



SAFETY DATA SHEET

(REACH regulation (EC) n° 1907/2006 - n° 2020/878)

SECTION 1 : IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name : REACTIF DE MURAKAMI

Product code : 17230-17231.

MURAKAMI ETCHANT / MURAKAMI ÄTZMITTEL / MURAKAMI REACTIV

1.2. Relevant identified uses of the substance or mixture and uses advised against

Etching reagent

1.3. Details of the supplier of the safety data sheet

Registered company name : PRESI S.A.S.

Address : 11 Rue du vercors.38320.EYBENS.France.

Telephone : +33 (0)4.76.72.00.21. Fax : +33 (0)4.76.72.05.84.

presi@presi.com

www.presi.com

1.4. Emergency telephone number : +33 (0)1.45.42.59.59.

Association/Organisation : INRS / ORFILA <http://www.centres-antipoison.net>.

SECTION 2 : HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

In compliance with EC regulation No. 1272/2008 and its amendments.

Skin corrosion, Category 1A (Skin Corr. 1A, H314).

Serious eye damage, Category 1 (Eye Dam. 1, H318).

Contact with acids liberates very toxic gas (EUH032).

This mixture does not present a physical hazard. Refer to the recommendations regarding the other products present on the site.

This mixture does not present an environmental hazard. No known or foreseeable environmental damage under standard conditions of use.

2.2. Label elements

In compliance with EC regulation No. 1272/2008 and its amendments.

Hazard pictograms :



GHS05

Signal Word :

DANGER

Product identifiers :

019-002-00-8 POTASSIUM HYDROXIDE

Hazard statements :

H314

Causes severe skin burns and eye damage.

EUH032

Contact with acids liberates very toxic gas.

Precautionary statements - Prevention :

P260

Do not breathe dust/fume/gas/mist/vapours/spray.

P264

Wash ... thoroughly after handling.

P280

Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/ ...

Precautionary statements - Response :

P301 + P330 + P331

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304 + P340	IF INHALED: Remove person to fresh air and keep 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.
P310	Immediately call a POISON CENTER/doctor/...
P321	Specific treatment (see ... on this label).
P363	Wash contaminated clothing before reuse.
Precautionary statements - Disposal :	
P501	Dispose of contents/container to ...

2.3. Other hazards

The mixture does not contain substances classified as 'Substances of Very High Concern' (SVHC) $\geq 0.1\%$ published by the European Chemicals Agency (ECHA) under article 57 of REACH: <http://echa.europa.eu/fr/candidate-list-table>

The mixture fulfils neither the PBT nor the vPvB criteria for mixtures in accordance with annexe XIII of the REACH regulations EC 1907/2006.

The mixture does not contain substances $\geq 0.1\%$ with endocrine disrupting properties in accordance with the criteria of the Delegated Regulation (EU) 2017/2100 of the Commission or Regulation (EU) 2018/605 of the Commission.

SECTION 3 : COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Composition :

Identification	(EC) 1272/2008	Note	%
CAS: 13746-66-2 EC: 237-323-3 REACH: 01-2120787462-46-0000 POTASSIUM HEXACYANOFERRATE (III)	GHS07 Wng Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 EUH:032		2.5 \leq x % < 10
INDEX: 019-002-00-8 CAS: 1310-58-3 EC: 215-181-3 REACH: 01-2119487136-33-0000 POTASSIUM HYDROXIDE	GHS05, GHS07 Dgr Acute Tox. 4, H302 Skin Corr. 1A, H314	[1]	2.5 \leq x % < 10

Specific concentration limits:

Identification	Specific concentration limits	ATE
INDEX: 019-002-00-8 CAS: 1310-58-3 EC: 215-181-3 REACH: 01-2119487136-33-0000 POTASSIUM HYDROXIDE	Skin Corr. 1A: H314 $C \geq 5\%$ Skin Corr. 1B: H314 $2\% \leq C < 5\%$ Skin Irrit. 2: H315 $0.5\% \leq C < 2\%$ Eye Dam. 1: H318 $C \geq 2\%$ Eye Irrit. 2: H319 $0.5\% \leq C < 2\%$	

Information on ingredients :

(Full text of H-phrases: see section 16)

[1] Substance for which maximum workplace exposure limits are available.

