1 Identification of the substance/mixture and of the company

· Product identifier
  · Trade name: gL-Rinse
· Product number: A234080
· Application of the substance / the mixture
  To be used by technically qualified personnel for research and development use only.
· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier:
    MicroChem Corp.
    200 Flanders Road
    Westborough, MA 01581 USA
· Information department:
  · Product Safety
  · Email: productsafety@microchem.com
· Emergency telephone number:
  · MicroChem Corp: 617-965-5511
  · Chemtrec USA Emergency: 800-424-9300
  · Chemtrec International Emergency: 703-527-3887

2 Hazard(s) identification

· Classification of the substance or mixture
  · GHS02 Flame
    Flam. Liq. 2 H225 Highly flammable liquid and vapor.
  · GHS08 Health hazard
    Carc. 2 H351 Suspected of causing cancer.
  · GHS07
    Eye Irrit. 2A H319 Causes serious eye irritation.
    STOT SE 3 H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.

· Label elements
  · GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
  · Hazard pictograms
    GHS02  GHS07  GHS08

· Signal word Danger
· Hazard-determining components of labeling:
  · Methyl isobutyl ketone
· Hazard statements
  H225 Highly flammable liquid and vapor.
Trade name: gL-Rinse

H319 Causes serious eye irritation.
H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.

Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P310+P311 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P337+P313 If eye irritation persists: Get medical advice/attention.
P370+P378 In case of fire: Use for extinction: Alcohol resistant foam.
P370+P378 In case of fire: Use for extinction: Fire-extinguishing powder.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:
NFPA ratings (scale 0 - 4)

\[
\begin{array}{ccc}
\text{Health} & 2 \\
\text{Fire} & 3 \\
\text{Reactivity} & 0 \\
\end{array}
\]

HMIS-ratings (scale 0 - 4)

<table>
<thead>
<tr>
<th>HEALTH</th>
<th>FIRE</th>
<th>REACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Mixtures
Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous components:

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Hazard Classifications</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl alcohol</td>
<td>Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336</td>
<td>60-80%</td>
</tr>
<tr>
<td>Methyl isobutyl ketone</td>
<td>Flam. Liq. 3, H225; Carc. 2, H331; Acute Tox. 4, H332; Eye Irrit. 2, H319; STOT SE 3, H335</td>
<td>10-25%</td>
</tr>
</tbody>
</table>
4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:**
  Wash eyes immediately with a large amount of water or normal saline, occasionally lifting upper and lower eye lids until no evidence of chemical remains (at least 20 minutes). Remove contact lenses if present and easy to remove. Seek immediate medical attention.
- **After swallowing:**
  Do not induce vomiting unless instructed to do so by a physician. Wash out mouth with water and keep person at rest. Seek immediate medical attention.
- **Information for doctor:**
  - **Most important symptoms and effects, both acute and delayed** No further relevant information available.
  - **Indication of any immediate medical attention and special treatment needed** Treat symptomatically.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
  Alcohol resistant foam
  Fire-extinguishing powder
  Carbon dioxide
- **For safety reasons unsuitable extinguishing agents:**
  Water with full jet
  Water
- **Special hazards arising from the substance or mixture**
  Containers may explode due to pressure increase when container is exposed to extreme heat. Vapors may travel a considerable distance to a source of ignition and flash back along vapor trail.
- **Advice for firefighters**
- **Protective equipment:** Wear SCBA.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
  Wear protective equipment. Keep unprotected persons away.
  Ensure adequate ventilation
  Keep away from ignition sources
- **Environmental precautions:** Do not allow to enter sewers/surface or ground water.
- **Methods and material for containment and cleaning up:**
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  Ensure adequate ventilation.
  Do not flush with water or aqueous cleansing agents
- **Reference to other sections**
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.
7 Handling and storage

· Handling:
  · Precautions for safe handling
    Ensure good ventilation/exhaust at the workplace.
    Prevent formation of aerosols.
  · Information about protection against explosions and fires:
    Keep ignition sources away - Do not smoke.
    Protect against electrostatic charges.
    Use explosion-proof apparatus / fittings and spark-proof tools.

· Conditions for safe storage, including any incompatibilities

· Storage:
  · Requirements to be met by storerooms and containers: Store in a cool location.
  · Information about storage in one common storage facility:
    Do not store together with oxidizing and acidic materials.
    Do not store together with alkalis (caustic solutions).
  · Further information about storage conditions:
    Keep container well-sealed in cool, dry location.
    Protect from heat and direct sunlight.
    Store receptacle in a well ventilated area.
  · Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

· Additional information about design of technical systems: No further data; see item 7.

