

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : DOWSIL™ TORAY SE 9189 L Gray RTV

Product code : 06017391

Recommended use of the chemical and restrictions on use

Recommended use : Adhesive, binding agents

Restrictions on use : 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.

Manufacturer or supplier's details

Company : DOW CHEMICAL KOREA LIMITED

Address : 412 TEHERAN-RO (DAECHI-DONG)
SEOUL 11 135-524

Telephone : 82-(0)2-3490-0700

Emergency telephone number : 080-369-2436


E-mail address : SDSQuestion@dow.com

2. HAZARDS IDENTIFICATION

GHS Classification

Skin sensitisation : Category 1

GHS label elements

Hazard pictograms : 

Signal word : Warning

Hazard statements : H317 May cause an allergic skin reaction.

Precautionary statements : **Prevention:**
P261 Avoid breathing mist or vapours.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.

Disposal:

P501 Dispose of contents and container according to wastes control act.

Other hazards which do not result in classification

|| Vapours may form explosive mixture with air.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : Silicone

Components

Chemical name	Common Name	CAS-No.	Concentration (% w/w)
Vinyltrimethoxysilane treated aluminum hydroxide	Trimethoxyvinylsilane treated with aluminum hydroxide	Not Assigned	$\geq 20 - < 30$
Vinyltrimethoxysilane treated Basic zinc carbonate	No data available	Not Assigned	$\geq 1 - < 10$
Methyltrimethoxysilane	Silane, trimethoxymethyl-	1185-55-3	$\geq 1 - < 10$
Organo Titanate	Proprietary Ingredient	Proprietary Ingredient	$\geq 1 - < 10$
Carbon black	Lampblack	1333-86-4	$\geq 0.1 - < 1$
Alkoxysiloxane	Proprietary Ingredient	Proprietary Ingredient	$\geq 50 - < 60$
Dimethyl Siloxane, Mono-trimethoxysiloxy- and Trimethylsiloxy-terminated	Siloxanes and silicones, di-Me, mono[(trimethoxysilyl)oxy]-terminated	472976-92-4	$\geq 10 - < 20$
Dimethyl siloxane, trimethylsiloxy-terminated	Siloxanes and Silicones, di-Me	63148-62-9	$\geq 1 - < 10$

4. FIRST AID MEASURES

|| General advice : In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice.

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

- In case of eye contact : Flush eyes with water as a precaution.
Get medical attention if irritation develops and persists.
- In case of skin contact : In case of contact, immediately flush skin with soap and plenty of water.
Remove contaminated clothing and shoes.
Get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.
- If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.
- If swallowed : If swallowed, DO NOT induce vomiting.
Get medical attention if symptoms occur.
Rinse mouth thoroughly with water.
- Most important symptoms and effects, both acute and delayed : May cause an allergic skin reaction.
- Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists.
- Notes to physician : Treat symptomatically and supportively.
-

5. FIREFIGHTING MEASURES

Suitable and unsuitable extinguishing media

- Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during fire-fighting : Do not use a solid water stream as it may scatter and spread fire.
Flash back possible over considerable distance.
Vapours may form explosive mixtures with air.
Exposure to combustion products may be a hazard to health.
- Hazardous combustion products : Carbon oxides
Silicon oxides
Formaldehyde
Metal oxides
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
Remove undamaged containers from fire area if it is safe to do so.

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

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. Use personal protective equipment. Follow safe handling advice and personal protective equipment recommendations.

Environmental precautions : Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up : Non-sparking tools should be used. Soak up with inert absorbent material. Suppress (knock down) gases/vapours/mists with a water spray jet. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

7. HANDLING AND STORAGE

Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Local/Total ventilation : Use with local exhaust ventilation.

Advice on safe handling : Do not get on skin or clothing. Avoid inhalation of vapour or mist. Do not swallow. Avoid contact with eyes. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment. Keep container tightly closed. Keep away from water. Protect from moisture.

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
 Date of first issue: 2014/12/03

Keep away from heat and sources of ignition.
 Take precautionary measures against static discharges.
 Take care to prevent spills, waste and minimize release to the environment.

Conditions for safe storage : Keep in properly labelled containers.
 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.

