



**PROJECT: BARCELONA DATA CENTER**  
**LOCATION: PARC LOGISTIC DE LA ZONA**  
**FRANCA**

**CLIENT: EDGED ENERGY**



<b>TITLE</b>	GLYCOL - CRITICAL
<b>ID NUMBER</b>	ESBAR – DC1 – GLY- 83
<b>VERSION</b>	00
<b>DATE</b>	20/10/2023
<b>ISSUED FOR</b>	Construction
<b>ISSUED BY</b>	Alberto Paramio
<b>REVISED BY</b>	Ismael Prat

	PROJECT: BARCELONA DATA CENTER		ID. NUMBER	
			ESBAR – DC1 – GLY - 83	
	GLYCOL - CRITICAL		VERSION	00

VERSION HISTORY

VERSION	DATE	MODIFICATIONS
00	20/10/2023	First version

	PROJECT: BARCELONA DATA CENTER		ID. NUMBER	
			ESBAR – DC1 – GLY- 83	
	GLYCOL - CRITICAL		VERSION	00

REVIEWER COMMENTS	

Friday 20, October 2023		
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	PROJECT: BARCELONA DATA CENTER		ID. NUMBER	
			ESBAR – DC1 – GLY- 83	
	GLYCOL - CRITICAL		VERSION	00


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Friday 20, October 2023		
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	PROJECT: BARCELONA DATA CENTER		ID. NUMBER	
			ESBAR – DC1 – GLY- 83	
	GLYCOL - CRITICAL		VERSION	00

**INDEX**

1.- PURPOSE .....	6
2.- PRODUCT DESCRIPTION.....	6
3.- ADDENDUM .....	6
3.1. DATASHEET OF GLYCOL (DOWCAL 200).....	7
3.2. SAFETY DATASHEET.....	8

	PROJECT: BARCELONA DATA CENTER		ID. NUMBER	
	GLYCOL - CRITICAL		ESBAR – DC1 – GLY- 83	
			VERSION	00

## 1.- PURPOSE

The purpose of this document is to describe and define the GLYCOL, which will be used in EDGED ENERGY – BARCELONA DATA CENTER | BUILDING 1, necessary for the CRITICAL HVAC installation. May this document serve as description of glycol mix with water piping system.

## 2.- PRODUCT DESCRIPTION

This presentation defines the GLYCOL that are required in this project. Inhibited Propylene Glycol 30% Prediluted Dowcal 200 will be supplied. Properties are specified in the following table and safety information are included in the Addendum:

### **Typical Properties of DOWCAL™ 200 Heat Transfer Fluid<sup>1</sup>**

Composition (% by weight)			
Propylene Glycol		92%	
Performance additive and water		8%	
Property	Unit	Value	Test Method
Colour		Colourless	
Density at 20°C	g/cm <sup>3</sup>	1.050	ASTM D4052
pH (50% vol. solution in demineralized water)		7.2 – 7.6	ASTM E70
Reserve alkalinity, as concentrate	ml	10.0 Min	ASTM D1121
Freezing point (50% vol. solution in demineralized water)	°C	-33	ASTM E70

## 3.- ADDENDUM

In order for this submittal to be completed, the following documentation is included as addendum:

- DATASHEET OF GLYCOL (DOWCAL 200)
- SAFETY DATASHEET

Friday 20, October 2023		
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	PROJECT: BARCELONA DATA CENTER		ID. NUMBER	
			ESBAR – DC1 – GLY- 83	
	GLYCOL - CRITICAL		VERSION	00

### 3.1. DATASHEET OF GLYCOL (DOWCAL 200)

Friday 20, October 2023		
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## Technical Data Sheet

### **DOWCAL™ 200 Heat Transfer Fluid**

Inhibited Propylene Glycol-based Heat Transfer Fluid

#### **Recommended Usage**

DOWCAL™ 200 is a propylene glycol-based heat transfer fluid for use in a wide range of industrial, construction and infrastructure applications. Its low acute toxicity makes DOWCAL™ 200 especially suitable for applications where toxicity is a concern.

