Material Safety Data Sheet
The Dow Chemical Company

Product Name: BETACLEAN(TM) GC800 GLASS AND SURFACE CLEANER

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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.

1. Product and Company Identification

Product Name

BETACLEAN(TM) GC800 GLASS AND SURFACE CLEANER

COMPANY IDENTIFICATION

The Dow Chemical Company
2030 Willard H. Dow Center
Midland, MI 48674
USA

For MSDS updates and Product Information: 800-258-2436

Prepared By: Prepared for use in Canada by EH&S, Hazard Communications.
Revision 2010.02.25
Print Date: 4/15/2010

Customer Information Number: 800-258-2436

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 989-636-4400
Local Emergency Contact: 989-636-4400

2. Hazards Identification

Emergency Overview

Color: Colorless
Physical State: Gas
Odor: Odorless
Hazards of product:

WARNING! Harmful if swallowed. Aspiration hazard. Can enter lungs and cause damage. Causes eye irritation. May cause skin irritation. Harmful if absorbed through skin. May be harmful if inhaled. May cause central nervous system effects; may cause respiratory tract irritation. May cause anesthetic effects. Isolate area.

Potential Health Effects

Eye Contact: May cause eye irritation. Vapor or mist may cause eye irritation.
Skin Contact: Prolonged contact may cause skin irritation with local redness.
Skin Absorption: Repeated skin contact may result in absorption of harmful amounts. Excessive exposure may cause hemolysis, thereby impairing the blood's ability to transport oxygen.
Inhalation: Vapor concentrations are attainable which could be hazardous on single exposure. Intentional misuse by concentrating and inhaling vapors may be harmful or fatal. Excessive exposure to solvent(s) may cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. Excessive exposure may increase sensitivity to epinephrine and increase myocardial irritability (irregular heartbeats).
Ingestion: Harmful effects not anticipated from swallowing small amounts.
Aspiration hazard: Based on physical properties, not likely to be an aspiration hazard.
Effects of Repeated Exposure: Contains component(s) which have been reported to cause effects on the following organs in animals: Blood. Kidney. Liver.
Cancer Information: In long-term animal studies with ethylene glycol butyl ether, small but statistically significant increases in tumors were observed in mice but not rats. The effects are not believed to be relevant to humans. If the material is handled in accordance with proper industrial handling procedures, exposures should not pose a carcinogenic risk to man.
Birth Defects/Developmental Effects: Contains component(s) which did not cause birth defects in animals; other fetal effects occurred only at doses toxic to the mother.
Reproductive Effects: In animal studies on component(s), effects on reproduction were seen only at doses that produced significant toxicity to the parent animals.

3. Composition/information on ingredients

Component	CAS #	Amount W/W
Water	7732-18-5	> 85.0 - < 95.0 %
Butane	106-97-8	< 10.0 %
Ethylene glycol monobutyl ether	111-76-2	< 5.0 %
Propane	74-98-6	< 5.0 %

Amounts are presented as percentages by weight.

4. First-aid measures

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.
Skin Contact: Immediately flush skin with water while removing contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Destroy contaminated leather items such as shoes, belts, and watchbands.
Inhalation: Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.
Ingestion: No emergency medical treatment necessary.
Notes to Physician: Due to structural analogy and clinical data, this material may have a mechanism of intoxication similar to ethylene glycol. On that basis, treatment similar to ethylene glycol intoxication may be of benefit. In cases where several ounces (60 - 100 ml) have been ingested, consider the use of ethanol and hemodialysis in the treatment. Consult standard literature for details of treatment. If ethanol is used, a therapeutically effective blood concentration in the range of 100 - 150 mg/dl may be achieved by a rapid loading dose followed by a continuous intravenous infusion. Consult standard literature for details of treatment. 4-Methyl pyrazole (Antizol®) is an effective blocker of alcohol