Materials to avoid : Do not store with the following product types:
 Oxidizing solids
 Oxidizing liquids

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Vinyltrimethoxysilane treated aluminum hydroxide	Not Assigned	TWA	2 mg/m ³ (Aluminium)	KR OEL
		TWA (Respirable fraction)	1 mg/m ³ (Aluminium)	ACGIH
Methyltrimethoxysilane	1185-55-3	TWA	7.5 ppm	DCC OEL
Carbon black	1333-86-4	TWA	3.5 mg/m ³	KR OEL
	Further information: Limited evidence of carcinogenicity in humans or animals, which is not sufficiently convincing to place the substance in Category 1			
		TWA (Inhalable fraction)	3 mg/m ³	ACGIH

Other ingredients, which are listed in section 3 but not listed in this section, do not have established occupational exposure limit values.

These substance(s) are inextricably bound in the product and therefore do not contribute to a dust inhalation hazard.

Carbon black

Occupational exposure limits of decomposition products

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Methanol	67-56-1	STEL	250 ppm	KR OEL
	Further information: Substances designated by 'Skin' may be absorbed into the bloodstream through the skin, mucous membrane and eye and contribute to the overall effect. (Skin notation does not apply to the skin irritant)			
		TWA	200 ppm	KR OEL
	Further information: Substances designated by 'Skin' may be ab-			

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
 Date of first issue: 2014/12/03

		sorbed into the bloodstream through the skin, mucous membrane and eye and contribute to the overall effect. (Skin notation does not apply to the skin irritant)		
		TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
Propan-2-ol	67-63-0	TWA	200 ppm	KR OEL
		STEL	400 ppm	KR OEL
		TWA	200 ppm	ACGIH
		STEL	400 ppm	ACGIH

Engineering measures : Processing may form hazardous compounds (see section 10).
 Ensure adequate ventilation, especially in confined areas.
 Minimize workplace exposure concentrations.

Personal protective equipment. Among the following personal protective equipment, the PPEs which require safety certification need to be certified by KOSHA.

Respiratory protection : Use respiratory protection (air supplied respirator) unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Filter type : Self-contained breathing apparatus

Eye protection : Wear the following personal protective equipment:
 Safety glasses

Hand protection

Material : Chemical-resistant gloves

Remarks : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Take note that the product is flammable, which may impact the selection of hand protection. Wash hands before breaks and at the end of workday.

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.
 Wear the following personal protective equipment:
 Flame retardant antistatic protective clothing, unless assessment demonstrates that the risk of explosive atmospheres or flash fires is low
 Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).

Hygiene measures : Ensure that eye flushing systems and safety showers are

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version	Revision Date:	SDS Number:	Date of last issue: 2017/03/18
5.0	2018.03.02	883668-00011	Date of first issue: 2014/12/03

located close to the working place.
When using do not eat, drink or smoke.
Wash contaminated clothing before re-use.
These precautions are for room temperature handling. Use at elevated temperature or aerosol/spray applications may require added precautions.
For further information regarding the use of silicones / organic oils in consumer aerosol applications, please refer to the guidance document regarding the use of these type of materials in consumer aerosol applications that has been developed by the silicone industry (www.SEHSC.com) or contact the Dow Chemical customer service group.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	viscous liquid
Colour	:	grey
Odour	:	slight
Odour Threshold	:	No data available
pH	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	> 100 °C
Flash point	:	72.00 °C Method: Seta closed cup
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Flammability (liquids)	:	Not applicable
Self-ignition	:	The substance or mixture is not classified as pyrophoric. The substance or mixture is not classified as self heating.
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	No data available
Solubility(ies) Water solubility	:	No data available
Relative vapour density	:	No data available

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

Relative density : 1.19

Partition coefficient: n-octanol/water : No data available

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Viscosity
Viscosity, dynamic : 200 Poise

Explosive properties : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Molecular weight : No data available

Particle size : Not applicable

10. STABILITY AND REACTIVITY

Chemical stability and possibility of hazardous reactions : Not classified as a reactivity hazard.
Stable under normal conditions.
Combustible liquid.
Vapours may form explosive mixture with air.
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.
Hazardous decomposition products will be formed upon contact with water or humid air.
Hazardous decomposition products will be formed at elevated temperatures.

Conditions to avoid : Exposure to moisture
Heat, flames and sparks.

Incompatible materials : Oxidizing agents
Water

Hazardous decomposition products

Contact with water or humid air : Methanol
Propan-2-ol

Thermal decomposition : Formaldehyde

11. TOXICOLOGICAL INFORMATION

Information on likely routes of : Inhalation

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

exposure Skin contact
Ingestion
Eye contact

Health hazard information

Acute toxicity

Components:

Methyltrimethoxysilane:

Acute oral toxicity : LD50 (Rat): 12.3 ml/kg
Assessment: The substance or mixture has no acute oral toxicity
Remarks: Information taken from reference works and the literature.