· Control parameters

  · Components with limit values that require monitoring at the workplace:

    | Component | PEL | REL | TLV |
    |-----------|-----|-----|-----|
    | 67-63-0 Isopropyl alcohol | Long-term value: 980 mg/m³, 400 ppm | Short-term value: 1225 mg/m³, 500 ppm | Short-term value: 984 mg/m³, 400 ppm |
    | | Long-term value: 980 mg/m³, 400 ppm | | Long-term value: 492 mg/m³, 200 ppm |
    | | | | BEI |
    | 108-10-1 Methyl isobutyl ketone | Long-term value: 410 mg/m³, 100 ppm | Short-term value: 300 mg/m³, 75 ppm | Short-term value: 82 mg/m³, 20 ppm |
    | | Long-term value: 205 mg/m³, 50 ppm | | BEI |

· Ingredients with biological limit values:

<table>
<thead>
<tr>
<th>Component</th>
<th>BEI</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-63-0 Isopropyl alcohol</td>
<td>40 mg/L</td>
</tr>
<tr>
<td>Medium: urine</td>
<td></td>
</tr>
<tr>
<td>Time: end of shift at end of workweek</td>
<td></td>
</tr>
<tr>
<td>Parameter: Acetone (background, nonspecific)</td>
<td></td>
</tr>
</tbody>
</table>
108-10-1 Methyl isobutyl ketone

BEI 1 mg/L
Medium: urine
Time: end of shift
Parameter: MIBK

Additional information: The lists that were valid during the creation were used as basis.

Personal protective equipment:
- General protective and hygienic measures:
  - Keep away from food and beverages.
  - Immediately remove all soiled and contaminated clothing.
  - Wash hands before breaks and at the end of work.
  - Avoid contact with the eyes.
  - Avoid contact with the eyes and skin.
- Respiratory equipment:
  - In case of low exposure, use cartridge respirator. In case of intensive or longer exposure, use SCBA.
- Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
- Material of gloves Nitrile rubber, NBR
- Penetration time of glove material Contact glove manufacture for break-through time.
- Eye protection:

Tightly sealed goggles

9 Physical and chemical properties

Information on basic physical and chemical properties
- General Information
- Appearance:
  - Form: Fluid
  - Color: Clear to light yellow
- Odor: Alcohol-like
- Odour threshold: Not determined.
- pH-value: Not determined.

Change in condition
- Melting point/Melting range: Undetermined.
- Boiling point/Boiling range: 82 °C (180 °F)
- Flash point: 12 °C (54 °F)
- Flammability (solid, gaseous): Not applicable.
- Ignition temperature: 425 °C (797 °F)
38. Decomposition temperature: Not determined.
40. Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
41. Explosion limits:
   Lower: 1.7 Vol %
   Upper: 12.0 Vol %
42. Vapor pressure at 20 °C (68 °F): 33 hPa (25 mm Hg)
43. Density at 20 °C (68 °F): 0.78816 g/cm³ (6.577 lbs/gal)
44. Relative density: Not determined.
45. Vapour density: Not determined.
46. Evaporation rate: 1.6-2.3 (BuAc=1)
47. Solubility in / Miscibility with Water: Water miscible No
49. Viscosity:
   Dynamic: Not determined.
   Kinematic: Not determined.
50. Solvent content:
   Organic solvents: 100.0 %
   VOC content: 100.0 %
51. Other information: No further relevant information available.

10 Stability and reactivity

- Reactivity
- Chemical stability: Stable under normal use conditions
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- Possibility of hazardous reactions: Possible formation of peroxide.
- Conditions to avoid
  Contact with incompatible materials.
  Heat, flames and sparks. Extremes of temperature and direct sunlight.
- Incompatible materials:
  Strong Acids, Strong Bases, Strong Oxidizing Agents, Caustics, Amines, Alkanolamines, Aldehydes, Chlorinated Compounds
- Hazardous decomposition products:
  Flammable gases/vapors
  Carbon monoxide and carbon dioxide

(Contd. on page 7)
11 Toxicological Information

- Information on toxicological effects
- Acute toxicity:
  - LD/LC50 values that are relevant for classification:
    - 67-63-0 Isopropyl alcohol
      - Oral LD50: 5045 mg/kg (Rat)
      - Dermal LD50: 12800 mg/kg (rabbit)
      - Inhalative LC50/4 h: 30 mg/l (Rat)
    - 108-10-1 Methyl isobutyl ketone
      - Oral LD50: 2080 mg/kg (Rat)
      - Dermal LD50: 1600 mg/kg (rabbit)
      - Inhalative LC50/4 h: 100 mg/l (Rat)
- Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: Irritating effect.
  - Sensitization: No sensitizing effects known.
- Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
  - Irritant
  - Harmful
- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    - 67-63-0 Isopropyl alcohol: 3
    - 108-10-1 Methyl isobutyl ketone: 108-10-1
  - NTP (National Toxicology Program)
    - None of the ingredients are listed.

