1. IDENTIFICATION

Product Name
Buffer BW

Recommended use of the chemical and restrictions on use
Identified Uses
For Research and Development Use Only

Company Identification
Covaris, Inc.

Customer Information Number
14 Gill Street, Unit H
Woburn, MA 01801
(781) 932-3959

Emergency Telephone Number
(800) 424-9300 (for emergencies only)

Chemtrec Number
(800) 424-9300

Issue Date
September 25, 2013

Supersedes Date
Safety Data Sheet prepared in accordance with OSHA’s Hazard Communication Standard (29 CFR 1910.1200) and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

2. HAZARD IDENTIFICATION

Hazard Classification
Flammable liquids - Category 3
Acute toxicity (oral) - Category 4
Acute toxicity (dermal) - Category 5
Serious eye damage/eye irritation - Category 2A
Skin corrosion/irritation - Category 2
Specific Target Organ Toxicity Single Exposure - Category 3
Target Organ(s): Central Nervous System

Label Elements
Hazard Symbols

Signal Word: Warning

Hazard Statements
Flammable liquid and vapour.
Causes serious eye irritation.
Causes skin irritation.
Harmful if swallowed.
May be harmful in contact with skin.
May cause drowsiness and dizziness.
May cause respiratory irritation.
2. HAZARD IDENTIFICATION

Precautionary Statements

Prevention
Do not eat, drink or smoke when using this product.
Use only in well-ventilated areas.
Wash hands thoroughly after handling.
Avoid breathing mists, vapor or dust.
Keep away from heat, sparks and open flame. - No smoking.
Use explosion-proof equipment.
Wear protective gloves and eye/face protection.
Take precautionary measures against static discharge.

Response
If skin irritation occurs, get medical advice/attention.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists, get medical advice/attention.
If inhaled: Remove to fresh air and keep comfortable for breathing.
If on skin (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
Take off contaminated clothing and wash before re-use.
Rinse mouth.
Call a poison center or doctor/physician if you feel unwell.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Storage
Store locked up.
Store container tightly closed in well-ventilated place.

Disposal
Dispose of contents/container in accordance with local regulation.

Other Hazards
None

Specific Concentration Limits
The values listed below represent the percentages of ingredients of unknown toxicity.

- Acute oral toxicity: 0 - 10%
- Acute dermal toxicity: 0 - 10%
- Acute inhalation toxicity: 0 - 10%
- Acute aquatic toxicity: 40 – 50%

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component | CAS Number | Concentration
--- | --- | ---
Isopropanol | 67-63-0 | 40 – 50%
Guanidine Hydrochloride | 50-01-1 | 40 – 50%
4. FIRST-AID MEASURES

Description of necessary first-aid measures

Eyes
Immediately flood the eye with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.

Skin
Wash affected area with plenty of water. Seek medical attention if symptoms persist.

Ingestion
Do not induce vomiting. Have victim drink 1-3 glasses of water to dilute stomach contents. Never administer anything by mouth if a victim is losing consciousness, is unconscious or is convulsing. Obtain medical attention immediately.

Inhalation
Remove from exposure. If there is difficulty in breathing, give oxygen. Obtain medical attention if symptoms persist.

Most important symptoms/effects, acute and delayed
Aside from the information found under description of necessary first aid measures (above) and Indication of immediate medical attention and special treatment needed, no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

Notes to Physicians
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable (and unsuitable) Extinguishing Media
Use foam, dry chemical or carbon dioxide. Be aware of the possibility of re-ignition. Keep containers and surroundings cool with water spray.

Specific hazards arising from the chemical
Vapors can travel a considerable distance to a source of ignition and flashback.

Special Protective Actions for Fire-Fighters
Wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Wear appropriate protective clothing.

Environmental Precautions
Prevent the material from entering drains or watercourses. Notify authorities if spill has entered watercourse or sewer or has contaminated soil or vegetation.

Methods and materials for containment and cleaning up
Contain and absorb using earth, sand or other inert material. Transfer into suitable containers for recovery or disposal. Eliminate all sources of ignition.
7. HANDLING AND STORAGE

Precautions for safe handling
Use in well ventilated area. Use local exhaust ventilation. Avoid inhaling vapor. Avoid contact with eyes, skin and clothing. Keep container tightly closed when not in use.

Conditions for safe storage
Store at room temperature. Store away from sources of heat or ignition. Storage area should be: cool - dry - well ventilated - out of direct sunlight - away from sources of ignition (heat, sparks, flames, pilot lights) - away from incompatible materials (see Section 10)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.
Isopropanol
ACGIH: 200ppm 8h TWA, 400ppm 15-min STEL
OSHA: PEL 400ppm (980mg/m³) 8h TWA

Appropriate engineering controls
No specific measures necessary.

