



# SAFETY DATA SHEET

DOW CHEMICAL PACIFIC  
(SINGAPORE) PRIVATE LIMITED

**Product name:** DOWICIDE™ A Antimicrobial

**Issue Date:** 03/26/2015

**Print Date:** 08/03/2015

DOW CHEMICAL PACIFIC (SINGAPORE) PRIVATE 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.

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## 1. PRODUCT AND COMPANY IDENTIFICATION

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**Product name:** DOWICIDE™ A Antimicrobial

**Recommended use of the chemical and restrictions on use**

**Identified uses:** For biocidal applications. For industrial use.

**COMPANY IDENTIFICATION**

DOW CHEMICAL PACIFIC  
(SINGAPORE) PRIVATE LIMITED  
260 ORCHARD RD, #18-01 THE HEEREN  
SINGAPORE 238855  
SINGAPORE

**Customer Information Number:**

(65) 6835-3773  
SDSQuestion@dow.com

**EMERGENCY TELEPHONE NUMBER**

**24-Hour Emergency Contact:** 65-6542-9595

**Local Emergency Contact:** 1800-332-3543

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## 2. HAZARDS IDENTIFICATION

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**Hazard classification**

Acute toxicity - Category 4 - Oral

Skin corrosion - Category 1

Specific target organ toxicity - single exposure - Category 3 - Inhalation

Respiratory tract irritant.

Acute aquatic toxicity - Category 1

**Label elements**

**Hazard pictograms**



Signal word: **DANGER!**

#### Hazards

Harmful if swallowed.  
Causes severe skin burns and eye damage.  
May cause respiratory irritation.  
Very toxic to aquatic life.

#### Precautionary statements

##### Prevention

Do not eat, drink or smoke when using this product.  
Wear protective gloves/ protective clothing/ eye protection/ face protection.  
Avoid release to the environment.

##### Response

IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.  
Rinse mouth.  
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

##### Storage

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

#### Other hazards

no data available

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

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This product is a mixture.

Component	CASRN	Concentration
sodium 2-biphenylate	132-27-4	71.7%
sodium hydroxide	1310-73-2	<= 1.6 %

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## 4. FIRST AID MEASURES

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### 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 person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing has stopped, apply artificial respiration.

**Skin contact:** Immediate continued and thorough washing in flowing water for at least 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential. Wash clothing before reuse. Properly dispose of leather items such as shoes, belts, and watchbands. Suitable emergency safety shower facility should be immediately available.

**Eye contact:** Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

**Ingestion:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

**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:** Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. If burn is present, treat as any thermal burn, after decontamination. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. Probable mucosal damage may contraindicate the use of gastric lavage. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

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## 5. FIREFIGHTING MEASURES

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**Suitable extinguishing media:** Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

**Unsuitable extinguishing media:** no data available

**Special hazards arising from the substance or mixture**

**Hazardous combustion products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Phenolic compounds. Carbon monoxide. Carbon dioxide. Benzene compounds.

**Unusual Fire and Explosion Hazards:** Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Do not permit dust to accumulate. When suspended in air dust can pose an explosion hazard. Minimize ignition sources. If dust layers are exposed to elevated temperatures, spontaneous combustion may occur. Dense smoke is produced when product burns.

#### **Advice for firefighters**

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Cool surroundings with water to localize fire zone. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Hand held dry chemical or carbon dioxide extinguishers may be used for small fires. Dust explosion hazard may result from forceful application of fire extinguishing agents. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

**Special protective equipment for firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

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## **6. ACCIDENTAL RELEASE MEASURES**

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**Personal precautions, protective equipment and emergency procedures:** Evacuate area. Keep upwind of spill. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations. Spilled material may cause a slipping hazard. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**Environmental precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

**Methods and materials for containment and cleaning up:** Contain spilled material if possible. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

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## **7. HANDLING AND STORAGE**

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**Precautions for safe handling:** Keep out of reach of children. Keep away from heat, sparks and flame. Do not get in eyes, on skin, on clothing. Do not swallow. Avoid breathing vapor or mist. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. No smoking, open flames or sources of ignition in handling and storage area. Good housekeeping and controlling of dusts are necessary for safe handling of product. Workers should be protected from the possibility of contact with molten resin. Do not get molten material in eyes, on skin or clothing. Product

shipped/handled hot can cause thermal burns. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

**Conditions for safe storage:** Store in a dry place. Store away from incompatible materials. See STABILITY AND REACTIVITY section.

#### Storage stability

**Shelf life:** Use within 24 Month

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
sodium 2-biphenylate	Dow IHG	TWA	1 mg/m <sup>3</sup>
sodium hydroxide	ACGIH	C	2 mg/m <sup>3</sup>
	SG OEL	PEL (short term)	2 mg/m <sup>3</sup>

### Exposure controls

**Engineering controls:** Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

### Individual protection measures

**Eye/face protection:** Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent. Wear a face-shield which allows use of chemical goggles, or wear a full-face respirator, to protect face and eyes when there is any likelihood of splashes.

