

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date: 28.05.2020

Version number 1

Revision: _____ 28.05.2020

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

· **1.1 Product identifier**

· **Trade name: Regenerating solution R5**

Regenerierlösung R5

· **Article number: 81020745**

· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
Not approved for private consumers.

· **Application of the substance / the mixture**

Electroplating auxiliary

· **1.3 Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**

*Heimerle + Meule GmbH
Dennigstrasse 16
D-75179 Pforzheim*

*Telefon +49 (0) 7231 940-0
Telefax +49 (0) 7231 940-2199*

www.heimerle-meule.com

· **Further information obtainable from:**

*Abteilung BASU - Bau/Arbeitssicherheit/Umwelt
sds@heimerle-meule.com*

*IATA - 24h Emergency Contact -
(Gefahrgut-Notrufnummer)
+49 172 739 6970*

· **1.4 Emergency telephone number:**

*Vergiftungs-Informationen-Zentrale Freiburg, ++49 761 19240 (24 h)
(Poisoning Information Center)*

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**

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



GHS09 environment

Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.



GHS07

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Eye Irrit. 2 H319 Causes serious eye irritation.
Skin Sens. 1 H317 May cause an allergic skin reaction.

· **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

GHS09

· **Signal word** Warning

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

Tetraamminpalladium(II)-chloride-solution

· **Hazard statements**

H319 Causes serious eye irritation.

H317 May cause an allergic skin reaction.

H410 Very toxic to aquatic life with long lasting effects.

· **Precautionary statements**

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P272 Contaminated work clothing should not be allowed out of the workplace.

P273 Avoid release to the environment.

P280 Wear protective gloves / eye protection / face protection.

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

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Labelling of packages where the contents do not exceed 125 ml**

· **Hazard pictograms**



GHS07

GHS09

· **Signal word** Warning

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

Tetraamminpalladium(II)-chloride-solution

· **Hazard statements**

H317 May cause an allergic skin reaction.

· **Precautionary statements**

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves.

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

P321 Specific treatment (see on this label).

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

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

SECTION 3: Composition/information on ingredients

- **3.2 Chemical characterisation: Mixtures**
- **Description:** Mixture of substances listed below with nonhazardous additions.

· **Dangerous components / Information on ingredients:**

CAS: 13815-17-3	Tetraamminpalladium(II)-chloride-solution; tetraamminepalladium(2+) dichloride	25%
	<ul style="list-style-type: none">  Met. Corr. 1, H290  Aquatic Acute 1, H400 (M=1); Aquatic Chronic 1, H410 (M=10)  Acute Tox. 4, H302; Acute Tox. 4, H312; Acute Tox. 4, H332; Eye Irrit. 2, H319; Skin Sens. 1, H317 	

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

SECTION 4: First aid measures

- **4.1 Description of first aid measures**
- **General information:**
Immediately remove any clothing soiled by the product.
Personal protection for the First Aider.
Take affected persons out of danger area and lay down.
Involve doctor immediately after an accident or unwell
- **After inhalation:**
Supply fresh air and to be sure call for a doctor.
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
If skin irritation continues, consult a doctor.
- **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:**
Call for a doctor immediately.
Drink plenty of water and provide fresh air. Call for a doctor immediately.
A person vomiting while laying on their back should be turned onto their side.
- **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**
No further relevant information available.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:** Use fire extinguishing methods suitable to surrounding conditions.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **5.2 Special hazards arising from the substance or mixture**
Formation of toxic gases is possible during heating or in case of fire.
In case of fire, the following can be released:
Hydrogen chloride (HCl)
Chlorine (CL₂)
Nitrogen oxides (NO_x)

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Ammonia (NH₃)· **5.3 Advice for firefighters**· **Protective equipment:***Wear fully protective suit.**Wear self-contained respiratory protective device.*

Beware: Filter masks provide protection for a short period of time only. They should only be used in exceptional cases, that is if a small amount of the substance has spilled out or in order to fight spillages and fire

· **Additional information***Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.**Collect contaminated fire fighting water separately. It must not enter the sewage system.*

SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures***Wear protective equipment. Keep unprotected persons away.**Use respiratory protective device against the effects of fumes/dust/aerosol.**Only handle and refill product in closed systems.*· **6.2 Environmental precautions:***Keep contaminated washing water and dispose of appropriately.**Do not allow product to reach sewage system or any water course.**Inform respective authorities in case of seepage into water course or sewage system.**Dilute with plenty of water.**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).**Dispose contaminated material as waste according to item 13.**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***Keep receptacles tightly sealed.**Ensure good ventilation/exhaustion at the workplace.**The usual precautionary measures are to be adhered to when handling chemicals.**Prevent formation of aerosols.**Wear suitable respiratory protective device when decanting larger quantities without extractor facilities.**Do not dry clean dust covered objects and floors. Wash thoroughly with plenty of water.*· **Information about fire - and explosion protection: No special measures required.**· **7.2 Conditions for safe storage, including any incompatibilities**· **Storage:**· **Requirements to be met by storerooms and receptacles:***Observe official regulations on storing packagings .**Observe official regulations on storing packagings .*

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Prevent any seepage into the ground.

