

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

- **1.1 Product identifier**
- **Trade name:** Remover PG
- **Article number:** G050200
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**  
 No further relevant information available.
- **Sector of Use** SU16 Manufacture of computer, electronic and optical products, electrical equipment
- **Application of the substance / the mixture** Photoresist remover
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
 Kayaku Advanced Materials  
 200 Flanders Road  
 Westborough, MA 01581  
 Tel: (617) 965-5511  
 Fax: (617) 965-5818
- **Further information obtainable from:**  
 Product Safety  
 Email: [productsafety@kayakuAM.com](mailto:productsafety@kayakuAM.com)
- **1.4 Emergency telephone number:**  
 Kayaku Advanced Materials : 617-965-5511  
 Chemtrec USA Emergency : 800-424-9300 (24 hr)  
 Chemtrec International Emergency : 703-527-3887 (24 hr)

## SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS08 health hazard

Repr. 1B H360D May damage the unborn child.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2 H319 Causes serious eye irritation.

STOT SE 3 H335 May cause respiratory irritation.

- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**  
 The product is classified and labelled according to the CLP regulation.
- **Hazard pictograms**



GHS07



GHS08

- **Signal word** *Danger*

(Contd. on page 2)

## Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 10.09.2019

Version number 4

Revision: 10.09.2019

**Trade name: Remover PG**

(Contd. of page 1)

· **Hazard-determining components of labelling:**

*N*-methyl-2-pyrrolidinone

· **Hazard statements**

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H360D May damage the unborn child.

H335 May cause respiratory irritation.

· **Precautionary statements**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. 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/ doctor.

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P304+P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

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.

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.

· **Additional information:**

Restricted to professional users.

· **2.3 Other hazards**

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

### SECTION 3: Composition/information on ingredients

· **3.1 Chemical characterisation: Substances**

· **CAS No. Description**

872-50-4 *N*-methyl-2-pyrrolidinone

· **Identification number(s)**

· **EC number:** 212-828-1

· **Index number:** 606-021-00-7

· **3.2 Chemical characterisation: Mixtures**

· **Description:** Mixture of substances listed below with nonhazardous additions.

· **Dangerous components:** Void

· **SVHC**

872-50-4	<i>N</i> -methyl-2-pyrrolidinone
----------	----------------------------------

· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

EU

(Contd. on page 3)

**Trade name: Remover PG**

(Contd. of page 2)

**SECTION 4: First aid measures**

- **4.1 Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **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:** If symptoms persist consult doctor.
- **4.2 Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **4.3 Indication of any immediate medical attention and special treatment needed** Treat symptomatically.

**SECTION 5: Firefighting measures**

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**  
Alcohol resistant foam  
Fire-extinguishing powder  
ABC powder
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **5.2 Special hazards arising from the substance or mixture** No further relevant information available.
- **5.3 Advice for firefighters**
- **Protective equipment:** Wear self-contained respiratory protective device.

**SECTION 6: Accidental release measures**

- **6.1 Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.  
Keep away from ignition sources.
- **6.2 Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Ensure adequate ventilation.
- **6.4 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.

**SECTION 7: Handling and storage**

- **7.1 Precautions for safe handling**  
Ensure good ventilation/exhaust at the workplace.  
Open and handle receptacle with care.  
Prevent formation of aerosols.
- **Information about fire - and explosion protection:**  
Keep respiratory protective device available.

(Contd. on page 4)

**Trade name: Remover PG**

(Contd. of page 3)

Keep ignition sources away - Do not smoke.

**· 7.2 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 oxidising agents.**
**· Further information about storage conditions:**

Keep container tightly sealed.

This product is hygroscopic.

**· 7.3 Specific end use(s) No further relevant information available.**
**SECTION 8: Exposure controls/personal protection**
**· Additional information about design of technical facilities: No further data; see item 7.**
**· 8.1 Control parameters**
**· Ingredients with limit values that require monitoring at the workplace:**
**872-50-4 N-methyl-2-pyrrolidinone**

 IOELV Short-term value: 80 mg/m<sup>3</sup>, 20 ppm

 Long-term value: 40 mg/m<sup>3</sup>, 10 ppm

Skin

**· Additional information: The lists valid during the making were used as basis.**
**· 8.2 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 protection:**

In case of low exposure use cartridge respirator. In case of intensive or longer exposure use self-contained respiratory protective device.

**· 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.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

**· Material of gloves Butyl rubber, BR**
**· Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

(Contd. on page 5)

**Trade name: Remover PG**

(Contd. of page 4)

· Eye protection:



Tightly sealed goggles

## SECTION 9: Physical and chemical properties

### · 9.1 Information on basic physical and chemical properties

#### · General Information

#### · Appearance:

Form:	Liquid
Colour:	According to product specification
· Odour:	Amine-like
· Odour threshold:	Not determined.

