I. Chemical Product and Company Identification

Product Name:	AQUCAR DB 20
Identification #:	35-440-0170
Product Use/Class:	Biocide
Supplier:	Nabors Completion and Production Services
	515 W. Greens Road, Suite 1100, Houston, TX 77067
Supplier Tracking Code:	2150
Emergency Contact:	CHEMTREC 1 (800) 424-9300
Prepared By:	lz
Date Prepared:	04/14/2014

II. Composition/Information on Ingredients

Chemical Name:	Polyethylene glycol
CAS Number:	25322-68-3
Percent by Mass Less Than:	>= 46.5 - <= 54.5 %
Exposure Limits	
Threshold Limit Value - Time Weighted Average:	10 mg/m3
Threshold Limit Value - Short Term Exposure Limit:	N/A
Permissible Exposure Limit - Time Weighted Average:	N/A
Permissible Exposure Limit - Ceiling:	N/A
Company Threshold Limit - Time Weighted Average:	N/A
Skin:	N/A
Chemical Name:	2,2-Dibromo-3-nitrilopropionamide
CAS Number:	10222-01-2
Percent by Mass Less Than:	20.0 %
Exposure Limits	
Threshold Limit Value - Time Weighted Average:	N/A
Threshold Limit Value - Short Term Exposure Limit:	N/A
Permissible Exposure Limit - Time Weighted Average:	N/A
Permissible Exposure Limit - Ceiling:	2 mg/m3
Company Threshold Limit - Time Weighted Average:	N/A
Skin:	N/A
Chemical Name:	Dibromoacetonitrile
CAS Number:	3252-43-5
Percent by Mass Less Than:	<= 3.0 %
Exposure Limits	
Threshold Limit Value - Time Weighted Average:	N/A
Threshold Limit Value - Short Term Exposure Limit:	N/A
Permissible Exposure Limit - Time Weighted Average:	N/A
Permissible Exposure Limit - Ceiling:	N/A
Company Threshold Limit - Time Weighted Average:	N/A
Skin:	0.1 ppm
Chemical Name:	Sodium bromide
CAS Number:	7647-15-6
Percent by Mass Less Than:	<= 4.0 %
Exposure Limits	
Threshold Limit Value - Time Weighted Average:	6 mg/m3
Threshold Limit Value - Short Term Exposure Limit:	N/A
Permissible Exposure Limit - Time Weighted Average:	N/A
Permissible Exposure Limit - Ceiling:	N/A
Company Threshold Limit - Time Weighted Average:	N/A
Skin:	N/A

III. Hazardous Identification

Emergency Overview:	Color: Colorless to brown Physical State: Liquid. Odor: Odorless to mild Hazards of product:DANGER! Keep out of reach of children. Causes severe eye burns. Causes skin burns. May cause allergic skin reaction. May be harmful if swallowed. Evacuate area. Keep upwind of spill. Toxic fumes may be released in fire situations. Avoid temperatures above 70°C (158°F).
Eye Contact:	May cause pain disproportionate to the level of irritation to eye tissues. May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.
Skin Contact:	Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage. Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation:	Mist may cause irritation of upper respiratory tract (nose and throat).
Ingestion:	Low toxicity if swallowed. Swallowing may result in irritation or burns of the mouth, throat, and gastrointestinal tract. May cause dizziness and drowsiness.
Chronic Harards:	Effects of Repeated Exposure: Excessive exposure may increase the blood and tissue levels of bromine. Observations in animals include kidney effects following repeated ingestion of active ingredient, but no evidence of systemic toxicity following repeated dermal exposure at maximum attainable doses. Birth Defects/Developmental Effects: For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

Primary Route(s) of Entry:	■ Skin Contact	■ Eye Contact	■ Ingestion	
	■ Skin Absorbtion	■ Inhalation		

IV. First Aid Measures

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.
Skin Contact:	Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing. Seek medical attention if symptoms occur or irritation persists. Wash clothing before reuse. Suitable emergency safety shower facility should be immediately available.
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.
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.

