1 Identification of the substance/mixture and of the company

- **Product identifier**
- **Trade name:** Remover PG
- **Product number:** G050200
- **Application of the substance / the mixture** Photoresist remover
- **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**
  - GHS08 Health hazard
  - **Repr. 1B** H360 May damage fertility or the unborn child.

  - GHS07

  - **Skin Irrit. 2** H315 Causes skin irritation.
  - **Eye Irrit. 2A** H319 Causes serious eye irritation.
  - **STOT SE 3** H335 May cause respiratory irritation.

  - Flam. Liq. 4 H227 Combustible liquid.

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

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - N-methyl-2-pyrrolidinone

- **Hazard statements**
  - **H227** Combustible liquid.
  - **H315** Causes skin irritation.
  - **H319** Causes serious eye irritation.
  - **H360** May damage fertility or the unborn child.

(Contd. on page 2)
Trade name: Remover PG

H335 May cause respiratory irritation.

Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
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 person to fresh air and keep comfortable for breathing.
P337+P313 If eye irritation persists: Get medical advice/attention.
P370+P378 In case of fire: Use for extinguishment: Alcohol resistant foam.
P370+P378 In case of fire: Use for extinguishment: Fire-extinguishing powder.
P370+P378 In case of fire: Use for extinguishment: 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.

Classification system:
NFPA ratings (scale 0 - 4)

Health = 2
Fire = 1
Reactivity = 0

HMIS-ratings (scale 0 - 4)

HEALTH 2 Health = *2
FIRE 1 Fire = 1
REACTIVITY 0 Reactivity = 0

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>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>872-50-4</td>
<td>99-99.5%</td>
</tr>
<tr>
<td>N-methyl-2-pyrrolidinone</td>
<td></td>
</tr>
<tr>
<td>☑️ Repr. 1B, H360; ☑️ Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H335; Flam. Liq. 4, H227</td>
<td></td>
</tr>
<tr>
<td>Proprietary Surfactant</td>
<td>0.1-1.0%</td>
</tr>
<tr>
<td>☑️ Skin Irrit. 2, H315; Eye Irrit. 2A, H319</td>
<td></td>
</tr>
</tbody>
</table>

4 First-aid measures

Description of first aid measures
General information: Immediately remove any clothing soiled by the product.
Trade name: Remover PG

After inhalation:
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

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 (about 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
  - ABC powder
- For safety reasons unsuitable extinguishing agents: Water with full jet
- Special hazards arising from the substance or mixture: No further relevant information available.
- 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.
  - 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.
- 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.
    - Open and handle container with care.
    - Prevent formation of aerosols.
  - Information about protection against explosions and fires:
    - Keep respirator available.
    - Keep ignition sources away - Do not smoke.
Trade name: Remover PG

- Conditions for safe storage, including any incompatibilities
- Storage:
  - Requirements to be met by storerooms and containers:
    Store in a cool location.
    Suitable material for receptacles and pipes: steel or stainless steel.
  - Information about storage in one common storage facility: Store away from oxidizing agents.
- Further information about storage conditions:
  Keep container tightly sealed.
  This product is hygroscopic.
- 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

<table>
<thead>
<tr>
<th>Components with limit values that require monitoring at the workplace:</th>
</tr>
</thead>
<tbody>
<tr>
<td>872-50-4 N-methyl-2-pyrrolidinone</td>
</tr>
<tr>
<td>WEEL</td>
</tr>
<tr>
<td>Skin</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ingredients with biological limit values:</th>
</tr>
</thead>
<tbody>
<tr>
<td>872-50-4 N-methyl-2-pyrrolidinone</td>
</tr>
<tr>
<td>BEI</td>
</tr>
<tr>
<td>Medium: urine</td>
</tr>
<tr>
<td>Time: end of shift</td>
</tr>
<tr>
<td>Parameter: 5-Hydroxy-N-methyl-2-pyrrolidone</td>
</tr>
</tbody>
</table>