SECTION 4 : FIRST AID MEASURES

As a general rule, in case of doubt or if symptoms persist, always call a doctor.

NEVER induce swallowing by an unconscious person.

4.1. description of first aid measures

In the event of exposure by inhalation :

Move to fresh air

If symptoms persist, call a physician



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In the event of splashes or contact with eyes :

Wash thoroughly with fresh, clean water for 15 minutes holding the eyelids open.
Regardless of the initial state, refer the patient to an ophthalmologist and show him the label.

In the event of splashes or contact with skin :

Remove any soiled or splashed clothing immediately.
Watch out for any remaining product between skin and clothing, watches, shoes, etc.
If the contaminated area is widespread and/or there is damage to the skin, a doctor must be consulted or the patient transferred to hospital.
Wash off with plenty of water

In the event of swallowing :

Do not give the patient anything orally.
In the event of swallowing, if the quantity is small (no more than one mouthful), rinse the mouth with water and consult a doctor.
Keep the person exposed at rest. Do not force vomiting.
Seek medical attention immediately, showing the label.
If swallowed accidentally, call a doctor to ascertain whether observation and hospital care will be necessary. Show the label.
Rinse mouth thoroughly with water

4.2. Most important symptoms and effects, both acute and delayed

No data available.

4.3. Indication of any immediate medical attention and special treatment needed

No data available.

SECTION 5 : FIREFIGHTING MEASURES

Non-flammable.

5.1. Extinguishing media

Suitable methods of extinction

In the event of a fire, use :

- sprayed water or water mist
- foam
- multipurpose ABC powder
- BC powder
- carbon dioxide (CO₂)

Non-combustible. Adapt the extinguishing agent according to the surrounding products.

Unsuitable methods of extinction

In the event of a fire, do not use :

- water jet

5.2. Special hazards arising from the substance or mixture

A fire will often produce a thick black smoke. Exposure to decomposition products may be hazardous to health.

Do not breathe in smoke.

In the event of a fire, the following may be formed :

- carbon monoxide (CO)
- carbon dioxide (CO₂)

5.3. Advice for firefighters

Due to the toxicity of the gas emitted on thermal decomposition of the products, fire-fighting personnel are to be equipped with autonomous insulating breathing apparatus.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Consult the safety measures listed under headings 7 and 8.

For non first aid worker

Avoid any contact with the skin and eyes.



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For first aid worker

First aid workers will be equipped with suitable personal protective equipment (See section 8).

6.2. Environmental precautions

Contain and control the leaks or spills with non-combustible absorbent materials such as sand, earth, vermiculite, diatomaceous earth in drums for waste disposal.

Prevent any material from entering drains or waterways.

6.3. Methods and material for containment and cleaning up

If the ground is contaminated, once the product has been recovered by sponging with an inert and non-combustible absorbent material, wash the contaminated area in plenty of water.

Clean preferably with a detergent, do not use solvents.

6.4. Reference to other sections

No data available.

SECTION 7 : HANDLING AND STORAGE

Requirements relating to storage premises apply to all facilities where the mixture is handled.

7.1. Precautions for safe handling

Always wash hands after handling.

Remove and wash contaminated clothing before re-using.

Ensure that there is adequate ventilation, especially in confined areas.

Emergency showers and eye wash stations will be required in facilities where the mixture is handled constantly.

Fire prevention :

Handle in well-ventilated areas.

Prevent access by unauthorised personnel.

Recommended equipment and procedures :

For personal protection, see section 8.

Observe precautions stated on label and also industrial safety regulations.

Packages which have been opened must be reclosed carefully and stored in an upright position.

Prohibited equipment and procedures :

No smoking, eating or drinking in areas where the mixture is used.

7.2. Conditions for safe storage, including any incompatibilities

No data available.

Storage

Keep the container tightly closed in a dry, well-ventilated place.