· **Information about storage in one common storage facility:**

Store away from foodstuffs.

· **Further information about storage conditions:** Keep container tightly sealed.

· **Storage class:** 8 B

· **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:**

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

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

· **8.2 Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

The usual precautionary measures are to be adhered to when handling chemicals.

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Do not inhale gases / fumes / aerosols.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

According to EC Directive 89/686/EEC

· **Respiratory protection:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Beware: Filter masks provide protection for a short period of time only. They should only be used in exceptional cases, that is if a small amount of the substance has spilled out or in order to fight spillages and fire.

according to EN 14387

according to EN 143

· **Recommended filter device for short term use:** Combination filter B-P2

· **Protection of hands:**



Protective gloves

according to EN 374

To avoid skin problems reduce the wearing of gloves to the required minimum.

Only use chemical-protective gloves with CE-labelling of category III.

Sensibilisation by the components in the glove materials is possible.

Check the permeability prior to each anewed use of the glove.

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

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

Prior to working with gloves the rubbing in with tanniferous skin-protecting agents for the avoidance of skin softening due to perspiration is recommended.

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- **Material of gloves**

Nitrile rubber, NBR

Recommended thickness of the material: ≥ 0.11 mm

Natural rubber, NR

Recommended thickness of the material: ≥ 1.0 mm

- **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.

The determined penetration times according to EN 16523-1:2015 are not performed under practical conditions. Therefore a maximum wearing time, which corresponds to 50% of the penetration time, is recommended.

For the mixture of chemicals mentioned below the penetration time has to be at least 480 minutes (Permeation according to EN 374 Part 3: Level 3).

Value for the permeation: Level ≤ 3

- **Not suitable are gloves made of the following materials:**

Leather gloves

Strong material gloves

- **Eye protection:**

Goggles recommended



Tightly sealed goggles

according to EN 166

- **Body protection:** Protective work clothing

SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

Form: Fluid

Colour: Light yellow

- **Odour:** Like ammoniac

- **Odour threshold:** Not determined.

- **pH-value at 20°C (68°F):** 9–10

- **Change in condition**

Melting point/freezing point: Undetermined.

Initial boiling point and boiling range: 100°C (212°F)

- **Flash point:** Not applicable.

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

- **Decomposition temperature:** Not determined.

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

- **Explosive properties:** Product does not present an explosion hazard.

- **Explosion limits:**

Lower: Not determined.

Upper: Not determined.

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· Vapour pressure:	Not determined.
· Density:	Not determined.
· Relative density	Not determined.
· Vapour density	Not determined.
· Evaporation rate	Not determined.
· 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.

SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:** To avoid thermal decomposition do not overheat.
- **10.3 Possibility of hazardous reactions** Reacts with acids, alkalis and oxidising agents.
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** Reaktionen with metals
- **10.6 Hazardous decomposition products:** No dangerous decomposition products known.

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:**

ATE (Acute Toxicity Estimates)

Oral	LD50	2,020 mg/kg
Dermal	LD50	4,443 mg/kg
Inhalative	LC50/4 h	44.4 mg/l

CAS: 13815-17-3 Tetraamminpalladium(II)-chloride-solution

Oral	LD50	500 mg/kg (ATE)
Dermal	LD50	1,100 mg/kg (ATE)
Inhalative	LC50/4 h	11 mg/l (ATE)

- **Primary irritant effect:**
- **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
- **Serious eye damage/irritation**
Causes serious eye irritation.
- **Respiratory or skin sensitisation**
May cause an allergic skin reaction.
- **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** Based on available data, the classification criteria are not met.
- **STOT-single exposure** Based on available data, the classification criteria are not met.

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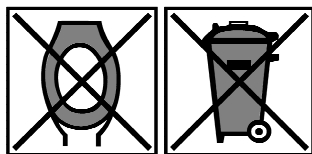
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability** No further relevant information available.
- **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 3 (German Regulation) (Self-assessment): extremely hazardous for water
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
- **12.5 Results of PBT and vPvB assessment** Not applicable.
- **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.

