

## Safety Data Sheet

according to Regulation (EC) No 1907/2006

### ICP standard ruthenium 1.000 g Ru/l RuCl<sub>3</sub> in hydrochloric acid 1 mol/l

Revision date: 17.01.2022

Product code: 03738

Page 1 of 10

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

### 1.1. Product identifier

ICP standard ruthenium 1.000 g Ru/l RuCl<sub>3</sub> in hydrochloric acid 1 mol/l

UFI: KXAA-30TX-700W-G6RC

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

#### Use of the substance/mixture

Laboratory chemicals

Industrial uses: Uses of substances as such or in preparations at industrial sites

Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

#### Uses advised against

Do not use for private purposes (household).

### 1.3. Details of the supplier of the safety data sheet

|                         |                                 |                              |
|-------------------------|---------------------------------|------------------------------|
| Company name:           | Fa. Bernd Kraft GmbH            |                              |
| Street:                 | Stempelstraße 6                 |                              |
| Place:                  | D-47167 Duisburg                |                              |
| Telephone:              | 0203/5194-0                     | Telefax: 0203/5194-290       |
| e-mail:                 | info@berndkraft.de              |                              |
| Contact person:         | Abteilung Produktsicherheit     | Telephone: 0203/5194-107/117 |
| e-mail:                 | produktsicherheit@berndkraft.de |                              |
| Internet:               | www.berndkraft.de               |                              |
| Responsible Department: | Abteilung Produktsicherheit     |                              |

### 1.4. Emergency telephone number:

For Hazardous Materials [or Dangerous Goods] Incidents Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300 Outside USA and Canada: +1 703-741-5970 (collect calls accepted)

### Further Information

This product is a mixture. REACH Registration Number see section 3.

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

#### Regulation (EC) No 1272/2008

Met. Corr. 1; H290

Full text of hazard statements: see SECTION 16.

### 2.2. Label elements

#### Regulation (EC) No 1272/2008

Signal word: Warning

Pictograms:



#### Hazard statements

H290 May be corrosive to metals.

#### Precautionary statements

P234 Keep only in original packaging.  
P390 Absorb spillage to prevent material damage.  
P406 Store in a corrosion-resistant container with a resistant inner liner.

**ICP standard ruthenium 1.000 g Ru/l RuCl<sub>3</sub> in hydrochloric acid 1 mol/l**

Revision date: 17.01.2022

Product code: 03738

Page 2 of 10

**2.3. Other hazards**

No data available

**SECTION 3: Composition/information on ingredients**

**3.2. Mixtures**

**Chemical characterization**

Mixtures in aqueous solution

**Hazardous components**

| CAS No    | Chemical name                                 |              |                  | Quantity  |
|-----------|---|--------------|------------------|-----------|
|           | EC No   | Index No     | REACH No         |           |
|           | Classification (Regulation (EC) No 1272/2008) |              |                  |           |
| 7647-01-0 | Hydrochloric acid                             |              |                  | 1 - < 5 % |
|           | 231-595-7                                     | 017-002-01-X | 01-2119484862-27 |           |
|           | Skin Corr. 1B, STOT SE 3; H314 H335           |              |                  |           |

Full text of H and EUH statements: see section 16.

**Specific Conc. Limits, M-factors and ATE**

| CAS No    | EC No  | Chemical name     | Quantity  |
|-----------|--|-------------------|-----------|
|           | Specific Conc. Limits, M-factors and ATE   |                   |           |
| 7647-01-0 | 231-595-7  | Hydrochloric acid | 1 - < 5 % |
|           | Skin Corr. 1B; H314: >= 25 - 100 Skin Irrit. 2; H315: >= 10 - < 25 Eye Irrit. 2; H319: >= 10 - < 25 STOT SE 3; H335: >= 10 - 100 |                   |           |

**Further Information**

This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of = 0.1 % (w/w).

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**

**General information**

No data available

**After inhalation**

Provide fresh air.  
Call a doctor if you feel unwell.

**After contact with skin**

Wash immediately with: Water  
Take off immediately all contaminated clothing and wash it before reuse.  
In case of skin irritation, consult a physician.

**After contact with eyes**

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.  
Remove contact lenses, if present and easy to do. Continue rinsing.

**After ingestion**

Rinse mouth immediately and drink plenty of water.  
Call a physician immediately.

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

Irritant

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

No data available

**ICP standard ruthenium 1.000 g Ru/l RuCl<sub>3</sub> in hydrochloric acid 1 mol/l**

Revision date: 17.01.2022

Product code: 03738

Page 3 of 10

**SECTION 5: Firefighting measures**

**5.1. Extinguishing media**

**Suitable extinguishing media**

Co-ordinate fire-fighting measures to the fire surroundings.