The floor must be impermeable and form a collecting basin so that, in the event of an accidental spillage, the liquid cannot spread beyond this area.

Packaging

Always keep in packaging made of an identical material to the original.

Suitable packaging materials :

- Polyethylene

7.3. Specific end use(s)

No data available.

SECTION 8 : EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Occupational exposure limits :

- ACGIH TLV (American Conference of Governmental Industrial Hygienists, Threshold Limit Values, 2010) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
1310-58-3			2 mg/m3		

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- Canada / Ontario (Control of exposure to biological or chemical agents, regulation 491/2009) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
1310-58-3	-	-	2 mg/m ³	-	-

- Canada / Quebec (Regulations on occupational health and safety) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
1310-58-3			2 mg/m ³	RP	

- France (INRS - Outils 65 / 2021-1849, 2021-1763, decree of 09/12/2021) :

CAS	VME-ppm :	VME-mg/m ³ :	VLE-ppm :	VLE-mg/m ³ :	Notes :	TMP No :
1310-58-3	-	-	-	2	-	-

- Japan (JSOH, Recommendation of occupational exposure limits 2021-2022) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
1310-58-3	2 mg/m ³				

- Switzerland (Suva 2021) :

CAS	VME	VLE	Valeur plafond	Notations
1310-58-3	2 ppm			

- USA / NIOSH IDLH (National Institute for Occupational Safety and Health, Immediately Dangerous to Life or Health Concentrations) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
1310-58-3			2 mg/m ³		

- UK / WEL (Workplace exposure limits, EH40/2005, Fourth Edition 2020) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
1310-58-3		2 mg/m ³			

Derived no effect level (DNEL) or derived minimum effect level (DMEL):

POTASSIUM HYDROXIDE (CAS: 1310-58-3)

Final use:

Exposure method:
Potential health effects:
DNEL :

Workers.

Inhalation.
Long term local effects.
1 mg of substance/m³

Final use:

Exposure method:
Potential health effects:
DNEL :

Man exposed via the environment.

Inhalation.
Long term local effects.
1 mg of substance/m³

POTASSIUM HEXACYANOFERRATE (III) (CAS: 13746-66-2)

Final use:

Exposure method:
Potential health effects:
DNEL :

Workers.

Dermal contact.
Long term systemic effects.
9 mg/kg body weight/day

Final use:

Exposure method:
Potential health effects:
DNEL :

Man exposed via the environment.

Ingestion.
Long term systemic effects.
4.5 mg/kg body weight/day

Exposure method:
Potential health effects:
DNEL :

Dermal contact.
Long term systemic effects.
4.5 mg/kg body weight/day

Predicted no effect concentration (PNEC):

POTASSIUM HEXACYANOFERRATE (III) (CAS: 13746-66-2)

Environmental compartment:

Fresh water.

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PNEC :	1.7 µg/l
Environmental compartment: PNEC :	Sea water. 0.17 µg/l
Environmental compartment: PNEC :	Waste water treatment plant. 100 mg/l

8.2. Exposure controls

Personal protection measures, such as personal protective equipment

Pictogram(s) indicating the obligation of wearing personal protective equipment (PPE) :



Use personal protective equipment that is clean and has been properly maintained.

Store personal protective equipment in a clean place, away from the work area.

Never eat, drink or smoke during use. Remove and wash contaminated clothing before re-using. Ensure that there is adequate ventilation, especially in confined areas.

- Eye / face protection

Avoid contact with eyes.

Use eye protectors designed to protect against liquid splashes

Before handling, wear safety goggles with protective sides accordance with standard EN166.

In the event of high danger, protect the face with a face shield.

Prescription glasses are not considered as protection.

Individuals wearing contact lenses should wear prescription glasses during work where they may be exposed to irritant vapours.

Provide eyewash stations in facilities where the product is handled constantly.

- Hand protection

Wear suitable protective gloves in the event of prolonged or repeated skin contact.

Use suitable protective gloves that are resistant to chemical agents in accordance with standard EN ISO 374-1.

Gloves must be selected according to the application and duration of use at the workstation.