#### Skin protection

**Hand protection:** Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Use gloves with insulation for thermal protection (EN 407), when needed. Examples of preferred glove barrier materials include: Neoprene. Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). When prolonged or frequently repeated contact may occur, a glove is recommended to prevent contact with the solid material. 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, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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<b>Appearance</b>	
<b>Physical state</b>	Flakes
<b>Color</b>	White to off-white
<b>Odor</b>	Mild
<b>Odor Threshold</b>	No test data available
<b>pH</b>	11.1 - 11.8 at 20 g/L <i>Literature</i> (water)
<b>Melting point/range</b>	47 - 130 °C <i>Literature</i>
<b>Freezing point</b>	<i>Not applicable</i>
<b>Boiling point (760 mmHg)</b>	<i>Literature</i> Decomposition
<b>Flash point</b>	<b>closed cup</b> > 115 °C <i>Literature</i>
<b>Evaporation Rate (Butyl Acetate = 1)</b>	Not applicable to solids
<b>Flammability (solid, gas)</b>	No
<b>Lower explosion limit</b>	<i>Not applicable</i>
<b>Upper explosion limit</b>	<i>Not applicable</i>
<b>Vapor Pressure</b>	<i>Literature</i> Expected to be low
<b>Relative Vapor Density (air = 1)</b>	<i>Not applicable</i>
<b>Relative Density (water = 1)</b>	1.3 at 25 °C <i>Literature</i>
<b>Water solubility</b>	53.7 % at 25 °C <i>Literature</i> by weight
<b>Partition coefficient: n-octanol/water</b>	no data available
<b>Auto-ignition temperature</b>	399 °C <i>Literature</i>
<b>Decomposition temperature</b>	No test data available
<b>Kinematic Viscosity</b>	Not applicable
<b>Explosive properties</b>	no data available
<b>Oxidizing properties</b>	no data available
<b>Liquid Density</b>	0.98 g/cm <sup>3</sup> at 25 °C <i>Literature</i>
<b>Molecular weight</b>	no data available

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

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## 10. STABILITY AND REACTIVITY

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**Reactivity:** no data available

**Chemical stability:** Thermally stable at typical use temperatures.

**Possibility of hazardous reactions:** Polymerization will not occur.

**Conditions to avoid:** Exposure to elevated temperatures can cause product to decompose.

**Incompatible materials:** Avoid contact with oxidizing materials. Avoid contact with: Strong acids.

**Hazardous decomposition products:** Decomposition products depend upon temperature, air supply and the presence of other materials.

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## 11. TOXICOLOGICAL INFORMATION

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*Toxicological information on this product or its components appear in this section when such data is available.*

### Acute toxicity

#### Acute oral toxicity

Low toxicity if swallowed. Swallowing may result in burns of the mouth and throat. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

LD50, Rat, male, 846 mg/kg

LD50, Rat, female, 591 mg/kg

#### Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product: The dermal LD50 has not been determined.

For similar material(s):

LD50, Rabbit, > 5,000 mg/kg No deaths occurred at this concentration.

#### Acute inhalation toxicity

Excessive exposure may cause severe irritation to the upper respiratory tract (nose and throat). Vapor from heated material or mist may cause respiratory irritation. For narcotic effects: No specific, relevant data available for assessment.

As product: The LC50 has not been determined.

For similar material(s):

LC50, Rat, 4 Hour, Aerosol, > 0.036 mg/l

### Skin corrosion/irritation

Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness and tissue damage.

Material may be handled at elevated temperatures; contact with heated material may cause thermal burns.

2-Phenylphenol has been reported to produce depigmentation (white patches) on skin of experimental animals when given orally but not by skin contact, and in humans only at concentrations that were significantly irritating to the skin. 2-Phenylphenol has not been found to cause depigmentation when present at low concentrations used in disinfectant formulations. 2-Phenylphenol (OPP) has important structural differences from the substituted phenols which are known to cause depigmentation at use dilutions in disinfectants.

**Serious eye damage/eye irritation**

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Material may be handled at elevated temperatures; contact with heated material may cause thermal burns.

Molten material may burn eyes.

**Sensitization**

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**

May cause respiratory irritation.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

For the major component(s):

In animals, effects have been reported on the following organs:

Kidney.

Bladder.

The data presented are for the following material:

Ortho phenyl phenol (OPP).

Orthophenyl phenol may be released if product is heated.

Kidney.

Liver.

Bladder.