· pH-value at 20 °C:	l. basisch
----------------------	------------

#### · Change in condition

Melting point/freezing point:	Undetermined.
Initial boiling point and boiling range:	202 °C

· Flash point:	86 °C
----------------	-------

· Flammability (solid, gas):	Not applicable.
------------------------------	-----------------

· Ignition temperature:	270 °C
-------------------------	--------

· Decomposition temperature:	Not determined.
------------------------------	-----------------

· Auto-ignition temperature:	Product is not selfigniting.
------------------------------	------------------------------

· Explosive properties:	Not determined.
-------------------------	-----------------

#### · Explosion limits:

Lower:	1.3 Vol %
Upper:	9.5 Vol %

· Vapour pressure at 20 °C:	0.39-0.43 hPa
-----------------------------	---------------

· Density at 25 °C:	1.030 g/cm <sup>3</sup>
· Relative density	Not determined.
· Vapour 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.

· 9.2 Other information	No further relevant information available.
-------------------------	--

EU

(Contd. on page 6)

**Trade name: Remover PG**

(Contd. of page 5)

## SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability** Stable
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions** No dangerous reactions known.
- **10.4 Conditions to avoid**  
Heat, flames and sparks. Extremes of temperature and direct sunlight.  
Contact with incompatible materials.
- **10.5 Incompatible materials:** Strong oxidizing agents
- **10.6 Hazardous decomposition products:**  
Carbon monoxide and carbon dioxide  
Nitrogen oxides

## SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity** Based on available data, the classification criteria are not met.

### · LD/LC50 values relevant for classification:

#### 872-50-4 N-methyl-2-pyrrolidinone

Oral	LD50	3914 mg/kg (Rat)
Dermal	LD50	8000 mg/kg (rabbit)
Inhalative	LC50/4 h	>5.0 mg/l (Rat)

- **Primary irritant effect:**
- **Skin corrosion/irritation**  
Causes skin irritation.
- **Serious eye damage/irritation**  
Causes serious eye irritation.
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- **Experience with humans:** No further relevant information available.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity**  
May damage the unborn child.
- **STOT-single exposure**  
May cause respiratory irritation.
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

## SECTION 12: Ecological information

### · 12.1 Toxicity

#### · Aquatic toxicity:

#### 872-50-4 N-methyl-2-pyrrolidinone

EC50/24 h	>1000 mg/l (daphnia magna)
LC50/96 h	>500 mg/l (Leuciscus idus)

- **12.2 Persistence and degradability** No further relevant information available.

(Contd. on page 7)



## Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 10.09.2019

Version number 4

Revision: 10.09.2019

**Trade name: Remover PG**

(Contd. of page 6)

- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**  
*Water hazard class 1 (German Regulation) (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.*
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

### SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**  
*Must not be disposed together with household garbage. Do not allow product to reach sewage system.*  
*Disposal must be made in accordance with International, National, and regional regulations.*
- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

### SECTION 14: Transport information

· <b>14.1 UN-Number</b>	
· <b>ADR, ADN, IMDG, IATA</b>	Not Regulated
· <b>14.2 UN proper shipping name</b>	
· <b>ADR, ADN, IMDG, IATA</b>	Not Regulated
· <b>14.3 Transport hazard class(es)</b>	
· <b>ADR, ADN, IMDG, IATA</b>	
· <b>Class</b>	Not Regulated
· <b>14.4 Packing group</b>	
· <b>ADR, IMDG, IATA</b>	Not Regulated
· <b>14.5 Environmental hazards:</b>	
· <b>Marine pollutant:</b>	No
· <b>14.6 Special precautions for user</b>	Not applicable.
· <b>14.7 Transport in bulk according to Annex II of Marpol and the IBC Code</b>	Not applicable.
· <b>Transport/Additional information:</b>	Not Regulated
· <b>UN "Model Regulation":</b>	Void

### SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3, 30, 71, 72

(Contd. on page 8)

## Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 10.09.2019

Version number 4

Revision: 10.09.2019

**Trade name: Remover PG**

(Contd. of page 7)

 · **National regulations:**

 · **Other regulations, limitations and prohibitive regulations**

 · **Substances of very high concern (SVHC) according to REACH, Article 57**

872-50-4	N-methyl-2-pyrrolidinone
----------	--------------------------

 · **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### SECTION 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.

 · **Classification according to Regulation (EC) No 1272/2008**

Art. 9(1) of Regulation (EC) No. 1272/2008 was used for classification purposes.

 · **Department issuing SDS:** Product safety department

 · **Contact:** Tom Cole, EHS Manager (tcole@kayakuAM)

 · **Revision History:**

The manufacturer's information in Section 1, the product hazard information in Section 2 and the component hazard information in Section 3 have been updated.

 · **Abbreviations and acronyms:**

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 Organisation

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

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

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)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

SVHC: Substances of Very High Concern

vPvB: very Persistent and very Bioaccumulative

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

Repr. 1B: Reproductive toxicity – Category 1B

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3