#### **Recommended use temperature range:**

-50°C to 175°C

#### **Key Benefits of DOWCAL™ 200 Heat Transfer Fluid**

- Low acute oral toxicity
- Improved corrosion protection, in particular for aluminum alloys
- Compatible with commonly used elastomers
- Hard water stability to enable use with local tap water
- Long fluid lifetime, lowering maintenance cost
- Recommended use at minimum 30% concentration for corrosion protection

### **Typical Properties of DOWCAL™ 200 Heat Transfer Fluid<sup>1</sup>**

Composition (% by weight)			
Propylene Glycol		92%	
Performance additive and water		8%	
Property	Unit	Value	Test Method
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Density at 20°C	g/cm <sup>3</sup>	1.050	ASTM D4052
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Freezing point (50% vol. solution in demineralized water)	°C	-33	ASTM E70

1. Typical properties not to be construed as specification, complete sales specification is available on request.



## Typical Freezing, Boiling Points and other properties of DOWCAL™ 200 Heat Transfer Fluid <sup>1</sup>

DOWCAL™ 200 % vol	DOWCAL™ 200 %wt	Freezing point °C	Refractive Index @ 20°C	Boiling point °C @ 1 bara	Density g/cm <sup>3</sup> @ 20°C	Dyn. viscosity mPa.s @ 20°C	Kin. viscosity mm <sup>2</sup> /s @ 20°C
5.0	5.3	-1.6	1.3391	100	1.006	1.36	1.95
10.0	10.5	-3.3	1.3452	100	1.011	1.62	1.66
15.0	15.8	-5.3	1.3513	101	1.015	1.93	1.81
20.0	20.9	-7.5	1.3573	101	1.020	2.30	2.11
21.0	22.0	-8.0	1.3585	101	1.021	2.39	2.18
22.0	23.0	-8.5	1.3597	101	1.022	2.48	2.26
23.0	24.0	-9.1	1.3609	101	1.022	2.57	2.34
24.0	25.1	-9.6	1.3621	102	1.023	2.66	2.42
25.0	26.1	-10.2	1.3633	102	1.024	2.76	2.51
26.0	27.1	-10.8	1.3645	102	1.025	2.87	2.61
27.0	28.2	-11.4	1.3657	102	1.026	2.97	2.71
28.0	29.2	-12.1	1.3669	102	1.027	3.09	2.81
29.0	30.2	-12.7	1.3681	102	1.028	3.20	2.92
30.0	31.2	-13.4	1.3693	102	1.029	3.33	3.04
31.0	32.3	-14.1	1.3704	102	1.030	3.45	3.16
32.0	33.3	-14.8	1.3716	102	1.031	3.58	3.29
33.0	34.3	-15.6	1.3728	102	1.032	3.72	3.42
34.0	35.3	-16.4	1.3739	102	1.033	3.87	3.56
35.0	36.3	-17.2	1.3751	102	1.034	4.02	3.70
36.0	37.4	-18.0	1.3762	103	1.035	4.17	3.85
37.0	38.4	-18.9	1.3774	103	1.036	4.34	4.01
38.0	39.4	-19.8	1.3785	103	1.037	4.51	4.17
39.0	40.4	-20.7	1.3797	103	1.038	4.68	4.35
40.0	41.4	-21.7	1.3808	103	1.039	4.87	4.53
41.0	42.4	-22.7	1.3820	103	1.039	5.06	4.71
42.0	43.4	-23.7	1.3831	103	1.040	5.26	4.91
43.0	44.4	-24.8	1.3842	103	1.041	5.47	5.12
44.0	45.4	-25.8	1.3853	103	1.042	5.69	5.33
45.0	46.4	-27.0	1.3864	103	1.043	5.92	5.55
46.0	47.5	-28.1	1.3875	104	1.044	6.16	5.79
47.0	48.5	-29.3	1.3886	104	1.045	6.40	6.03
48.0	49.5	-30.5	1.3897	104	1.046	6.66	6.29
49.0	50.5	-31.8	1.3908	104	1.047	6.93	6.55
50.0	51.5	-33.1	1.3919	104	1.048	7.22	6.83
51.0	52.5	-34.5	1.3930	105	1.048	7.51	7.12
52.0	53.5	-35.9	1.3941	105	1.049	7.82	7.42
53.0	54.4	-37.3	1.3951	105	1.050	8.14	7.74
54.0	55.4	-38.7	1.3962	105	1.051	8.48	8.07
55.0	56.4	-40.3	1.3973	105	1.052	8.83	8.41
60.0	61.4	-48.5	1.4024	107	1.056	10.8	10.4
65.0	66.3	<-51	1.4074	108	1.059	13.3	12.8
70.0	71.2	<-51	1.4122	109	1.062	16.5	15.8
75.0	76.1	<-51	1.4168	111	1.064	20.4	19.5
80.0	80.9	<-51	1.4212	113	1.066	25.4	24.1
85.0	85.7	<-51	1.4253	116	1.066	31.6	29.8
90.0	90.5	<-51	1.4291	121	1.065	39.5	36.9
95.0	95.3	<-51	1.4327	129	1.062	49.5	45.7
100.0	100.0	<-51	1.4360	142	1.057	62.3	56.5