Contact manufacturer for recycling information.

- **Waste disposal key:**
The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

- **European waste catalogue**

11 00 00	WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY
11 01 00	wastes from chemical surface treatment and coating of metals and other materials (for example galvanic processes, zinc coating processes, pickling processes, etching, phosphating, alkaline degreasing, anodising)
11 01 98*	other wastes containing hazardous substances
HP4	Irritant - skin irritation and eye damage
HP6	Acute Toxicity
HP13	Sensitising
HP14	Ecotoxic

- **Uncleaned packaging:**
- **Recommendation:**
Disposal must be made according to official regulations.
Packaging which is uncleaned or soiled with product remains is to be treated like the product itself

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Packaging free of product remains is to be supplied refuse for recycling. Only if no adequate collecting system is available, they may be disposed of through the domestic rubbish

· **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

SECTION 14: Transport information

· 14.1 UN-Number

· ADR, IMDG, IATA

UNI719

· 14.2 UN proper shipping name

· ADR

UNI719 CAUSTIC ALKALI LIQUID, N.O.S.
(Tetraamminpalladium(II)-chloride-solution),
ENVIRONMENTALLY HAZARDOUS

· IMDG

CAUSTIC ALKALI LIQUID, N.O.S.
(Tetraamminpalladium(II)-chloride-solution), MARINE
POLLUTANT

· IATA

CAUSTIC ALKALI LIQUID, N.O.S.
(Tetraamminpalladium(II)-chloride-solution)

· 14.3 Transport hazard class(es)

· ADR, IMDG



· Class

8 Corrosive substances.

· Label

8

· IATA



· Class

8 Corrosive substances.

· Label

8

· 14.4 Packing group

· ADR, IMDG, IATA

III

· 14.5 Environmental hazards:

Product contains environmentally hazardous substances:
Tetraamminpalladium(II)-chloride-solution

· Marine pollutant:

No

Symbol (fish and tree)

· Special marking (ADR):

Symbol (fish and tree)

· 14.6 Special precautions for user

Warning: Corrosive substances.

· Danger code (Kemler):

80

· EMS Number:

F-A,S-B

· Segregation groups

Alkalis

· Stowage Category

A

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· Segregation Code	SG22 Stow "away from" ammonium salts SG35 Stow "separated from" SGG1-acids
· 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable.
· Transport/Additional information:	

· ADR	
· Limited quantities (LQ)	5L
· Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· Transport category	3
· Tunnel restriction code	E

· IMDG	
· Limited quantities (LQ)	5L
· Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml

· IATA	
· Remarks:	24h Emergency Contact - (Gefahrgut-Notrufnummer) +49 172 739 6970
· UN "Model Regulation":	UN 1719 CAUSTIC ALKALI LIQUID, N.O.S. (TETRAAMMINPALLADIUM(II)-CHLORIDE-SOLUTION), 8, III, ENVIRONMENTALLY HAZARDOUS

SECTION 15: Regulatory information

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

COUNCIL DIRECTIVE 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteenth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC)

DIRECTIVE 2012/18/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC

· **TSCA (Toxic Substances Control Act)**

All ingredients are listed.

· **GADSL**

None of the ingredients is listed.

· **Directive 2012/18/EU**

· **Named dangerous substances - ANNEX I** None of the ingredients is listed.

· **Seveso category E1** Hazardous to the Aquatic Environment

· **Qualifying quantity (tonnes) for the application of lower-tier requirements** 100 t

· **Qualifying quantity (tonnes) for the application of upper-tier requirements** 200 t

· **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3

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- **National regulations:**
- **Waterhazard class:** Water hazard class 3 (Self-assessment): extremely hazardous for water.
- **Other regulations, limitations and prohibitive regulations -**
- **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.

- **Reasons for revise**

If necessary, this safety data sheet can be revised according to legal guidelines.

Our current version for your reference is available on our website
www.heimerle-meule.com

- **Date from last issue :** Version 1

- **Relevant phrases**

H290 May be corrosive to metals.
H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

- **Department issuing SDS:**

Department BASU - Bau/Arbeitssicherheit/Umwelt

sds@heimerle-meule.com

- **Contact:**

Herr Thomas Knuth
Knuth@heimerle-meule.com
sds@heimerle-meule.com

- **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
AwSV: Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (German regulation).
TRGS: Technische Regeln für Gefahrstoffe (German regulation)
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
vPvB: very Persistent and very Bioaccumulative
Met. Corr. 1: Corrosive to metals – Category 1
Acute Tox. 4: Acute toxicity - oral – Category 4
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
Skin Sens. 1: Skin sensitisation – Category 1
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1