- Additional information: The lists that were valid during the creation were used as basis.
- Exposure controls
- 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 and skin.
    Do not inhale gases / fumes / aerosols.
    Pregnant women should strictly avoid inhalation or skin contact.
- 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.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Contact glove manufacturer for break-through time.
- Material of gloves Butyl rubber, BR
- Penetration time of glove material Contact glove manufacture for break-through time.
Trade name: Remover PG

- Eye protection:
  Tightly sealed goggles

9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
- Appearance:
  - Form: Liquid
  - Color: Clear to light yellow
  - Odor: Amine-like
  - Odor threshold: Not determined.
- pH-value at 20 °C (68 °F): l. basisch
- Change in condition
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: 202 °C (396 °F)
- Flash point: 86 °C (187 °F)
- Flammability (solid, gaseous): Not applicable.
- Ignition temperature: 270 °C (518 °F)
- Decomposition temperature: Not determined.
- Auto igniting: Product is not selfigniting.
- Danger of explosion: Not determined.
- Explosion limits:
  - Lower: 1.3 Vol %
  - Upper: 9.5 Vol %
- Vapor pressure at 20 °C (68 °F): 0.39-0.43 hPa (0-0 mm Hg)
- Density at 25 °C (77 °F): 1.030 g/cm³ (8.595 lbs/gal)
  - Relative density: Not determined.
  - Vapor density: Not determined.
  - Evaporation rate: 0.03 (BuAc=1)
- Solubility in / Miscibility with
  - Water: Fully miscible.
- Partition coefficient (n-octanol/water): Not determined.
- Viscosity:
  - Dynamic: Not determined.
  - Kinematic: Not determined.
- Other information: No further relevant information available.

10 Stability and reactivity

- Reactivity No further relevant information available.
11 Toxicological information

- Information on toxicological effects
- Acute toxicity:

<table>
<thead>
<tr>
<th>LD/LC50 values that are relevant for classification:</th>
</tr>
</thead>
<tbody>
<tr>
<td>872-50-4 N-methyl-2-pyrrolidinone</td>
</tr>
<tr>
<td>Oral</td>
</tr>
<tr>
<td>Dermal</td>
</tr>
<tr>
<td>Inhalative</td>
</tr>
</tbody>
</table>

- Primary irritant effect:
- on the skin: Irritant to skin and mucous membranes.
- on the eye: Irritating effect.
- Sensitization: No sensitizing effects known.
- Experience with humans: No further relevant information available.
- Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

- Carcinogenic categories
- IARC (International Agency for Research on Cancer)
  None of the ingredients are listed.
- NTP (National Toxicology Program)
  None of the ingredients are listed.
- OSHA-Ca (Occupational Safety & Health Administration)
  None of the ingredients are listed.

12 Ecological information

- Toxicity

<table>
<thead>
<tr>
<th>Aquatic toxicity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>872-50-4 N-methyl-2-pyrrolidinone</td>
</tr>
<tr>
<td>EC50/24 h</td>
</tr>
<tr>
<td>LC50/96 h</td>
</tr>
</tbody>
</table>

- Persistence and degradability No further relevant information available.
- Behavior in environmental systems:
  Bioaccumulative potential No further relevant information available.
- Mobility in soil No further relevant information available.
Trade name: Remover PG

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

14 Transport information

- UN-Number
  - DOT, ADR, ADN, IMDG, IATA Not Regulated
- UN proper shipping name
  - DOT, ADR, ADN, IMDG, IATA Not Regulated
- Transport hazard class(es)
  - DOT, ADR, ADN, IMDG, IATA Class Not Regulated
- Packing group
  - DOT, ADR, IMDG, IATA Not Regulated
- Environmental hazards:
  - Marine pollutant: No
- Special precautions for user Not applicable.
- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.
- Transport/Additional information: Not Regulated
- UN "Model Regulation": Not Regulated

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.
Trade name: Remover PG

- **Section 313 (Specific toxic chemical listings):**
  
  872-50-4 N-methyl-2-pyrrolidinone

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

- **Proposition 65**
  
  - **Chemicals known to cause cancer:**
    None of the ingredients are listed.
  