1. Typical properties not to be construed as specification, complete sales specification is available on request.

NOTE: Generally, for an extended margin of protection, you should select a temperature in this table that is at least 3°C lower than the expected lowest ambient temperature. Please contact Dow on specific cases or further assistance.

**Saturation properties of DOWCAL™ 200 Heat Transfer Fluid at 30% volume concentration<sup>1</sup>**

Temp °C	Specific Heat kJ/kg.K	Density g/cm <sup>3</sup>	Thermal conductivity W/m.K	Dyn. viscosity mPa.s
0	3.82	1.041	0.417	7.81
25	3.89	1.026	0.446	2.78
50	3.95	1.011	0.467	1.33
100	4.09	0.981	0.489	0.51
130	4.17	0.962	0.491	0.36
160	4.25	0.944	0.487	0.27

**Saturation properties of DOWCAL™ 200 Heat Transfer Fluid at 40% volume concentration<sup>1</sup>**

Temp °C	Specific Heat kJ/kg.K	Density g/cm <sup>3</sup>	Thermal conductivity W/m.K	Dyn. viscosity mPa.s
0	3.68	1.051	0.376	12.50
25	3.75	1.036	0.399	3.99
50	3.83	1.020	0.417	1.77
100	3.99	0.990	0.434	0.62
130	4.09	0.972	0.435	0.41
160	4.18	0.953	0.431	0.31

**Saturation properties of DOWCAL™ 200 Heat Transfer Fluid at 50% volume concentration<sup>1</sup>**

Temp °C	Specific Heat kJ/kg.K	Density g/cm <sup>3</sup>	Thermal conductivity W/m.K	Dyn. viscosity mPa.s
0	3.51	1.060	0.337	20.33
25	3.6	1.045	0.356	5.81
50	3.7	1.029	0.370	2.37
100	3.88	0.999	0.384	0.75
130	3.99	0.981	0.384	0.49
160	4.1	0.962	0.379	0.35

1. Typical properties not to be construed as specification, complete sales specification is available on request

**Handling  
Precaution**

Before using this product, consult the Safety Data Sheet (SDS) for details on product hazards, recommended handling precautions and product storage.

**Disposal  
Considerations**

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner. It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

**Product  
Stewardship**

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

**Customer Notice**

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

Contact:  
[www.dow.com/contact](http://www.dow.com/contact)

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	PROJECT: BARCELONA DATA CENTER		ID. NUMBER	
			ESBAR – DC1 – GLY- 83	
	GLYCOL - CRITICAL		VERSION	00

## 3.2. SAFETY DATASHEET

Friday 20, October 2023		
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# SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

**Product name:** DOWCAL™ 200 Heat Transfer Fluid

**Issue Date:** 06/22/2022

**Print Date:** 06/23/2022

THE DOW CHEMICAL COMPANY 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. IDENTIFICATION

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**Product name:** DOWCAL™ 200 Heat Transfer Fluid

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

**Identified uses:** Intended as a heat transfer fluid for closed-loop systems. 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**

THE DOW CHEMICAL COMPANY  
2211 H.H. DOW WAY  
MIDLAND MI 48674  
UNITED STATES

**Customer Information Number:**

800-258-2436  
SDSQuestion@dow.com

**EMERGENCY TELEPHONE NUMBER**

**24-Hour Emergency Contact:** CHEMTREC +1 800-424-9300

**Local Emergency Contact:** 800-424-9300

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## 2. HAZARDS IDENTIFICATION

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**Hazard classification**

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Reproductive toxicity - Category 1B

**Label elements**

**Hazard pictograms**



Signal word: **DANGER!**

**Hazards**

May damage fertility or the unborn child.