**Carcinogenicity**

Sodium o-phenylphenate has been shown to cause bladder tumors when fed at exaggerated doses to rats. Under typical use patterns, the long term risk of human health effects of OPP and the sodium salt are negligible. Orthophenyl phenol may be released if product is heated. Ortho-phenylphenol has been shown to produce urinary bladder tumors in male rats and liver tumors in male mice fed exaggerated doses.

**Teratogenicity**

The data presented are for the following material: Ortho phenyl phenol (OPP). Orthophenyl phenol may be released if product is heated. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the major component(s): Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

**Reproductive toxicity**

No relevant data found.

**Mutagenicity**

For the major component(s): In vitro genetic toxicity studies were negative. The data presented are for the following material: Ortho phenyl phenol (OPP). Orthophenyl phenol may be released if product is heated. In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

**Aspiration Hazard**

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



**Carcinogenicity****Component**

sodium 2-biphenylate

**List**

IARC

**Classification**

Group 2B: Possibly carcinogenic to humans

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**12. ECOLOGICAL INFORMATION**

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*Ecotoxicological information on this product or its components appear in this section when such data is available.*

**Ecotoxicity****Acute toxicity to fish**

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

LC50, *Oncorhynchus mykiss* (rainbow trout), flow-through test, 96 Hour, 2.6 mg/l

**Acute toxicity to aquatic invertebrates**

LC50, *Daphnia magna* (Water flea), 3.8 mg/l

LC50, saltwater mysid *Mysidopsis bahia*, flow-through test, 96 Hour, 0.32 mg/l

**Acute toxicity to algae/aquatic plants**

EC50, diatom *Navicula* sp., static test, 72 Hour, Biomass, 2.8 mg/l

Based on information for a similar material:

Ortho phenyl phenol (OPP).

EC50, alga *Scenedesmus* sp., static test, 72 Hour, Biomass, 0.85 mg/l

**Toxicity to Above Ground Organisms**

Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg).

Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

**Persistence and degradability**

**Biodegradability:** 10-day Window: Pass

**Biodegradation:** 88 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301B or Equivalent

10-day Window: Not applicable

**Biodegradation:** 47 - 86 %

**Exposure time:** 14 d

**Method:** OECD Test Guideline 302C or Equivalent

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

**Bioaccumulative potential**

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

**Mobility in Soil**

No data available.

**Results of PBT and vPvB assessment**

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

**Other adverse effects**

No specific, relevant data available for assessment.

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### 13. DISPOSAL CONSIDERATIONS

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**Disposal methods:** This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required. Do not dump into any sewers, on the ground, or into any body of water.

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

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### 14. TRANSPORT INFORMATION

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**Classification for ROAD and Rail transport:**

<b>Proper shipping name</b>	CORROSIVE SOLID, BASIC, ORGANIC, N.O.S.(Sodium hydroxide)
<b>UN number</b>	UN 3263
<b>Class</b>	8
<b>Packing group</b>	III
<b>Environmental hazards</b>	Sodium O-Phenylphenate

**Classification for SEA transport (IMO-IMDG):**

<b>Proper shipping name</b>	CORROSIVE SOLID, BASIC, ORGANIC, N.O.S.(Sodium hydroxide)
<b>UN number</b>	UN 3263
<b>Class</b>	8
<b>Packing group</b>	III
<b>Marine pollutant</b>	Sodium O-Phenylphenate
<b>Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code</b>	Consult IMO regulations before transporting ocean bulk

**Classification for AIR transport (IATA/ICAO):**

<b>Proper shipping name</b>	Corrosive solid, basic, organic, n.o.s.(Sodium hydroxide)
<b>UN number</b>	UN 3263
<b>Class</b>	8
<b>Packing group</b>	III

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.

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## 15. REGULATORY INFORMATION

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### Workplace Classification

This product is classified as hazardous according to Singapore Standards, Act and Regulations.

**The following statutes, regulations and standards have the related prescribes on chemicals in terms of safe use, storage, transportation, loading and unloading, classification and symbol etc.**

Workplace Safety and Health Act & Workplace Safety and Health (General Provisions) Regulations  
 Environmental Protection and Management Act and Environmental Protection and Management (Hazardous Substances) Regulations  
 Chemical Weapons Prohibition Act  
 Fire Safety Act and Fire Safety (Petroleum and Flammable Materials) Regulations

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## 16. OTHER INFORMATION

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### Revision

Identification Number: 101201560 / A167 / Issue Date: 03/26/2015 / Version: 3.0

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

### Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
C	Ceiling limit
Dow IHG	Dow Industrial Hygiene Guideline
PEL (short term)	Permissible Exposure Level (PEL) Short Term
SG OEL	Singapore. Workplace Safety and Health Act - First Schedule Permissible Exposure Limits of Toxic Substances
TWA	Time Weighted Average (TWA):

### 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.

DOW CHEMICAL PACIFIC (SINGAPORE) PRIVATE LIMITED urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the

effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.