Individual protection measures
Respiratory Protection
Respiratory protection not normally required.
Skin Protection
Chemical resistant gloves
Eye/Face Protection
Chemical goggles or safety glasses with side shields
Body Protection
Normal work wear.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Physical State: Liquid
Color: Colorless
Odor: Alcoholic
Odor Threshold: No data available
pH: 7 - 8
Specific Gravity: 1.06
Boiling Range/Point (°C/F): No data available
Melting Point (°C/F): No data available
Flash Point (PMCC) (°C/F): 25°C/77°F
Vapor Pressure: No data available
Evaporation Rate (BuAc=1): No data available
Solubility in Water: No data available
Vapor Density (Air = 1): No data available
VOC (g/l): No data available
Partition coefficient (n-octanol/water): No data available
Viscosity: No data available
9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto-ignition Temperature</td>
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<tr>
<td>Decomposition Temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper explosive limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosive limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity
No known reactivity.

Chemical Stability
Stable under normal conditions.

Possibility of hazardous reactions
Hazardous polymerization will not occur.

Conditions to Avoid
Heat – high temperatures

Incompatible Materials
Strong oxidizing agents

Hazardous Decomposition Products
Oxides of carbon - nitrogen oxides - hydrogen chloride gas

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
Isopropanol:
Oral LD50 (rat) 5045 mg/kg
Dermal LD50 (rabbit) 12,800 mg/kg
Inhalation LC50 (rat) 72.6 mg/l

Guanidine hydrochloride
Oral LD50 (rat, female) 773.6 mg/kg
Dermal LD50 (rabbit) >2000 mg/kg
Inhalation LC50: (rat- female) 3.181 mg/l, (rat- male) 7.655 mg/l, (rat- male/female) 5.319 mg/l
(ECHA Note: This substance has to be classified according to CLP, EU GHS (Regulation (EC) No. 1272/2008) for Acute toxicity (Inhalation) as Category 4 based on the female LC50, route of administration: aerosol - air)

Specific Target Organ Toxicity (STOT) – single exposure
Isopropanol: Causes adverse central nervous system effects.

Specific Target Organ Toxicity (STOT) – repeat exposure
No data available to indicate product or components will cause target organ effects after repeated exposure.

Serious Eye damage/Irritation
Isopropanol: Causes eye irritation.
Guanidine hydrochloride: Irritating in eye irritation study (rabbits)
11. TOXICOLOGICAL INFORMATION

Skin Corrosion/Irritation
Guanidine hydrochloride: Irritating in skin irritation study (rabbits)

Respiratory or Skin Sensitization
No data available to indicate product or components may cause skin or respiratory sensitization.

Carcinogenicity
No data available to indicate product may present a carcinogenic hazard.

Germ Cell Mutagenicity
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Reproductive Toxicity
No data available to indicate either product or components present at greater than 0.1% may cause reproductive toxicity or birth defects.

Aspiration Hazard
Not an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Isopropanol
LC50 (fathead minnow) 9640 mg/l 96 hr
EC50 (daphnia magna) 13,299 mg/l 48 hr
EC50 (algae) 1000 mg/l 96 hr

Mobility in soil
No relevant studies identified.

Persistence/Degradability
No relevant studies identified.

Bioaccumulative Potential
No relevant studies identified.

Other adverse effects
No relevant studies identified.

13. DISPOSAL CONSIDERATIONS

Disposal Methods
Dispose of in accordance with all applicable local and national regulations.

14. TRANSPORT INFORMATION

IATA
Proper Shipping Name Flammable Liquid n.o.s. (Isopropanol)
Hazard Class 3
Subsidiary class None
Packing Group III
UN-No UN1993
15. REGULATORY INFORMATION

United States TSCA Inventory
Components of this product have not been verified for the inventory listing requirements of the US Toxic Substance Control Act (TSCA) Chemical Substance Inventory.

Canada DSL Inventory
Components of this product have not been verified for inclusion on the Domestic Substance List (DSL).

WHMIS Classification
B2.D2B
This product was classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations and the MSDS contains all the information required by these regulations.

SARA Title III Sect. 311/312 Categorization
Immediate (Acute), Fire Hazard

16. OTHER INFORMATION

NFPA Ratings
NFPA Code for Flammability - 3
NFPA Code for Health - 2
NFPA Code for Reactivity - 0
NFPA Code for Special Hazards – None

HMIS Ratings
HMIS Code for Flammability - 3
HMIS Code for Health - 2
HMIS Code for Physical Hazard - 0
HMIS Code for Personal Protection - See Section 8
*Chronic

Legend
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service
ECHA: European Chemicals Agency
IARC: International Agency for Research on Cancer
N/A: Denotes no applicable information found or available
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PEL: Permissible Exposure Limit
SDS: Safety Data Sheet
STEL: Short Term Exposure Limit
TLV: Threshold Limit Value

Information Source and References
This SDS is prepared by Hazard Communication Specialists based on information provided by internal company references.

Prepared By: EnviroNet LLC.

PN: 010204 Rev B
16. OTHER INFORMATION

The information and recommendations presented in this SDS are based on sources believed to be accurate. Covaris assumes no liability for the accuracy or completeness of this information. It is the user's responsibility to determine the suitability of the material for their particular purposes. In particular, we make NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, with respect to such information, and we assume no liability resulting from its use. Users should ensure that any use or disposal of the material is in accordance with applicable Federal, State, and local laws and regulations.