**Precautionary statements****Prevention**

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Wear protective gloves, protective clothing, eye protection and/or face protection.

**Response**

IF exposed or concerned: Get medical advice/ attention.

**Storage**

Store locked up.

**Disposal**

Dispose of contents and/or container to an approved waste disposal plant.

**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
Propylene glycol	57-55-6	$\geq 80.0 - \leq 96.0$ %*
Water	7732-18-5	$1.0 - \leq 5.0$ %*
Sodium benzoate	532-32-1	$1.0 - < 3.5$ %*
Boron potassium oxide (B <sub>4</sub> K <sub>2</sub> O <sub>7</sub> ), tetrahydrate	12045-78-2	$1.0 - < 2.0$ %*
Tolyl triazole	29385-43-1	$\geq 0.1 - < 0.25$ %*
Sodium hydroxide	1310-73-2	0.13%

*Note*

Actual concentration is withheld as a trade secret

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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 and keep comfortable for breathing; consult a physician.

**Skin contact:** Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation or rash occurs. Wash clothing before reuse. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands.

**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.

**Ingestion:** Rinse mouth with water. 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:** No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

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## 5. FIREFIGHTING MEASURES

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**Extinguishing media**

**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:** Do not use direct water stream.. May spread fire..

**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:.. Carbon monoxide.. Carbon dioxide..

**Unusual Fire and Explosion Hazards:** Container may rupture from gas generation in a fire situation.. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids..

**Advice for firefighters**

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry.. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed.. Fight fire from protected location or safe distance. Consider

the use of unmanned hose holders or monitor nozzles.. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container.. Burning liquids may be extinguished by dilution with water.. Do not use direct water stream. May spread fire.. Move container from fire area if this is possible without hazard.. 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).. If protective equipment is not available or not used, fight fire from a protected location or safe distance..

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## 6. ACCIDENTAL RELEASE MEASURES

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**Personal precautions, protective equipment and emergency procedures:** 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.

**Methods and materials for containment and cleaning up:** Contain spilled material if possible. Small spills: Absorb with materials such as: Cat litter. Sawdust. Vermiculite. Zorb-all®. Collect in suitable and properly labeled containers. Large spills: Dike area to contain spill. See Section 13, Disposal Considerations, for additional information.

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## 7. HANDLING AND STORAGE

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**Precautions for safe handling:** Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

**Conditions for safe storage:** Do not store in: Opened or unlabeled containers. Store in a dry place. Avoid moisture. Store away from direct sunlight. Store in tightly closed container. Use only with adequate ventilation. See Section 10 for more specific information. Additional storage and handling information on this product may be obtained by calling your sales or customer service contact.

### Storage stability

**Shelf life:** Use within 24 Month

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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### 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
Propylene glycol	US WEEL	TWA	10 mg/m3
Sodium benzoate	Dow IHG	TWA	10 mg/m3
	ACGIH	TWA	2.5 mg/m3



	Further information: Skin: Danger of cutaneous absorption; A5: Not suspected as a human carcinogen		
Sodium hydroxide	ACGIH	C	2 mg/m3
	OSHA Z-1	TWA	2 mg/m3

**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 safety glasses (with side shields). If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.

**Skin protection**

**Hand protection:** Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). Examples of acceptable glove barrier materials include: Neoprene. 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:** Wear clean, body-covering clothing.

**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 most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**Appearance****Physical state**

Liquid.