  - **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:**
    872-50-4 N-methyl-2-pyrrolidinone

- **Carcinogenic categories**
  
  - **EPA (Environmental Protection Agency)**
    None of the ingredients are listed.
  
  - **TLV (Threshold Limit Value established by ACGIH)**
    None of the ingredients are listed.
  
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    None of the ingredients are listed.

- **Massachusetts State Right To Know List**
  
  872-50-4 N-methyl-2-pyrrolidinone

- **New Jersey State Right To Know List**
  
  872-50-4 N-methyl-2-pyrrolidinone

- **Pennsylvania Hazardous Substances List**
  
  872-50-4 N-methyl-2-pyrrolidinone

- **California SCAQMD Rule 443.1 VOC’s:** 1026 g/l, vapor pressure 0.3 mm Hg 20C

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

- **Hazard pictograms**
  
  GHS07  GHS08

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  
  N-methyl-2-pyrrolidinone

- **Hazard statements**
  
  H227 Combustible liquid.
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.
  H360 May damage fertility or the unborn child.
  H335 May cause respiratory irritation.

- **Precautionary statements**
  
  P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

(Contd. on page 9)
贸易名称: Remover PG

<table>
<thead>
<tr>
<th>序号</th>
<th>内容</th>
</tr>
</thead>
<tbody>
<tr>
<td>P261</td>
<td>避免吸入尘埃/烟尘/气体/蒸汽/雾气/喷雾/喷洒。</td>
</tr>
<tr>
<td>P280</td>
<td>佩戴防护手套/防护工作服/防护眼镜/面罩。</td>
</tr>
<tr>
<td>P301+P310</td>
<td>如吞食: 立即致电 POISON CENTER/ 医生。</td>
</tr>
<tr>
<td>P305+P351+P338</td>
<td>如接触眼睛: 慎重用大量水冲洗几分钟。如配戴隐形眼镜, 应将其取出。</td>
</tr>
<tr>
<td>P304+P340</td>
<td>如吸入: 将患者移至新鲜空气处并保持呼吸舒适。</td>
</tr>
<tr>
<td>P337+P313</td>
<td>如眼睛刺激持续: 就医或求救。</td>
</tr>
<tr>
<td>P360+P352</td>
<td>如皮肤接触: 用大量肥皂和水清洗。</td>
</tr>
<tr>
<td>P403+P233</td>
<td>储存于通风良好的地方。容器应密封。</td>
</tr>
<tr>
<td>P501</td>
<td>应根据当地/区域/国家/国际法规处理内容。</td>
</tr>
</tbody>
</table>

· **化学安全评价:** A Chemical Safety Assessment has not been carried out.

### 16 Other information

此信息基于现有知识。然而，此信息不构成对特定产品的保证，并不建立法律上的有效关系。

- **发布 SDS 部门:** 产品安全部门
- **联系人:** Mr. Cole
- **修订历史:**
  The business address of the manufacturer in Section 1 was updated. The contact person in Section 16 was updated.
- **准备日期 / 最后更新:** 06/01/2017 / 2
- **缩略语和缩写:**
  - RID: Règlement International concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
  - ICAO: International Civil Aviation Organization
  - 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)
  - NFPA: National Fire Protection Association (USA)
  - HMIS: Hazardous Materials Identification System (USA)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - PBT: Permeant, Biocumulative and Toxic
  - vPvB: very Permeant and very Bioaccumulative
  - NIOSH: National Institute for Occupational Safety
  - OSHA: Occupational Safety & Health
  - TLV: Threshold Limit Value
  - PER: Permissible Exposure Limit
  - REL: Recommended Exposure Limit
  - BEI: Biological Exposure Limit
  - Flamm. Liq. 4: Flammable liquids – Category 4
  - Skin Irrit. 2: Skin corrosion/irritation – Category 2
  - Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
  - Rep. 1B: Reproductive toxicity – Category 1B
  - STOT SE 3: Specific target organ toxicity (single exposure) – Category 3