Acute inhalation toxicity : LC50 (Rat): > 42.1 mg/l
Exposure time: 6 h
Test atmosphere: vapour
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: On basis of test data.

Acute dermal toxicity : LD50 (Rabbit): > 9,500 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity
Remarks: On basis of test data.

Organo Titanate:

Acute oral toxicity : LD50 (Rat): 23,020 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 173 mg/l
Exposure time: 6 h
Test atmosphere: vapour
Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rabbit): 12,870 mg/kg
Remarks: Based on data from similar materials

Carbon black:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 0.0046 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 3,000 mg/kg

Alkoxysiloxane:

Acute oral toxicity : LD50 (Rat): > 50 ml/kg
Assessment: The substance or mixture has no acute oral toxicity
Remarks: Based on data from similar materials

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity
Remarks: Based on data from similar materials

Dimethyl Siloxane, Mono-trimethoxysiloxy- and Trimethylsiloxy-terminated:

Acute oral toxicity : LD50 (Rat): > 20,000 mg/kg
Assessment: The substance or mixture has no acute oral toxicity
Remarks: Information taken from reference works and the literature.

Dimethyl siloxane, trimethylsiloxy-terminated:

Acute oral toxicity : LD50 (Rat): > 50 ml/kg
Assessment: The substance or mixture has no acute oral toxicity
Remarks: On basis of test data.

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity
Remarks: On basis of test data.

Skin corrosion/irritation

Components:

Methyltrimethoxysilane:

Species: Rabbit
Result: No skin irritation
Remarks: On basis of test data.

Organo Titanate:

Species: Rabbit
Result: No skin irritation

Carbon black:

Species: Rabbit
Result: No skin irritation

Alkoxysiloxane:

Species: Rabbit
Result: No skin irritation
Remarks: Based on data from similar materials

Dimethyl Siloxane, Mono-trimethoxysiloxy- and Trimethylsiloxy-terminated:

Result: No skin irritation
Remarks: Based on data from similar materials

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

Dimethyl siloxane, trimethylsiloxy-terminated:

Species: Rabbit
Result: No skin irritation
Remarks: Based on data from similar materials

Serious eye damage/eye irritation

Components:

Methyltrimethoxysilane:

Species: Rabbit
Result: No eye irritation
Remarks: On basis of test data.

Organo Titanate:

Species: Rabbit
Result: Irritation to eyes, reversing within 21 days

Carbon black:

Species: Rabbit
Result: No eye irritation

Alkoxysiloxane:

Species: Rabbit
Result: No eye irritation
Remarks: Based on data from similar materials

Dimethyl Siloxane, Mono-trimethoxysiloxy- and Trimethylsiloxy-terminated:

Result: No eye irritation
Remarks: Based on data from similar materials

Dimethyl siloxane, trimethylsiloxy-terminated:

Species: Rabbit
Result: No eye irritation
Remarks: On basis of test data.

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Components:

Methyltrimethoxysilane:

Assessment: Probability or evidence of low to moderate skin sensitisation rate in humans

Test Type: Buehler Test
Species: Guinea pig
Result: positive
Remarks: On basis of test data.

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

Organo Titanate:

Exposure routes: Skin contact
Species: Guinea pig
Result: negative

Carbon black:

Test Type: Buehler Test
Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: negative

Alkoxysiloxane:

Assessment: Does not cause skin sensitisation.

Test Type: Maximisation Test
Species: Guinea pig
Result: negative
Remarks: Based on data from similar materials

Dimethyl Siloxane, Mono-trimethoxysiloxy- and Trimethylsiloxy-terminated:

Assessment: Does not cause skin sensitisation.

Test Type: Maximisation Test
Species: Guinea pig
Remarks: Based on data from similar materials

Dimethyl siloxane, trimethylsiloxy-terminated:

Assessment: Does not cause skin sensitisation.

Test Type: Buehler Test
Species: Guinea pig
Result: negative
Remarks: On basis of test data.

Test Type: Maximisation Test
Species: Guinea pig
Result: negative
Remarks: On basis of test data.