**Unsuitable extinguishing media**

no restriction

**5.2. Special hazards arising from the substance or mixture**

Non-combustible liquids

Hazardous combustion products

In case of fire may be liberated:

Hydrochloric gas

**5.3. Advice for firefighters**

Wear a self-contained breathing apparatus and chemical protective clothing. Full protection suit.

Avoid contact with skin, eyes and clothes.

**Additional information**

Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

Use water spray jet to protect personnel and to cool endangered containers.

**SECTION 6: Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

**General advice**

Corrosive to metals.

**For non-emergency personnel**

Provide adequate ventilation.

Use personal protection equipment.

Avoid contact with skin, eyes and clothes.

Remove persons to safety.

Emergency procedures

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

**For emergency responders**

Precautionary statements For emergency responders : Personal protection equipment: see section 8

**6.2. Environmental precautions**

Do not allow to enter into surface water or drains.

**6.3. Methods and material for containment and cleaning up**

**For containment**

Cover drains.

Prevent spread over a wide area (e.g. by containment or oil barriers).

Collect in closed and suitable containers for disposal.

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

**For cleaning up**

Clean contaminated articles and floor according to the environmental legislation.

**Other information**

Provide adequate ventilation.

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

Wear breathing apparatus if exposed to vapours/dusts/aerosols.

**6.4. Reference to other sections**

Safe handling: see section 7

Personal protection equipment: see section 8

Disposal: see section 13

**ICP standard ruthenium 1.000 g Ru/l RuCl<sub>3</sub> in hydrochloric acid 1 mol/l**

Revision date: 17.01.2022

Product code: 03738

Page 4 of 10

**SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

**Advice on safe handling**

- If handled uncovered, arrangements with local exhaust ventilation have to be used.
- Read label before use. Handle and open container with care.
- When using do not eat, drink, smoke, sniff. Keep container tightly closed.
- Use personal protection equipment.
- Provide adequate ventilation.
- Avoid contact with skin, eyes and clothes.

**Advice on protection against fire and explosion**

- Usual measures for fire prevention.

**Advice on general occupational hygiene**

- Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme.
- Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat or drink.

**Further information on handling**

- Draw up and observe skin protection programme.
- Wash hands and face before breaks and after work and take a shower if necessary.
- Take off immediately all contaminated clothing and wash it before reuse.

**7.2. Conditions for safe storage, including any incompatibilities**

**Requirements for storage rooms and vessels**

- Keep container tightly closed.

**Further information on storage conditions**

- Unsuitable container/equipment material: Metal

**7.3. Specific end use(s)**

- Laboratory chemicals

**SECTION 8: Exposure controls/personal protection**

**8.1. Control parameters**

**Occupational exposure limits**

| CAS No    | Substance         | ppm | mg/m <sup>3</sup> | fib/cm <sup>3</sup> | Category      | Origin |
|-----------|-------------------|-----|-------------------|---------------------|---------------|--------|
| 7647-01-0 | Hydrogen chloride | 5   | 8                 |                     | TWA (8 h)     |        |
|           |                   | 10  | 15                |                     | STEL (15 min) |        |

**DNEL/DMEL values**

| CAS No                   | Substance         | Exposure route | Effect | Value                |
|--------------------------|-------------------|----------------|--------|----------------------|
| 7647-01-0                | Hydrochloric acid |                |        |                      |
| Worker DNEL, long-term   |                   | inhalation     | local  | 8 mg/m <sup>3</sup>  |
| Worker DNEL, acute       |                   | inhalation     | local  | 15 mg/m <sup>3</sup> |
| Consumer DNEL, long-term |                   | inhalation     | local  | 8 mg/m <sup>3</sup>  |
| Consumer DNEL, acute     |                   | inhalation     | local  | 15 mg/m <sup>3</sup> |

**8.2. Exposure controls**

**Appropriate engineering controls**

- Technical measures and the application of suitable work processes have priority over personal protection

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**ICP standard ruthenium 1.000 g Ru/l RuCl<sub>3</sub> in hydrochloric acid 1 mol/l**

Revision date: 17.01.2022

Product code: 03738

Page 5 of 10

equipment.

If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe gas/fumes/vapour/spray.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection**

Suitable eye protection:  
Face protection shield  
goggles.