**Color**

Color is variable

**Odor**

Characteristic

**Odor Threshold**

No test data available

**pH**7.2 - 8.2 50% *Literature***Melting point/range**

Not applicable to liquids

**Freezing point**-51 - -12 °C ( -60 - 10 °F) *Literature***Boiling point (760 mmHg)**170 °C ( 338 °F) *Literature***Flash point****closed cup** 101 °C ( 214 °F) at 760 mmHg *Literature*

Evaporation Rate (Butyl Acetate = 1)	<0.5 <i>Estimated.</i>
Flammability (solid, gas)	Not applicable to liquids
Flammability (liquids)	Not expected to be a static-accumulating flammable liquid.
Lower explosion limit	2.6 % vol <i>Literature</i> (based on major component)
Upper explosion limit	12.5 % vol <i>Literature</i> (based on major component)
Vapor Pressure	3 mbar <i>Literature</i>
Relative Vapor Density (air = 1)	>1.0 <i>Literature</i>
Relative Density (water = 1)	1.045 - 1.055 at 20 °C (68 °F) / 20 °C <i>Literature</i>
Water solubility	completely miscible
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	420 °C (788 °F) <i>Literature</i> Propylene glycol
Decomposition temperature	No test data available
Kinematic Viscosity	50 - 75 mm <sup>2</sup> /s at 20 °C (68 °F) <i>Literature</i>
Explosive properties	Not explosive
Oxidizing properties	No Oxidizing
Molecular weight	No test 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:** Stable under recommended storage conditions. See Storage, Section 7.  
Hygroscopic

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

**Conditions to avoid:** Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid direct sunlight or ultraviolet sources.

**Incompatible materials:** Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

**Hazardous decomposition products:** Decomposition products depend upon temperature, air supply and the presence of other materials.. Decomposition products can include and are not limited to:.. Aldehydes.. Alcohols.. Ethers.. Organic acids..

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## 11. TOXICOLOGICAL INFORMATION

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

**Information on likely routes of exposure**

Ingestion, Inhalation, Skin contact, Eye contact.

**Acute toxicity (represents short term exposures with immediate effects - no chronic/delayed effects known unless otherwise noted)**

**Acute oral toxicity**

**Information for the Product:**

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

As product: Single dose oral LD50 has not been determined.

Based on information for component(s):  
LD50, Rat, > 20,000 mg/kg

**Information for components:**

**Propylene glycol**

LD50, Rat, > 20,000 mg/kg

**Sodium benzoate**

LD50, Rat, male and female, 2,100 - 3,450 mg/kg Estimated.

**Boron potassium oxide (B4K2O7), tetrahydrate**

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

Typical for this family of materials. LD50, Rat, male, 3,690 mg/kg

**Tolyl triazole**

LD50, Rat, male and female, 720 mg/kg OECD Test Guideline 401

**Sodium hydroxide**

Single dose oral LD50 has not been determined.

**Acute dermal toxicity**

**Information for the Product:**

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

As product: The dermal LD50 has not been determined.

Based on information for component(s):  
LD50, Rabbit, > 2,000 mg/kg

**Information for components:**

**Propylene glycol**

LD50, Rabbit, > 2,000 mg/kg No deaths occurred at this concentration.

**Sodium benzoate**

The dermal LD50 has not been determined.

**Boron potassiiium oxide (B4K2O7), tetrahydrate**

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

Typical for this family of materials. LD50, Rat, male and female, > 2,000 mg/kg No deaths occurred at this concentration.

**Tolyl triazole**

LD50, Rabbit, > 5,000 mg/kg

**Sodium hydroxide**

The dermal LD50 has not been determined.

**Acute inhalation toxicity**

**Information for the Product:**

At room temperature, exposure to vapor is minimal due to low volatility.

As product: The LC50 has not been determined.

**Information for components:**

**Propylene glycol**

LC50, Rabbit, 2 Hour, dust/mist, 317.042 mg/l No deaths occurred at this concentration.

**Sodium benzoate**

The LC50 has not been determined.

**Boron potassiiium oxide (B4K2O7), tetrahydrate**

No adverse effects are anticipated from single exposure to dust. Dust may cause irritation to upper respiratory tract (nose and throat).

Typical for this family of materials. LC50, Rat, male and female, 4 Hour, dust/mist, > 2.03 mg/l OECD Test Guideline 403 No deaths occurred at this concentration.

**Tolyl triazole**

The LC50 has not been determined.