Carcinogenicity

Components:

Carbon black:

According to Ministry of Employment and Labor Public Notice: Category 2

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

Germ cell mutagenicity

Components:

Methyltrimethoxysilane:

- Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Remarks: On basis of test data.
- Test Type: Mutagenicity (in vitro mammalian cytogenetic test)
Result: positive
Remarks: On basis of test data.
- Test Type: Chromosome aberration test in vitro
Result: positive
Remarks: On basis of test data.
- Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Ingestion
Result: negative
Remarks: On basis of test data.
- Germ cell mutagenicity- Assessment : Animal testing did not show any mutagenic effects.

Organo Titanate:

- Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Carbon black:

- Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Alkoxysiloxane:

- Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Remarks: Based on data from similar materials

Dimethyl siloxane, trimethylsiloxy-terminated:

- Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Remarks: On basis of test data.

Reproductive toxicity

Components:

Methyltrimethoxysilane:

- Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

Species: Rat, male and female
Application Route: Ingestion
Symptoms: No effects on fertility
Remarks: On basis of test data.

Effects on foetal development : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat, male and female
Application Route: Ingestion
Symptoms: No effects on foetal development
Remarks: On basis of test data.

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

Organo Titanate:

Effects on foetal development : Test Type: Embryo-foetal development
Species: Rabbit
Application Route: Ingestion
Result: negative
Remarks: Based on data from similar materials

Alkoxysiloxane:

Effects on fertility : Species: Rat
Application Route: Ingestion
Symptoms: No effects on fertility
Remarks: Based on data from similar materials

Effects on foetal development : Species: Rat
Application Route: Ingestion
Symptoms: No effects on foetal development
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

Dimethyl Siloxane, Mono-trimethoxysiloxy- and Trimethylsiloxy-terminated:

Effects on fertility : Species: Rabbit, male
Symptoms: No effects on fertility
Remarks: Based on data from similar materials

Effects on foetal development : Species: Rabbit, male
Symptoms: No effects on foetal development
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

Dimethyl siloxane, trimethylsiloxy-terminated:

Effects on fertility : Species: Rat
Application Route: Ingestion
Symptoms: No effects on fertility

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

Remarks: On basis of test data.

Effects on foetal development : Species: Rat
Application Route: Ingestion
Symptoms: No effects on foetal development
Remarks: On basis of test data.

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

STOT - single exposure

Components:

Organo Titanate:

Assessment: May cause drowsiness or dizziness.

STOT - repeated exposure

Components:

Methyltrimethoxysilane:

Exposure routes: inhalation (vapour)

Assessment: No significant health effects observed in animals at concentrations of 1 mg/l/6h/d or less.

Exposure routes: Ingestion

Assessment: No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

Carbon black:

Exposure routes: inhalation (dust/mist/fume)

Assessment: No significant health effects observed in animals at concentrations of 0.2 mg/l/6h/d or less.

Alkoxysiloxane:

Exposure routes: Ingestion

Assessment: No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

Dimethyl Siloxane, Mono-trimethoxysiloxy- and Trimethylsiloxy-terminated:

Exposure routes: Ingestion

Assessment: No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

Exposure routes: Skin contact

Assessment: No significant health effects observed in animals at concentrations of 200 mg/kg bw or less.

Dimethyl siloxane, trimethylsiloxy-terminated:

Exposure routes: Ingestion

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

Assessment: No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

Exposure routes: Skin contact

Assessment: No significant health effects observed in animals at concentrations of 200 mg/kg bw or less.

Repeated dose toxicity

Components:

Methyltrimethoxysilane:

Species: Rat
Application Route: inhalation (vapour)
Remarks: On basis of test data.

Species: Rat
Application Route: Ingestion
Remarks: On basis of test data.

Organo Titanate:

Species: Rat
NOAEL: 86.7 mg/l
Application Route: inhalation (vapour)
Exposure time: 13 Weeks
Remarks: Based on data from similar materials

Carbon black:

Species: Rat
NOAEL: 1 mg/m³
LOAEL: 7 mg/m³
Application Route: Inhalation
Test atmosphere: dust/mist
Exposure time: 90 Days
Remarks: These substance(s) are inextricably bound in the product and therefore do not contribute to a dust inhalation hazard.

Alkoxysiloxane:

Species: Rat
Application Route: Ingestion
Remarks: Based on data from similar materials

Species: Rat
Application Route: Skin contact
Remarks: Based on data from similar materials

Dimethyl Siloxane, Mono-trimethoxysiloxy- and Trimethylsiloxy-terminated:

Application Route: Ingestion
Remarks: Based on data from similar materials

Application Route: Skin contact
Remarks: Based on data from similar materials

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

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Dimethyl siloxane, trimethylsiloxy-terminated:

Species: Rat
Application Route: Ingestion
Remarks: On basis of test data.