**Hand protection**

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Protective gloves are recommended Company KCL GmbH, D-36124 Eichenzell, email: [vertrieb@kcl.de](mailto:vertrieb@kcl.de) With specification (test according to EN374):

By long-term hand contact

Recommended glove articles: KCL 741 Dermatril® L  
Recommended material: NBR (Nitrile rubber) 0,11 mm  
Wearing time with permanent contact: > 480 min

By short-term hand contact

Recommended glove articles: KCL 741 Dermatril® L  
Recommended material: NBR (Nitrile rubber) 0,11 mm  
Wearing time with occasional contact (splashes): > 480 min

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types. This recommendation applies only to the product stated in the safety data sheet supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

**Skin protection**

Wear suitable protective clothing.  
Protective clothing acid-resistant

**Respiratory protection**

Respiratory protection necessary at: aerosol or mist formation

**Environmental exposure controls**

Do not allow to enter into surface water or drains.

**SECTION 9: Physical and chemical properties**

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

|                  |                                     |
|------------------|-------------------------------------|
| Physical state:  | Liquid                              |
| Colour:          | dark red                            |
| Odour:           | odourless                           |
| Odour threshold: | No data available No data available |

**Changes in the physical state**

|   |                   |
|---|-------------------|
| Melting point/freezing point:                             | No data available |
| Boiling point or initial boiling point and boiling range: | No data available |
| Sublimation point:  | No data available |

**ICP standard ruthenium 1.000 g Ru/l RuCl<sub>3</sub> in hydrochloric acid 1 mol/l**

Revision date: 17.01.2022

Product code: 03738

Page 6 of 10

Softening point: No data available  
 Pour point: No data available  
 No data available:  
 Flash point: X

**Flammability**

Solid/liquid: not applicable  
 Gas: not applicable

**Explosive properties**

No data available

Lower explosion limits: No data available  
 Upper explosion limits: No data available  
 Auto-ignition temperature: No data available

**Self-ignition temperature**

Solid: not applicable  
 Gas: not applicable

Decomposition temperature: No data available

pH-Value: acidic

Viscosity / dynamic: No data available

Viscosity / kinematic: No data available

Flow time: No data available

Water solubility: No data available

**Solubility in other solvents**

not determined

Dissolution rate: No data available

Partition coefficient n-octanol/water: No data available

Dispersion stability: No data available

Vapour pressure: No data available

Vapour pressure: No data available

Density: No data available

Relative density: No data available

Bulk density: No data available

Relative vapour density: No data available

Particle characteristics: No data available

**9.2. Other information**

**Information with regard to physical hazard classes**

Oxidizing properties  
 No data available

**Other safety characteristics**

Solvent separation test: No data available  
 Solvent content: No data available  
 Solid content: No data available  
 Evaporation rate: No data available

**Further Information**

Corrosive to metals

**ICP standard ruthenium 1.000 g Ru/l RuCl<sub>3</sub> in hydrochloric acid 1 mol/l**

Revision date: 17.01.2022

Product code: 03738

Page 7 of 10

**SECTION 10: Stability and reactivity**

**10.1. Reactivity**

Corrosive to metals.

**10.2. Chemical stability**

The product is stable under storage at normal ambient temperatures.

**10.3. Possibility of hazardous reactions**

The product develops hydrogen in an aqueous solution in contact with metals.

**10.4. Conditions to avoid**

Heat

**10.5. Incompatible materials**

Keep away from: Metal.

The product develops hydrogen in an aqueous solution in contact with metals.

**10.6. Hazardous decomposition products**

In case of fire may be liberated:

SECTION 5: Firefighting measures

**Further information**

No data available

**SECTION 11: Toxicological information**

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

**Toxicokinetics, metabolism and distribution**

There are no data available on the mixture itself.

**Acute toxicity**

Based on available data, the classification criteria are not met.

**Irritation and corrosivity**

Based on available data, the classification criteria are not met.  
slightly irritant but not relevant for classification.

**Sensitising effects**

Based on available data, the classification criteria are not met.

**Carcinogenic/mutagenic/toxic effects for reproduction**

Based on available data, the classification criteria are not met.

**STOT-single exposure**

Based on available data, the classification criteria are not met.

**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.

**Specific effects in experiment on an animal**

There are no data available on the mixture itself.

**Additional information on tests**

There are no data available on the mixture itself.

**Practical experience**

There are no data available on the mixture itself.

**11.2. Information on other hazards**

**Endocrine disrupting properties**

There are no data available on the mixture itself.

**ICP standard ruthenium 1.000 g Ru/l RuCl<sub>3</sub> in hydrochloric acid 1 mol/l**

Revision date: 17.01.2022

Product code: 03738

Page 8 of 10

**Other information**

There are no data available on the mixture itself.