Protective gloves need to be selected according to their suitability for the workstation in question : other chemical products that may be handled, necessary physical protections (cutting, pricking, heat protection), level of dexterity required.

Type of gloves recommended :

- Nitrile rubber (butadiene-acrylonitrile copolymer rubber (NBR))

- PVC (polyvinyl chloride)

- Butyl Rubber (Isobutylene-isoprene copolymer)

- Natural latex

- Body protection

Avoid skin contact.

Wear suitable protective clothing.

Suitable type of protective clothing :

In the event of substantial spatter, wear liquid-tight protective clothing against chemical risks (type 3) in accordance with EN14605/A1 to prevent skin contact.

In the event of a risk of splashing, wear protective clothing against chemical risks (type 6) in accordance with EN13034/A1 to prevent skin contact.

Wear suitable protective clothing, in particular overalls and boots. These items must be kept in good condition and cleaned after use.

Work clothing worn by personnel shall be laundered regularly.

After contact with the product, all parts of the body that have been soiled must be washed.



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SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state

Physical state : Fluid liquid.

Colour

Orange

Odour

Odour threshold : Not stated.

Melting point

Melting point/melting range : Not specified.

Freezing point

Freezing point / Freezing range : Not stated.

Boiling point or initial boiling point and boiling range

Boiling point/boiling range : Not specified.

Flammability

Flammability (solid, gas) : Not stated.

Lower and upper explosion limit

Explosive properties, lower explosivity limit (%) : Not stated.

Explosive properties, upper explosivity limit (%) : Not stated.

Flash point

Flash Point : Incombustible.

Auto-ignition temperature

Self-ignition temperature : Not specified.

Decomposition temperature

Decomposition point/decomposition range : Not specified.

pH

pH : Not relevant.

pH (aqueous solution) : Not stated.

Kinematic viscosity

Viscosity : Not stated.

Solubility

Water solubility : Soluble.

Fat solubility : Not stated.

Partition coefficient n-octanol/water (log value)

Partition coefficient: n-octanol/water : Not stated.

Vapour pressure

Vapour pressure (50°C) : Not relevant.

Density and/or relative density

Density : 1.114

Relative vapour density

Vapour density : Not stated.

9.2. Other information

VOC (g/l) : 0

9.2.1. Information with regard to physical hazard classes

No data available.

9.2.2. Other safety characteristics

No data available.



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SECTION 10 : STABILITY AND REACTIVITY

10.1. Reactivity

This mixture reacts with acids, releasing very toxic gases in dangerous quantities.

10.2. Chemical stability

This mixture is stable under the recommended handling and storage conditions in section 7.

10.3. Possibility of hazardous reactions

When exposed to high temperatures, the mixture can release hazardous decomposition products, such as carbon monoxide and dioxide, fumes and nitrogen oxide.

10.4. Conditions to avoid

No data available.

10.5. Incompatible materials

Keep away from :

- acids

Releases a highly toxic gas when in contact with acids.

10.6. Hazardous decomposition products

The thermal decomposition may release/form :

- carbon monoxide (CO)

- carbon dioxide (CO₂)

SECTION 11 : TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

May cause irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis, following exposure for up to three minutes.

Corrosive reactions are typified by ulcers, bleeding, bloody scabs, and, by the end of observation at 14 days, by discolouration due to blanching of the skin, complete areas of alopecia, and scars.

11.1.1. Substances

No toxicological data available for the substances.

11.1.2. Mixture

No toxicological data available for the mixture.

11.2. Information on other hazards

SECTION 12 : ECOLOGICAL INFORMATION

12.1. Toxicity

12.1.2. Mixtures

No aquatic toxicity data available for the mixture.

12.2. Persistence and degradability

No data available.

12.3. Bioaccumulative potential

No data available.

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

No data available.

12.6. Endocrine disrupting properties

No data available.

12.7. Other adverse effects

No data available.

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German regulations concerning the classification of hazards for water (WGK, AwSV Annex I, KBws) :

WGK 2 : Hazardous for water.

SECTION 13 : DISPOSAL CONSIDERATIONS

Proper waste management of the mixture and/or its container must be determined in accordance with Directive 2008/98/EC.