Species: Rat
Application Route: Skin contact
Remarks: On basis of test data.

Aspiration toxicity

Product:

No aspiration toxicity classification

Experience with human exposure

No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

No data available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Ecotoxicology Assessment

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Components:

Vinyltrimethoxysilane treated Basic zinc carbonate:

Ecotoxicology Assessment

Acute aquatic toxicity : No toxicity at the limit of solubility

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Methyltrimethoxysilane:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 110 mg/l
Exposure time: 96 h

Toxicity to daphnia and other : EC50 (Daphnia sp. (water flea)): > 122 mg/l

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

aquatic invertebrates Exposure time: 48 h
Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 120 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Toxicity to microorganisms : EC50: > 100 mg/l
Method: OECD Test Guideline 209

Organo Titanate:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 11,130 mg/l
Exposure time: 96 h
Remarks: Based on data from similar materials
Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): > 500 mg/l
Exposure time: 72 h
Remarks: Based on data from similar materials

Carbon black:

Toxicity to fish : LC0 (Danio rerio (zebra fish)): 1,000 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 5,600 mg/l
Exposure time: 24 h
Method: OECD Test Guideline 202
Toxicity to algae : NOEC (Desmodesmus subspicatus (green algae)): 10,000 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Alkoxysiloxane:

Toxicity to fish (Chronic toxicity) : Remarks: No toxicity at the limit of solubility
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: No toxicity at the limit of solubility

Dimethyl Siloxane, Mono-trimethoxysiloxy- and Trimethylsiloxy-terminated:

Toxicity to fish (Chronic toxicity) : Remarks: No toxicity at the limit of solubility
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: No toxicity at the limit of solubility

Dimethyl siloxane, trimethylsiloxy-terminated:

Toxicity to fish : LC50 (Pleuronectes platessa (European plaice)): 350 mg/l

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

Exposure time: 96 h

LC50 (Oncorhynchus mykiss (rainbow trout)): 172 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: On basis of test data.

LC50 (Oncorhynchus mykiss (rainbow trout)): > 1,000 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: On basis of test data.

LC50 (Oncorhynchus mykiss (rainbow trout)): > 962 mg/l
Exposure time: 96 h
Method: OPPTS 850.1075
Remarks: On basis of test data.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 200 mg/l
Exposure time: 48 h

EC50 (Daphnia magna (Water flea)): > 1,000 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Remarks: On basis of test data.

EC50 (Daphnia magna (Water flea)): > 320 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Remarks: On basis of test data.

EC50 (Daphnia magna (Water flea)): > 981 mg/l
Exposure time: 48 h
Method: OPPTS 850.1010
Remarks: On basis of test data.

EC50 (Acartia tonsa): 629 mg/l
Exposure time: 48 h
Method: ISO 14669 and PARCOM method
Remarks: On basis of test data.

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): > 2,000 mg/l
Exposure time: 336 h

EC50 (Anabaena flos-aquae): > 2,000 mg/l
Exposure time: 336 h

Toxicity to fish (Chronic toxicity) : NOEC (Cyprinodon variegatus (sheepshead minnow)): 91 mg/l
Remarks: On basis of test data.

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

Persistence and degradability

Components:

Organo Titanate:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 66 %
Exposure time: 28 d
Method: OECD Test Guideline 301D
Remarks: Based on data from similar materials

Bioaccumulative potential

Components:

Methyltrimethoxysilane:

Partition coefficient: n-octanol/water : log Pow: -2.36

Organo Titanate:

Partition coefficient: n-octanol/water : log Pow: 0.05

Alkoxysiloxane:

Partition coefficient: n-octanol/water : log Pow: ≥ 4
Remarks: Based on data from similar materials

Dimethyl Siloxane, Mono-trimethoxysiloxy- and Trimethylsiloxy-terminated:

Partition coefficient: n-octanol/water : log Pow: ≥ 4
Remarks: Based on data from similar materials

Mobility in soil

No data available

Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of contents and container according to wastes control act.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
Empty containers retain residue and can be dangerous.
Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death.

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

If not otherwise specified: Dispose of as unused product.

Disposal precautions

Dispose of contents and container according to wastes control act.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG

Not regulated as a dangerous good

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

UN number : Not applicable
Proper shipping name : Not applicable
Class : Not applicable
Subsidiary risk : Not applicable
Packing group : Not applicable
Labels : Not applicable
EmS Code : Not applicable
Marine pollutant : Not applicable

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

Not applicable for product as supplied.