**Sodium hydroxide**

The LC50 has not been determined.

**Skin corrosion/irritation**

**Information for the Product:**

Based on information for component(s):

Prolonged contact is essentially nonirritating to skin.

Repeated contact may cause flaking and softening of skin.

**Information for components:**

**Propylene glycol**

Prolonged contact is essentially nonirritating to skin.  
Repeated contact may cause flaking and softening of skin.

**Sodium benzoate**

Brief contact is essentially nonirritating to skin.

**Boron potassium oxide (B4K2O7), tetrahydrate**

Brief contact is essentially nonirritating to skin.

**Tolyl triazole**

Based on product testing:  
Brief contact is essentially nonirritating to skin.

**Sodium hydroxide**

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

**Serious eye damage/eye irritation**

**Information for the Product:**

Based on information for component(s):  
May cause slight eye irritation.  
Corneal injury is unlikely.  
Mist may cause eye irritation.

**Information for components:**

**Propylene glycol**

May cause slight temporary eye irritation.  
Corneal injury is unlikely.  
Mist may cause eye irritation.

**Sodium benzoate**

May cause severe eye irritation.  
Corneal injury is unlikely.

**Boron potassium oxide (B4K2O7), tetrahydrate**

May cause slight eye irritation.  
Corneal injury is unlikely.

**Tolyl triazole**

Based on product testing:  
May cause slight eye irritation.

**Sodium hydroxide**

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

**Sensitization**

**Information for the Product:**

Based on information for component(s):

For skin sensitization:

Skin contact may cause an allergic skin reaction in a small proportion of individuals.

For respiratory sensitization:

No relevant data found.

**Information for components:**

**Propylene glycol**

Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:

No relevant data found.

**Sodium benzoate**

Skin contact may cause an allergic skin reaction in a small proportion of individuals.

For respiratory sensitization:

No relevant data found.

**Boron potassium oxide (B4K2O7), tetrahydrate**

For this family of materials, sensitization studies done in guinea pigs have been negative.

For respiratory sensitization:

No relevant data found.

**Tolyl triazole**

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

For respiratory sensitization:

No relevant data found.

**Sodium hydroxide**

Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:

No relevant data found.

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

**Information for the Product:**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Information for components:**

**Propylene glycol**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Sodium benzoate**

Available data are inadequate to determine single exposure specific target organ toxicity.

**Boron potassiium oxide (B4K2O7), tetrahydrate**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Tolyl triazole**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Sodium hydroxide**

Material is corrosive. Material is not classified as a respiratory irritant; however, upper respiratory tract irritation or corrosivity may be expected.

**Aspiration Hazard**

**Information for the Product:**

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

**Information for components:**

**Propylene glycol**

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

**Sodium benzoate**

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

**Boron potassiium oxide (B4K2O7), tetrahydrate**

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

**Tolyl triazole**

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

**Sodium hydroxide**

Aspiration into the respiratory system may occur during ingestion or vomiting. Due to corrosivity, tissue damage or lung injury may occur.

**Chronic toxicity (represents longer term exposures with repeated dose resulting in chronic/delayed effects - no immediate effects known unless otherwise noted)**

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

**Information for the Product:**

Based on information for component(s):

In humans, symptoms may include:

Respiratory effects

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

Liver.

Testes

In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

**Information for components:**

**Propylene glycol**

In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

**Sodium benzoate**

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

**Boron potassium oxide (B4K2O7), tetrahydrate**

For this family of materials:

In humans, symptoms may include:

Respiratory effects.

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

Central nervous system.

Testes.

**Tolyl triazole**

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

**Sodium hydroxide**

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

**Carcinogenicity**

**Information for the Product:**

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

**Information for components:**

**Propylene glycol**

Did not cause cancer in laboratory animals.

**Sodium benzoate**

No relevant data found.

**Boron potassium oxide (B4K2O7), tetrahydrate**

For this family of materials: Did not cause cancer in laboratory animals.

**Tolyl triazole**

No relevant data found.

**Sodium hydroxide**

No relevant data found.

**Teratogenicity**

**Information for the Product:**

Contains component(s) which caused birth defects in laboratory animals. In laboratory animals, boron compounds have caused birth defects only at doses toxic to the mother and have been toxic to the fetus at doses nontoxic to the mother.