13.1. Waste treatment methods

Do not pour into drains or waterways.

Waste :

Waste management is carried out without endangering human health, without harming the environment and, in particular without risk to water, air, soil, plants or animals.

Recycle or dispose of waste in compliance with current legislation, preferably via a certified collector or company.

Do not contaminate the ground or water with waste, do not dispose of waste into the environment.

Soiled packaging :

Empty container completely. Keep label(s) on container.

Give to a certified disposal contractor.

SECTION 14 : TRANSPORT INFORMATION

Transport product in compliance with provisions of the ADR for road, RID for rail, IMDG for sea and ICAO/IATA for air transport (ADR 2021 - IMDG 2020 [40-20] - ICAO/IATA 2022 [63]).

14.1. UN number or ID number

1760

14.2. UN proper shipping name

UN1760=CORROSIVE LIQUID, N.O.S.
(potassium hydroxide)

14.3. Transport hazard class(es)

- Classification :



8

14.4. Packing group

III

14.5. Environmental hazards

-

14.6. Special precautions for user

ADR/RID	Class	Code	Pack gr.	Label	Ident.	LQ	Provis.	EQ	Cat.	Tunnel
	8	C9	III	8	80	5 L	274	E1	3	E

IMDG	Class	2°Label	Pack gr.	LQ	EMS	Provis.	EQ	Stowage Handling	Segregation
	8	-	III	5 L	F-A, S-B	223 274	E1	Category A SW2	-

IATA	Class	2°Label	Pack gr.	Passager	Passager	Cargo	Cargo	note	EQ
	8	-	III	852	5 L	856	60 L	A3 A803	E1
	8	-	III	Y841	1 L	-	-	A3 A803	E1

For limited quantities, see part 2.7 of the OACI/IATA and chapter 3.4 of the ADR and IMDG.

For excepted quantities, see part 2.6 of the OACI/IATA and chapter 3.5 of the ADR and IMDG.



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14.7. Maritime transport in bulk according to IMO instruments

No data available.

SECTION 15: Regulatory information

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

- Classification and labelling information included in section 2:

The following regulations have been used:

- EU Regulation No. 1272/2008 amended by EU Regulation No. 2022/692 (ATP 18)

- Container information:

The mixture does not contain any substance restricted under Annex XVII of Regulation (EC) No. 1907/2006 (REACH):
<https://echa.europa.eu/substances-restricted-under-reach>.

- Particular provisions :

No data available.

- German regulations concerning the classification of hazards for water (WGK, AwSV Annex I, KBws) :

WGK 2 : Hazardous for water.

15.2. Chemical safety assessment

No data available.

SECTION 16 : OTHER INFORMATION

Since the user's working conditions are not known by us, the information supplied on this safety data sheet is based on our current level of knowledge and on national and community regulations.

The mixture must not be used for other uses than those specified in section 1 without having first obtained written handling instructions.

It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations.

The information in this safety data sheet must be regarded as a description of the safety requirements relating to the mixture and not as a guarantee of the properties thereof.

Wording of the phrases mentioned in section 3 :

H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
EUH032	Contact with acids liberates very toxic gas.

Abbreviations :

REACH : Registration, Evaluation, Authorization and Restriction of Chemical Substances.

DNEL : Derived No-Effect Level

PNEC : Predicted No-Effect Concentration

STEL : Short-term exposure limit

TWA : Time Weighted Averages

TMP : French Occupational Illness table

TLV : Threshold Limit Value (exposure)

AEV : Average Exposure Value.

ADR : European agreement concerning the international carriage of dangerous goods by Road.

IMDG : International Maritime Dangerous Goods.

IATA : International Air Transport Association.

ICAO : International Civil Aviation Organisation

RID : Regulations concerning the International carriage of Dangerous goods by rail.

WGK : Wassergefährdungsklasse (Water Hazard Class).

GHS05 : Corrosion

PBT: Persistent, bioaccumulable and toxic.



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vPvB : Very persistent, very bioaccumulable.

SVHC : Substances of very high concern.