dehydrogenase and should be used in the treatment of ethylene glycol (EG), di- or triethylene glycol (DEG, TEG), ethylene glycol butyl ether (EGBE), or methanol intoxication if available. Fomepizole protocol (Brent, J. et al., New England Journal of Medicine, Feb. 8, 2001, 344:6, p. 424-9): loading dose 15 mg/kg intravenously, follow by bolus dose of 10 mg/kg every 12 hours; after 48 hours, increase bolus dose to 15 mg/kg every 12 hours. Continue fomepizole until serum methanol, EG, DEG, TEG or EGBE are undetectable. The signs and symptoms of poisoning include anion gap metabolic acidosis, CNS depression, renal tubular injury, and possible late stage cranial nerve involvement. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. Maintain adequate ventilation and oxygenation of the patient. In severe poisoning, respiratory support with mechanical ventilation and positive end expiratory pressure may be required. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Exposure may increase "myocardial irritability". Do not administer sympathomimetic drugs such as epinephrine unless absolutely necessary. If hemolysis is suspected, monitor hemoglobin, hematocrit, plasma free hemoglobin, and urinalysis. Whole blood or packed RBC transfusion may be required in severe cases. Alkalinization of urine with bicarbonate may prevent renal damage. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.
Emergency Personnel Protection: 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.

5. Fire Fighting Measures

Extinguishing Media: This material does not burn. If exposed to fire from another source, use suitable extinguishing agent for that fire.
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. This material does not burn. Fight fire for other material that is burning.
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.
Unusual Fire and Explosion Hazards: Container may vent and/or rupture due to fire. Expelled material will not burn.
Hazardous Combustion Products: Not applicable

See Section 9 for related Physical Properties

6. Accidental Release Measures

Steps to be Taken if Material is Released or Spilled: Contain spilled material if possible. Absorb with materials such as: Cat litter. Sand. Sawdust.
Ignition Sources Removal: Not applicable.
Dust Control: Not applicable.
Personal Precautions: Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Inhalation, Skin, Mucous and Eye Contact Prevention: 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.

7. Handling and Storage

Handling

General Handling: Use with adequate ventilation. Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Do not breathe vapor. Keep container closed.

Storage

Store in tightly closed, properly vented containers. Store in a dry place. Store indoors.

Storage temperature: 10 - 35 °C

Storage temperature:
5 - 35 °C

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
Propane	OEL (QUE)	TWA	1,800 mg/m3 1,000 ppm
	CAD AB OEL	TWA	1,800 mg/m3 1,000 ppm
	CAD AB OEL	STEL	2,700 mg/m3 1,500 ppm
	CAD BC OEL	TWA	1,000 ppm
	CAD ON OEL	TWAEV	1,000 ppm
	ACGIH	TWA	1,000 ppm
Butane	CAD AB OEL	TWA	1,900 mg/m3 800 ppm
	ACGIH	TWA	1,000 ppm
	CAD BC OEL	TWA	600 ppm
	CAD BC OEL	STEL	750 ppm
	CAD ON OEL	TWAEV	1,000 ppm
	CAD ON OEL	TWAEV	1,900 mg/m3 800 ppm
	OEL (QUE)	TWA	1,900 mg/m3 800 ppm
Ethylene glycol monobutyl ether	CAD ON OEL	TWAEV	20 ppm SKIN
	ACGIH	TWA	20 ppm
	CAD AB OEL	TWA	97 mg/m3 20 ppm SKIN
	CAD BC OEL	TWA	20 ppm
	OEL (QUE)	TWA	97 mg/m3 20 ppm
	OEL (QUE)	TWA	97 mg/m3 20 ppm

Consult local authorities for recommended exposure limits.
A "skin" notation following the inhalation exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact.
It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

Personal Protection

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. If exposure causes eye discomfort, use a full-face respirator.
Skin 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.

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Neoprene. Natural rubber ("latex"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Polyvinyl chloride ("PVC" or "vinyl"). Avoid gloves made of: Polyvinyl alcohol ("PVA"). 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.