V. Fire Fighting Measures

Flash Point:	>= 182 °C (>= 360 °F) Cleveland Open Cup
Auto Ignition Temperature:	No test data available
Lower Explosive Temp.:	No test data available
Upper Explosive Temp.:	No test data available
Extinguishing Media:	Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.Do not use direct water stream. May spread fire.
Unusual Fire and Explosive Harards:	This material will not burn until the water has evaporated. Residue can burn. Container may rupture from gas generation in a fire situation.
Special Fire Fighting Procedures:	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. If product becomes contaminated with water, monitor product for heat generation and/or decomposition. 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. Move container from fire area if this is possible without hazard. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the “Accidental Release Measures” and the “Ecological Information” sections of this (M)SDS. 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.

VI. Accidental Release Measures

Steps to be Taken in Case Material is Released or Spilled:	Personal precautions, protective equipment and emergency procedures: Evacuate area. Keep upwind of spill. Refer to Section 7, Handling, for additional precautionary measures. Only trained and properly protected personnel must be involved in clean-up operations. Ventilate area of leak or spill. 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. Attempt to neutralize by adding materials such as Sodium bisulphite. Sodium metabisulfite. Neutralize with approximately 17.2 grams sodium bisulfite ($NaHSO_3$) or 15.7 grams sodium meta bisulphite ($Na_2S_2O_5$) for every 100 grams biocidal product. Absorb with materials such as: Dirt. Sand. Vermiculite. Zorb-all®. Hazorb®. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

VII. Handling and Storage

Handling:	Keep out of reach of children. Do not get in eyes, on skin, on clothing. Avoid breathing mist. Avoid prolonged or repeated contact with skin. Do not swallow. 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.
Storage:	Store in original container. Keep container tightly closed. Do not store in: Aluminum. Brass. Copper. Copper alloys. Mild steel. Stainless steel. Shelf life: Use within 12 Months Storage temperature: <= 35 °C

VIII. Exposure Controls/Personal Protection

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.
Respiratory Protection:	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.
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. Safety shower should be located in immediate work area. Use chemical protective clothing resistant to this material, when there is any possibility of skin contact. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly. Items which cannot be decontaminated, such as shoes, belts and watchbands, should be removed and disposed of properly. Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Examples of acceptable glove barrier materials include: Nitrile/butadiene rubber ("nitrile" or "NBR"). 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.
Eye Protection:	Use chemical goggles.
Other Protective Equipment:	NA
Hygenic Practices:	Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face before smoking or eating.

IX. Physical and Chemical Properties

Boiling Point:	> 70 °C (> 158 °F) Literature decomposition. @ 760 mm Hg	Vapor Density:	0.8 Calculated
Odor:	Odorless to mild	Odor Threshold:	No test data available
Appearance:	Colorless to brown liquid.	Evaporation Rate:	No test data available
Solubility in H20:	7.5 % @ 20 °C Literature	Specific Gravity:	1.20 - 1.30 Literature
Freeze Point:	< -50 °C (< -58 °F) Literature	pH at 50.0%:	1.5 - 5.0 Literature
Vapor Pressure:	18.9 mmHg @ 25 °C Estimated	Viscosity:	N/A
Physical State:	Liquid		
Coefficient of Water Oil Distribution:	Not Determined		

X. Stability and Reactivity

Conditions to Avoid:	Avoid temperatures above 70°C (158°F) Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.
Incompatability:	Avoid contact with: Oxidizers. Strong bases. Avoid contact with metals such as: Aluminum.
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: Carbon dioxide. Bromine. Cyanogen bromide. Dibromoacetonitrile.
Hazardous Polymization:	Will not occur.
Stability:	Stable under recommended storage conditions. No dangerous reaction known under conditions of normal use.

XI. Toxicological Properties

Toxicological Properties:

Eye damage/eye irritation
May cause pain disproportionate to the level of irritation to eye tissues. May cause severe irritation
with corneal injury which may result in permanent impairment of vision, even blindness. Chemical
burns may occur.
Skin corrosion/irritation
Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue
damage.
Sensitization
Skin
For similar material(s): Has caused allergic skin reactions when tested in guinea pigs. Did not cause
allergic skin reactions when tested in humans.
Respiratory
No relevant information found.
Repeated Dose Toxicity
Excessive exposure may increase the blood and tissue levels of bromine. Observations in animals
include kidney effects following repeated ingestion of active ingredient, but no evidence of systemic
toxicity following repeated dermal exposure at maximum attainable doses.
Chronic Toxicity and Carcinogenicity
Active ingredient did not cause cancer in laboratory animals.
Carcinogenicity Classifications:
Component List Classification
Dibromoacetonitrile IARC Possibly carcinogenic to humans.; 2B
Developmental Toxicity
For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the
mother. For the active ingredient(s): Did not cause birth defects in laboratory animals.
Reproductive Toxicity
No relevant data found.
Genetic Toxicology
For the active ingredient(s): In vitro genetic toxicity studies were negative. For the major component(s): Animal genetic toxicity studies were negative.