**Information for components:**

**Propylene glycol**

Did not cause birth defects or any other fetal effects in laboratory animals.

**Sodium benzoate**

Did not cause birth defects or any other fetal effects in laboratory animals.

**Boron potassium oxide (B4K2O7), tetrahydrate**

In laboratory animals, boron compounds have caused birth defects only at doses toxic to the mother and have been toxic to the fetus at doses nontoxic to the mother.

**Tolyl triazole**

Has caused birth defects in laboratory animals.

**Sodium hydroxide**

No relevant data found.

**Reproductive toxicity**

**Information for the Product:**

For the major component(s): In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

For the minor component(s): In animal studies, boron compounds have been shown to interfere with fertility in males, and to a lesser degree in females.

**Information for components:**

**Propylene glycol**

In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

**Sodium benzoate**

No relevant data found.

**Boron potassium oxide (B4K2O7), tetrahydrate**

In animal studies, boron compounds have been shown to interfere with fertility in males, and to a lesser degree in females.

**Tolyl triazole**

No relevant data found.

**Sodium hydroxide**

No relevant data found.

**Mutagenicity**

**Information for the Product:**

Contains component(s) which were negative in some in vitro genetic toxicity studies and positive in others. Genetic toxicity studies in animals were negative for component(s) tested.

**Information for components:****Propylene glycol**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

**Sodium benzoate**

In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

**Boron potassium oxide (B4K2O7), tetrahydrate**

For this family of materials: In vitro mutagenicity studies were negative. Animal genetic toxicity studies were negative.

**Tolyl triazole**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

**Sodium hydroxide**

In vitro genetic toxicity studies were negative.

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**12. ECOLOGICAL INFORMATION**

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

**Toxicity****Propylene glycol****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, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 40,613 mg/l, OECD Test Guideline 203

**Acute toxicity to aquatic invertebrates**

LC50, Ceriodaphnia dubia (water flea), static test, 48 Hour, 18,340 mg/l, OECD Test Guideline 202

**Acute toxicity to algae/aquatic plants**

ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Growth rate inhibition, 19,000 mg/l, OECD Test Guideline 201

**Toxicity to bacteria**

NOEC, Pseudomonas putida, 18 Hour, > 20,000 mg/l

**Chronic toxicity to aquatic invertebrates**

NOEC, Ceriodaphnia dubia (water flea), semi-static test, 7 d, number of offspring, 13,020 mg/l

**Sodium benzoate****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, Pimephales promelas (fathead minnow), static test, 96 Hour, > 100 mg/l

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), static test, 96 Hour, > 100 mg/l

**Acute toxicity to algae/aquatic plants**

ErC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, > 100 mg/l

**Boron potassiiium oxide (B4K2O7), tetrahydrate****Acute toxicity to fish**

For this family of materials:

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).

For this family of materials:

LC50, dab (Limanda limanda), flow-through, 96 Hour, 523 mg/l

**Acute toxicity to aquatic invertebrates**

For this family of materials:

LC50, Daphnia magna (Water flea), static test, 48 Hour, 939 mg/l, OECD Test Guideline 202 or Equivalent

**Tolyl triazole****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, Cyprinodon variegatus (sheepshead minnow), semi-static test, 96 Hour, 55 mg/l, OECD Test Guideline 203

**Acute toxicity to aquatic invertebrates**

LC50, copepod Acartia tonsa, static test, 48 Hour, 55 mg/l

For similar material(s):

EC50, Daphnia galeata (water flea), static test, 48 Hour, 8.58 mg/l

For similar material(s):

EC50, Daphnia galeata (water flea), static test, 48 Hour, 15.8 mg/l

**Acute toxicity to algae/aquatic plants**

EC50, Skeletonema costatum (marine diatom), static test, 72 Hour, Growth rate inhibition, 53 mg/l

NOEC, Skeletonema costatum (marine diatom), static test, 72 Hour, Growth rate inhibition, 30 mg/l

For similar material(s):

EC10, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 2.86 mg/l

For similar material(s):

NOEC, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 2.5 mg/l

For similar material(s):

EC10, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 1.18 mg/l

For similar material(s):

NOEC, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 1.2 mg/l

**Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna (Water flea), semi-static test, 21 d, Reproduction, 18.4 mg/l

For similar material(s):

EC10, Daphnia galeata (water flea), 21 d, Reproduction, 0.4 mg/l

For similar material(s):

EC10, Daphnia galeata (water flea), 21 d, Reproduction, 0.97 mg/l

**Sodium hydroxide****Acute toxicity to fish**

May increase pH of aquatic systems to > pH 10 which may be toxic to aquatic organisms.