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

Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

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

9. Physical and Chemical Properties

Physical State	Gas
Color	Colorless
Odor	Odorless
Odor Threshold	No test data available
Flash Point - Closed Cup	> 93.3 °C *Pensky-Martens Closed Cup ASTM D 93*
Flammability (solid, gas)	No
Flammable Limits In Air	**Lower**: No test data available **Upper**: No test data available
Autoignition Temperature	No test data available
Vapor Pressure	No test data available
Boiling Point (760 mmHg)	No test data available.
Vapor Density (air = 1)	No test data available
Specific Gravity (H2O = 1)	0.95 *ASTM D1475*
Freezing Point	No test data available
Melting Point	No test data available
Solubility in water (by weight)	No test data available
pH	10 - 11 *Vendor*
Molecular Weight	No test data available
Decomposition Temperature	No test data available
Partition coefficient, n-octanol/water (log Pow)	No test data available
Evaporation Rate (Butyl Acetate = 1)	No test data available
Kinematic Viscosity	No test data available
Volatile Organic Compounds	0.78 lb/gal *EPA Method No. 24* (typical value)

10. Stability and Reactivity

Stability/Instability

Stable.

Conditions to Avoid: Elevated temperatures can cause container to vent and/or rupture.

Incompatible Materials: Avoid contact with oxidizing materials.

Hazardous Polymerization
Will not occur.

Thermal Decomposition
Does not decompose.

11. Toxicological Information

Acute Toxicity
Ingestion
Single dose oral LD50 has not been determined.
Dermal
The dermal LD50 has not been determined.
Inhalation
The LC50 has not been determined.

Serious eye damage/eye irritation
May cause eye irritation. Vapor or mist may cause eye irritation.

Skin corrosion/irritation
Prolonged contact may cause skin irritation with local redness.

Sensitization
Skin
No relevant information found.
Respiratory
No relevant information found.

Repeated Dose Toxicity
Contains component(s) which have been reported to cause effects on the following organs in animals: Blood. Kidney. Liver.

Chronic Toxicity and Carcinogenicity
In long-term animal studies with ethylene glycol butyl ether, small but statistically significant increases in tumors were observed in mice but not rats. The effects are not believed to be relevant to humans. If the material is handled in accordance with proper industrial handling procedures, exposures should not pose a carcinogenic risk to man.

Carcinogenicity Classifications:

Component	List	Classification
Ethylene glycol monobutyl ether	ACGIH	Confirmed animal carcinogen with unknown relevance to humans.; Group A3

Developmental Toxicity
Contains component(s) which did not cause birth defects in animals; other fetal effects occurred only at doses toxic to the mother.

Reproductive Toxicity
In animal studies on component(s), effects on reproduction were seen only at doses that produced significant toxicity to the parent animals.

Genetic Toxicology
Contains a component(s) which were negative in in vitro genetic toxicity studies.

Component Toxicology - Ethylene glycol monobutyl ether

Skin Absorption	LD50, Guinea pig > 2,000 mg/kg

Component Toxicology - Butane

Inhalation	LC50, 4 h, Vapor, Rat 280,000 ppm

Component Toxicology - Ethylene glycol monobutyl ether

Inhalation	LC50, 4 h, Vapor, Rat 2.21 mg/l

Component Toxicology - Propane

Inhalation	LC50, 15 min, Vapor, Rat, male and female > 800,000 ppm

Component Toxicology - Ethylene glycol monobutyl ether

Ingestion	LD50, Rat, male 1,746 mg/kg

Ingestion	LD50, Guinea pig 1,400 mg/kg

12. Ecological Information

ENVIRONMENTAL FATE

Data for Component: **Butane**

Movement & Partitioning

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Potential for mobility in soil is very high (Koc between 0 and 50).
Henry's Law Constant (H): 9.50E-01 atm*m3/mole; 25 °C Measured
Partition coefficient, n-octanol/water (log Pow): 2.89 Measured
Partition coefficient, soil organic carbon/water (Koc): 44 - 900 Estimated.

Persistence and Degradability

Biodegradation may occur under aerobic conditions (in the presence of oxygen).
Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
2.63E-12 cm3/s	49 h	Estimated.

Theoretical Oxygen Demand: 3.58 mg/mg

Data for Component: **Ethylene glycol monobutyl ether**

Movement & Partitioning

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Potential for mobility in soil is high (Koc between 50 and 150).
Henry's Law Constant (H): 1.60E-06 atm*m3/mole Measured
Partition coefficient, n-octanol/water (log Pow): 0.83 Measured
Partition coefficient, soil organic carbon/water (Koc): 67 Estimated.