National Regulations

Refer to section 15 for specific national regulation.

Special precautions for user

Not applicable

15. REGULATORY INFORMATION

National regulatory information

Regulation under the Occupational Safety and Health Act

Harmful Substances Prohibited from Manufacturing

Not applicable

Harmful Substances Required Permission for Manufacture

Not applicable

Harmful Agents to be kept below Occupational Exposure Limits

Chemical name	CAS-No.
Aluminum (Soluble salts)	Not Assigned
Carbon black	1333-86-4

Harmful Agents Required to be kept below Permission Levels

Not applicable

Hazardous substances requiring management

Chemical name	CAS-No.	Threshold limits (%)
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SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

Aluminum and compounds	Not Assigned	>= 1 %
Zinc and compounds	Not Assigned	>= 1 %

Controlled Substances Subject to Environment Monitoring

Chemical name	CAS-No.	Threshold limits (%)
Soluble aluminium salts	Not Assigned	>= 1 %

Controlled Substances Subject to Health Examination

Chemical name	CAS-No.	Threshold limits (%)
Aluminum and compounds	Not Assigned	>= 1 %

Act on the Registration and Evaluation, etc. of Chemical Substances, Chemicals Control Act

Priority Existing Chemicals

Not applicable

Toxic Chemicals

Not applicable

Restricted Chemicals

Not applicable

Prohibited Chemicals

Not applicable

Toxic Release Inventory

Chemical name	CAS-No.	Group	Threshold limits (%)
Aluminium and its compounds	Not Assigned	Group II	>= 1 %
Zinc and its compounds	Not Assigned	Group II	>= 1 %

Accident Precaution Chemicals

Not applicable

Dangerous Substances Safety Management Act

Classification : Group 4, Flammable liquids, Type 3 petroleum, Water insoluble liquid

Hazard rank : Hazardous rank III

Designated Quantity : 2000 litre

Safety Warning : Keep away from fire

Wastes Control Act

Industrial waste
Follow article 13 of the act to dispose the product waste

Other requirements in domestic and other countries

The components of this product are reported in the following inventories:

NZIoC : All ingredients listed or exempt.

IECSC : All ingredients listed or exempt.

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version	Revision Date:	SDS Number:	Date of last issue: 2017/03/18
5.0	2018.03.02	883668-00011	Date of first issue: 2014/12/03

REACH : For purchases from Dow Chemical EU legal entities, all ingredients are currently pre/registered or exempt under REACH. Please refer to section 1 for recommended uses. For purchases from non-EU Dow Chemical legal entities with the intention to export into EEA please contact your DC representative/local office.

TSCA : All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

AICS : Consult your local Dow Chemical office.

ENCS/ISHL : All components are listed on ENCS/ISHL or exempted from inventory listing.

KECI : One or more ingredients are not listed or exempt.

PICCS : All ingredients listed or exempt.

TCSI : All ingredients listed or exempt.

16. OTHER INFORMATION

Other information : none

Further information

Sources of key data used to compile the Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Issuing date : 2014/12/03

Revision number and date

Number of Revision : 10

Revision Date : 2018.03.02

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Date format : yyyy/mm/dd

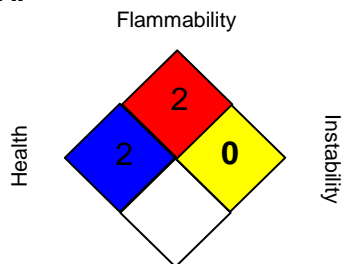
SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version 5.0 Revision Date: 2018.03.02 SDS Number: 883668-00011 Date of last issue: 2017/03/18
Date of first issue: 2014/12/03

NFPA:



Special hazard.

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
DCC OEL : Dow Chemical Guide
KR OEL : Harmful Agents to be kept below Occupational Exposure Limits

ACGIH / TWA : 8-hour, time-weighted average
ACGIH / STEL : Short-term exposure limit
DCC OEL / TWA : Time weighted average
KR OEL / TWA : Time Weighted Average
KR OEL / STEL : Short Term Exposure Limit

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

SAFETY DATA SHEET

DOWSIL™ TORAY SE 9189 L Gray RTV



Version	Revision Date:	SDS Number:	Date of last issue: 2017/03/18
5.0	2018.03.02	883668-00011	Date of first issue: 2014/12/03

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

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

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