**Persistence and degradability****Propylene glycol**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation may occur under anaerobic conditions (in the absence of oxygen).

10-day Window: Pass

**Biodegradation:** 81 %

**Exposure time:** 28 d

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

10-day Window: Not applicable

**Biodegradation:** 96 %

**Exposure time:** 64 d

**Method:** OECD Test Guideline 306 or Equivalent

**Theoretical Oxygen Demand:** 1.68 mg/mg

**Chemical Oxygen Demand:** 1.53 mg/mg

**Biological oxygen demand (BOD)**

Incubation Time	BOD
5 d	69.000 %
10 d	70.000 %
20 d	86.000 %

**Photodegradation**

**Atmospheric half-life:** 10 Hour

**Method:** Estimated.

**Sodium benzoate**

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

10-day Window: Pass

**Biodegradation:** > 74 %

**Exposure time:** 28 d

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

**Boron potassium oxide (B4K2O7), tetrahydrate**

**Biodegradability:** Biodegradation is not applicable.

**Tolyl triazole**

**Biodegradability:** Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

**Biodegradation:** 4 %

**Exposure time:** 28 d

**Sodium hydroxide**

**Biodegradability:** Biodegradability is not applicable to inorganic substances.

**Bioaccumulative potential****Propylene glycol**

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

**Partition coefficient: n-octanol/water(log Pow):** -1.07 Measured

**Bioconcentration factor (BCF):** 0.09 Estimated.

**Sodium benzoate**

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

**Partition coefficient: n-octanol/water(log Pow):** -2.27 Estimated.

**Boron potassium oxide (B4K2O7), tetrahydrate**

**Bioaccumulation:** Partitioning from water to n-octanol is not applicable.

**Tolyl triazole**

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

**Partition coefficient: n-octanol/water(log Pow):** 1.71 Estimated.

**Bioconcentration factor (BCF):** 4.17 Estimated.

**Sodium hydroxide**

**Bioaccumulation:** No bioconcentration is expected because of the relatively high water solubility.

**Mobility in soil****Propylene glycol**

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

**Partition coefficient (Koc):** < 1 Estimated.

**Sodium benzoate**

No relevant data found.

**Boron potassium oxide (B4K2O7), tetrahydrate**

No relevant data found.

**Tolyl triazole**

**Partition coefficient (Koc):** 1647 Estimated.

**Sodium hydroxide**

**Partition coefficient (Koc):** 14 Estimated.

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## 13. DISPOSAL CONSIDERATIONS

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**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.

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## 14. TRANSPORT INFORMATION

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### DOT

Not regulated for transport

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

Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Not regulated for transport Consult IMO regulations before transporting ocean bulk
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### Classification for AIR transport (IATA/ICAO):

Not regulated for 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.

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## 15. REGULATORY INFORMATION

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### Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Reproductive toxicity

### Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

### Pennsylvania Worker and Community Right-To-Know Act:

The following chemicals are listed because of the additional requirements of Pennsylvania law:

#### Components

#### CASRN

Propylene glycol

57-55-6

**California Prop. 65**

WARNING: This product can expose you to chemicals including Methanol, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**United States TSCA Inventory (TSCA)**

All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

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**16. OTHER INFORMATION**

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**Hazard Rating System****NFPA**

Health	Flammability	Instability
0	1	0

**Revision**

Identification Number: 99194262 / A001 / Issue Date: 06/22/2022 / Version: 8.0

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
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
TWA	Time weighted average
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

**Full text of other abbreviations**

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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;

MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; 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

**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.

THE DOW CHEMICAL COMPANY 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.

US