Persistence and Degradability

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).
OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
95 %	28 d	OECD 301E Test
100 %	28 d	OECD 302B Test

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
5.2 %	57 %	72.2 %	

Chemical Oxygen Demand: 2.21 mg/g
Theoretical Oxygen Demand: 2.30 mg/mg

Data for Component: **Propane**

Movement & Partitioning

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Potential for mobility in soil is very high (Koc between 0 and 50).
Henry's Law Constant (H): 7.07E-01 atm*m3/mole; 25 °C Measured
Partition coefficient, n-octanol/water (log Pow): 2.36 Measured
Partition coefficient, soil organic carbon/water (Koc): 24 - 460 Estimated.
Distribution in Environment: Mackay Level 1 Fugacity Model:

Air	Water.	Biota	Soil	Sediment
100 %	0 %	0 %	0 %	0 %

Persistence and Degradability

No relevant information found.

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
1.27E-12 cm3/s	8.4 d	Estimated.

Theoretical Oxygen Demand: 3.64 mg/mg

ECOTOXICITY

Data for Component: **Butane**

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).

Data for Component: **Ethylene glycol monobutyl ether**

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).

Fish Acute & Prolonged Toxicity
LC50, rainbow trout (Oncorhynchus mykiss), 96 h: 1,700 mg/l
LC50, bluegill (Lepomis macrochirus), 96 h: 820 - 1,490 mg/l
Aquatic Invertebrate Acute Toxicity
LC50, water flea Daphnia magna: 835 mg/l
EC50, water flea Daphnia magna, immobilization: 1,600 - 2,500 mg/l
LC50, grass shrimp (Palaemonetes pugio), static, 96 h: 5.4 mg/l
LC50, common shrimp Crangon crangon, static, 96 h: 550 - 950 mg/l
Aquatic Plant Toxicity
EC50, green alga Pseudokirchneriella subcapitata (formerly known as Selenastrum capricornutum), biomass growth inhibition, 72 h: 911 mg/l
Toxicity to Micro-organisms
IC50; bacteria: > 1,000 mg/l

Data for Component: **Propane**

No relevant information found.

13. Disposal Considerations

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: Incinerator or other thermal destruction device. As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Group at 1-800-258-2436 or 1-989-832-1556 (U.S.), or 1-800-331-6451 (Canada) for further details.

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

14. Transport Information

TDG Small container
NOT REGULATED

TDG Large container
NOT REGULATED

IMDG
Proper Shipping Name: AEROSOLS
Hazard Class: 2.2 **ID Number:** UN1950
EMS Number: F-D,S-U

LIMITED QUANTITY

ICAO/IATA
Proper Shipping Name: AEROSOLS
Hazard Class: 2.2 **ID Number:** UN1950**Cargo Packing Instruction:** 203
Passenger Packing Instruction: 203

LIMITED QUANTITY

15. Regulatory Information

US. Toxic Substances Control Act
All components of this product are either on the TSCA Inventory, are exempt from TSCA Inventory Requirements under 40 CFR 720.30, or comply with the PMN Polymer Exemption 40 CFR 723.250.
European Inventory of Existing Commercial Chemical Substances (EINECS)
The components of this product are on the EINECS inventory or are exempt from inventory requirements.
CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.
Australia. Industrial Chemical (Notification and Assessment) Act
The principal components and additives of this product are included in the Australian Inventory of Chemical Substances (AICS) or comply with the requirements of the Industrial Chemicals (Notification and Assessment) Act 1989.

Hazardous Products Act Information: CPR Compliance

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

Hazardous Products Act Information: WHMIS Classification

A	Compressed Gas
D2B	Eye or Skin Irritant

Hazardous Products Act Information: Hazardous Ingredients
This product contains the following ingredients which are Controlled Products and/or are on the Ingredient Disclosure List (Canadian HPA Section 13 and 14).

Component	**CAS #**	**Amount W/W**
Ethylene glycol monobutyl ether	111-76-2	< 5.0 %
Butane	106-97-8	> 5.0 - < 10.0 %

16. Other Information

Hazard Rating System

NFPA	Health	Fire	Reactivity
	1	3	0

Recommended Uses and Restrictions

A glass cleaner -- For use in automotive applications.

Revision

Identification Number: 51140 / 0000 / Issue Date 2010.02.25 / Version: 3.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
VOL/VOL	Volume/Volume

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.