12 Ecological Information

- Toxicity
  - Aquatic toxicity:
    - 67-63-0 Isopropyl alcohol
      - EC50/48 h: 7550-13300 mg/l (daphnia magna) (immobilization)
      - EC50/72 h: >1000 mg/l (scenedesmus subspicatus) (Growth rate inhibition)
      - LC50/96 h: 9640-10400 mg/l (Pimephales promelas)
    - 108-10-1 Methyl isobutyl ketone
      - EC50/96 hr: 980 mg/l (scenedesmus subspicatus)
      - LC50/24 h: 5000 mg/l (daphnia magna)
      - LC50/96 h: 505 mg/l (fathead minnow)
      - 505-540 mg/l (Pimephales promelas)
      - 600 mg/l (Salmo gairdneri)
  - Persistence and degradability: No further relevant information available.
Trade name: gL-Rinse

- Behavior in environmental systems:
- Bioaccumulative potential: No further relevant information available.
- Mobility in soil: No further relevant information available.
- Additional ecological information:
  - General notes:
    - Water hazard class 1 (Self-assessment): slightly hazardous for water
    - Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- Results of PBT and vPvB assessment:
  - PBT: Not applicable.
  - vPvB: Not applicable.
- Other adverse effects: No further relevant information available.

13 Disposal considerations

- Waste treatment methods
  - Recommendation:
    - Must not be disposed of as regular garbage/trash. Do not allow product to reach sewage system.
    - Disposal must be made in accordance with Federal, State, and Local regulations.

- Uncleaned packaging:
  - Recommendation: Disposal must be made in accordance with Federal, State, and Local regulations.

14 Transport information

- UN-Number
  - DOT, ADR, IMDG, IATA: UN1993
- UN proper shipping name
  - DOT, ADR: Flammable liquids, n.o.s. (Isopropanol (Isopropyl alcohol), Methyl isobutyl ketone)
  - IMDG, IATA: FLAMMABLE LIQUID, N.O.S. (ISOPROPANOL (ISOPROPYL ALCOHOL), METHYL ISOBUTYL KETONE)
- Transport hazard class(es)
  - DOT
    - Class: 3 Flammable liquids.
    - Label: 3
  - ADR, IMDG, IATA
    - Class: 3 Flammable liquids
    - Label: 3
- Packing group
  - DOT, ADR, IMDG, IATA: II
### 15 Regulatory information

**Safety, health and environmental regulations/legislation specific for the substance or mixture**

- **Sara**
  - **Section 355 (extremely hazardous substances):**
    - None of the ingredients are listed.
  
  - **Section 313 (Specific toxic chemical listings):**
    - All ingredients are listed.

- **TSCA (Toxic Substances Control Act):**
  - All ingredients are listed or comply with TSCA regulations.

- **Proposition 65**
  - **Chemicals known to cause cancer:**
    - 108-10-1 Methyl isobutyl ketone
  
  - **Chemicals known to cause reproductive toxicity for females:**
    - None of the ingredients are listed.

  - **Chemicals known to cause reproductive toxicity for males:**
    - None of the ingredients are listed.

  - **Chemicals known to cause developmental toxicity:**
    - None of the ingredients are listed.

- **Carcinogenic categories**
  - **EPA (Environmental Protection Agency)**
    - 108-10-1 Methyl isobutyl ketone I
  
  - **TLV (Threshold Limit Value established by ACGIH)**
    - 67-63-0 Isopropyl alcohol A4

  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    - None of the ingredients are listed.

  - **OSHA-Ca (Occupational Safety & Health Administration)**
    - None of the ingredients are listed.

- **Massachusetts State Right To Know List**
  - 67-63-0 Isopropyl alcohol
  - 108-10-1 Methyl isobutyl ketone

(Contd. on page 10)
Trade name: gL-Rinse

- New Jersey State Right To Know List
  - 67-63-0 Isopropyl alcohol
  - 108-10-1 Methyl isobutyl ketone

- Pennsylvania Hazardous Substances List
  - 67-63-0 Isopropyl alcohol
  - 108-10-1 Methyl isobutyl ketone

- California SCAQMD Rule 443.1 VOC's: No information available.

- GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

- Hazard pictograms
  
  GHS02  GHS07  GHS08

- Signal word Danger

- Hazard-determining components of labeling:
  Methyl isobutyl ketone

- Hazard statements
  
  H225 Highly flammable liquid and vapor.
  H319 Causes serious eye irritation.
  H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.

- Precautionary statements
  
  P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
  P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
  P280 Wear protective gloves/protective clothing/eye protection/face protection.
  P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
  P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  P337+P313 If eye irritation persists: Get medical advice/attention.
  P370+P378 In case of fire: Use for extinction: Alcohol resistant foam.
  P370+P378 In case of fire: Use for extinction: Fire-extinguishing powder.
  P370+P378 In case of fire: Use for extinction: Carbon dioxide.
  P302+P352 IF ON SKIN: Wash with plenty of soap and water.
  P403+P233 Store in a well-ventilated place. Keep container tightly closed.
  P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Department issuing MSDS: Product safety department
- Contact: Mr. Cole
- Revision History: New SDS
- Date of preparation / last revision 12/23/2015 / -
Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent