASRN
Toluene	108-88-3

Controlled Substances Subject to Health Examination

Components	CASRN
Toluene	108-88-3

Regulation under the Chemical Control Act**Toxic Chemicals**

Not applicable

Restricted Chemicals

Not applicable

Prohibited Chemicals

Not applicable

Accident Precaution Chemicals

Not applicable

Dangerous Substances Safety Management Act

Group 4, Class 1 Petroleum, Hazard Class II, Flammable

Waste Management Law

Industrial waste, CAUTION! HAZARDOUS WASTE

Follow article 13 of the act to dispose the product waste

Other requirements in domestic and other countries**Korea. Korean Existing Chemicals Inventory (KECI):**

The product contains an intentional component that is subject to a restriction. Production and/or use is limited by the conditions of the restriction.

16. OTHER INFORMATION

Other information

none

Hazard Rating System

NFPA

Health	Flammability	Instability
2	3	0

Revision

Identification Number: 4020225 / A153 / Issue Date: 2018.04.02 / Version: 1.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Date of first issue: 2015.04.07

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	ACGIH - Biological Exposure Indices (BEI)
KR OEL	Harmful Agents to be kept below Occupational Exposure Limits
STEL	Short Term Exposure Limit
TWA	8-hour, time-weighted average

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; CPR - Controlled Products Regulations; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

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