Oral:

Ingestion
LD50, rat 510 mg/kg

Dermal:

Dermal
LD50, rabbit > 2,000 mg/kg

Inhalation:

Inhalation
LC50, 4 h, Aerosol, rat, female 1.25 mg/l
LC50, 4 h, Aerosol, rat, male 1.40 mg/l

XII. Ecological Information

Ecological Properties:

No product information is available.

Ecotoxicity:

Toxicity
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, Oncorhynchus mykiss (rainbow trout), 96 h: 3.6 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, Daphnia magna (Water flea), static test, 48 h, immobilization: 2.5 mg/l Product Name: AQUCAR(TM) DB 20 Water Treatment Microbiocide Issue Date: 02/14/2014

Aquatic Plant Toxicity
ErC50, Pseudokirchneriella subcapitata (green algae), Growth rate inhibition, 72 h: 1.5 mg/l

Persistence and Degradability

Data for Component: Polyethylene glycol
Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
OECD Biodegradation Tests:
Biodegradation Exposure Time Method 10 Day Window
85 % 28 d OECD 301F Test pass
Theoretical Oxygen Demand: 1.67 mg/mg

Data for Component: 2,2-Dibromo-3-nitrilopropionamide
Abiotic degradation: The material is rapidly degradable by abiotic means.
Stability in Water (1/2-life):
65 h; 25 °C; pH 7
OECD Biodegradation Tests:
Biodegradation Exposure Time Method 10 Day Window
35 - 78 % 28 d OECD 301B Test fail
83.3 % 28 d OECD 303A Test Not applicable
17 - 22 % 28 d OECD 306 Test Not applicable
Indirect Photodegradation with OH Radicals
Rate Constant Atmospheric Half-life Method
2.00E-12 cm3/s 5.3 d Estimated.
Chemical Oxygen Demand: 0.26 mg/mg
Theoretical Oxygen Demand: 0.59 mg/mg

Data for Component: Sodium bromide
Biodegradation is not applicable.

Chemical Fate Information:	Bioaccumulative potential

Data for Component: Polyethylene glycol
Bioaccumulation: No bioconcentration is expected because of the relatively high water solubility.
Data for Component: 2,2-Dibromo-3-nitrilopropionamide
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 0.79 Measured
Bioconcentration Factor (BCF): 13; Fish; Measured
Data for Component: Sodium bromide
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Bioconcentration Factor (BCF): < 40; Fish; Measured

Mobility in soil

Data for Component: Polyethylene glycol
Mobility in soil: No data available.
Data for Component: 2,2-Dibromo-3-nitrilopropionamide
Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 15 Estimated.
Henry's Law Constant (H): 4.67E-10 atm*m3/mole; 25 °C Estimated.
Data for Component: Sodium bromide
Mobility in soil: No relevant data found.

XIII. Disposal Consideration

Disposal Method:	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.
RCRA Status:	Discarded product, as sold, would be considered a RCRA Hazardous Waste based on the characteristic of corrosivity. The EPA Hazardous Waste number is D002.

XIV. Transportation Information

DOT Proper Shipping Name:	Corrosive liquid, acidic, organic, n.o.s.
DOT Technical Name:	2,2-Dibromo-3-nitrilopropionamide, Hazard Class: 8 I
DOT Hazard Class:	8
DOT Hazard Subclass:	
DOT UN/NA Number:	UN3265
Packing Group:	III
Resp. Guide Page:	

XV. Regulatory Information

OSHA:	This product is a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
TSCA Status:	This product contains chemical substance(s) exempt from TSCA Inventory requirements. It is sold solely for use as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.
CERCLA SARA:	Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312 : Immediate (Acute) Health Hazard. Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313 : To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.
SARA Section 313 Required Reporting:	

XVI. Other Information

Other Information:	NA = Not applicable ND = Not Determined NI = No Information NE = Not Established
MSDS Updated:	5/14/2014
MSDS Printed:	1/9/2015