**Further information**

Irritant

**SECTION 12: Ecological information**

**12.1. Toxicity**

There are no data available on the mixture itself.

| CAS No    | Chemical name       |      |           |         |                |        |
|-----------|---------------------|------|-----------|---------|----------------|--------|
|           | Aquatic toxicity    | Dose | [h]   [d] | Species | Source         | Method |
| 7647-01-0 | Hydrochloric acid   |      |           |         |                |        |
|           | Acute fish toxicity | LC50 | 862 mg/l  | 96 h    | Leuciscus idus |        |

**12.2. Persistence and degradability**

There are no data available on the mixture itself.

**12.3. Bioaccumulative potential**

There are no data available on the mixture itself.

**12.4. Mobility in soil**

There are no data available on the mixture itself.

**12.5. Results of PBT and vPvB assessment**

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

There are no data available on the mixture itself.

**12.6. Endocrine disrupting properties**

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

There are no data available on the mixture itself.

**12.7. Other adverse effects**

Discharge into the environment must be avoided.

**Further information**

Do not empty into drains.

**SECTION 13: Disposal considerations**

**13.1. Waste treatment methods**

**Disposal recommendations**

Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.

Send to a physico-chemical treatment facility under observation of official regulations.

Do not empty into drains.

**Contaminated packaging**

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

**SECTION 14: Transport information**

**Land transport (ADR/RID)**

|  |                   |
|--|-------------------|
| <b>14.1. UN number or ID number:</b>     | UN 1789           |
| <b>14.2. UN proper shipping name:</b>    | HYDROCHLORIC ACID |
| <b>14.3. Transport hazard class(es):</b> | 8                 |
| <b>14.4. Packing group:</b>              | III               |
| Hazard label:                            | 8                 |
| Classification code:                     | C1                |



**ICP standard ruthenium 1.000 g Ru/l RuCl<sub>3</sub> in hydrochloric acid 1 mol/l**

Revision date: 17.01.2022

Product code: 03738

Page 9 of 10

Special Provisions: 520  
 Limited quantity: 5 L  
 Excepted quantity: E1  
 Transport category: 3  
 Hazard No: 80  
 Tunnel restriction code: E

**Inland waterways transport (ADN)**

**14.1. UN number or ID number:** UN 1789  
**14.2. UN proper shipping name:** HYDROCHLORIC ACID  
**14.3. Transport hazard class(es):** 8  
**14.4. Packing group:** III  
 Hazard label: 8  
 Classification code: C1  
 Special Provisions: 520  
 Limited quantity: 5 L  
 Excepted quantity: E1

**Marine transport (IMDG)**

**14.1. UN number or ID number:** UN 1789  
**14.2. UN proper shipping name:** HYDROCHLORIC ACID  
**14.3. Transport hazard class(es):** 8  
**14.4. Packing group:** III  
 Hazard label: 8  
 Special Provisions: 223  
 Limited quantity: 5 L  
 Excepted quantity: E1  
 EmS: F-A, S-B

**Air transport (ICAO-TI/IATA-DGR)**

**14.1. UN number or ID number:** UN 1789  
**14.2. UN proper shipping name:** HYDROCHLORIC ACID  
**14.3. Transport hazard class(es):** 8  
**14.4. Packing group:** III  
 Hazard label: 8  
 Special Provisions: A3 A803  
 Limited quantity Passenger: 1 L  
 Passenger LQ: Y841  
 Excepted quantity: E1  
 IATA-packing instructions - Passenger: 852  
 IATA-max. quantity - Passenger: 5 L  
 IATA-packing instructions - Cargo: 856  
 IATA-max. quantity - Cargo: 60 L

**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: No

**SECTION 15: Regulatory information**

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

**EU regulatory information**

Information according to 2012/18/EU (SEVESO III): Not subject to 2012/18/EU (SEVESO III)

**National regulatory information**

Water hazard class (D): 1 - slightly hazardous to water

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**ICP standard ruthenium 1.000 g Ru/l RuCl<sub>3</sub> in hydrochloric acid 1 mol/l**

Revision date: 17.01.2022

Product code: 03738

Page 10 of 10

**SECTION 16: Other information**

**Changes**

This data sheet contains changes from the previous version in section(s): 1,9,11,12,13.

**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  
IATA: International Air Transport Association  
GHS: Globally Harmonized 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  
LC50: Lethal concentration, 50%  
LD50: Lethal dose, 50%

**Classification for mixtures and used evaluation method according to Regulation (EC) No 1272/2008 [CLP]**

| Classification     | Classification procedure |
|--------------------|--------------------------|
| Met. Corr. 1; H290 | On basis of test data    |

**Relevant H and EUH statements (number and full text)**

H290 May be corrosive to metals.  
H314 Causes severe skin burns and eye damage.  
H335 May cause respiratory irritation.

**Further Information**

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

*(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)*