



Johnson Matthey

SAFETY DATA SHEET

Ruthenium (III) Chloride in Aqueous solution

Product code : 191004

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

1.1 Product identifier

Product name : Ruthenium (III) Chloride in Aqueous solution
Product code : 191004
Product description : Not available.
Product type : Liquid.
Other means of identification : Not available.

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

Not applicable.

1.3 Details of the supplier of the safety data sheet

Johnson Matthey Plc,
Orchard Road,
Royston,
Herts SG8 5HE

e-mail address of person responsible for this SDS : EHS_CCR@matthey.com

1.4 Emergency telephone number

Supplier

Telephone number : +44(0)1763253000
Hours of operation : 24 hours

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Met. Corr. 1, H290
Acute Tox. 4, H302
Acute Tox. 4, H332
Skin Corr. 1A, H314
Eye Dam. 1, H318
Aquatic Chronic 3, H412

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.

Classification according to Directive 1999/45/EC [DPD]

The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification : Xn; R20/22
C; R35
R52/53

Human health hazards : Harmful by inhalation and if swallowed. Causes severe burns.

Environmental hazards : Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

SECTION 2: Hazards identification

See Section 16 for the full text of the R phrases or H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms :



Signal word :

Danger

Hazard statements :

May be corrosive to metals.
Harmful if swallowed or if inhaled.
Causes severe skin burns and eye damage.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention :

Wear protective gloves/clothing and eye/face protection.

Response :

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF SWALLOWED: Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

Storage :

Store locked up.

Disposal :

Not applicable.

Hazardous ingredients :

ruthenium trichloride
hydrogen chloride

Supplemental label elements :

Not applicable.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles :

Not applicable.

Special packaging requirements

Containers to be fitted with child-resistant fastenings :

Not applicable.

Tactile warning of danger :

Not applicable.

2.3 Other hazards

Other hazards which do not result in classification :

None known.

SECTION 3: Composition/information on ingredients

3.2 Mixtures :

Mixture

Product/ingredient name	Identifiers	%	Classification		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
ruthenium trichloride	EC: 233-167-5 CAS: 10049-08-8	>=35 - <50	Xn; R22 C; R34 R52/53	Met. Corr. 1, H290 Acute Tox. 4, H302 Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Chronic 3, H412	[1]
hydrogen chloride	EC: 231-595-7 CAS: 7647-01-0 Index: 017-002-00-2	>=10 - <20	T; R23 C; R35	Press. Gas, H281 Acute Tox. 3, H331 Skin Corr. 1A, H314 Eye Irrit. 2, H319	[1] [2]

SECTION 3: Composition/information on ingredients

			See Section 16 for the full text of the R-phrases declared above.	See Section 16 for the full text of the H statements declared above.	
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There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

Type

- [1] Substance classified with a health or environmental hazard
- [2] Substance with a workplace exposure limit
- [3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
- [4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
- [5] Substance of equivalent concern

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : Harmful if inhaled. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.
- Skin contact** : Causes severe burns.

SECTION 4: First aid measures

Ingestion : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician :

Specific treatments : No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
halogenated compounds
metal oxide/oxides

5.3 Advice for firefighters

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

Remark : The residue, ash or char left after a fire may have catalytic properties and may promote the re-ignition of flammable materials and vapours.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

SECTION 6: Accidental release measures

6.2 Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

6.3 Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Absorb spillage to prevent material damage. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Absorb spillage to prevent material damage. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Absorb spillage to prevent material damage.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in corrosive resistant container with a resistant inner liner. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Seveso II Directive - Reporting thresholds (in tonnes)

Named substances

Name	Notification and MAPP threshold	Safety report threshold
hydrogen chloride	25	250

7.3 Specific end use(s)

Recommendations : Not available.

SECTION 7: Handling and storage

Industrial sector specific solutions : Not available.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product. Additional measures might be required for bulk handling or other uses that could significantly increase worker or exposure or environmental releases.

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
hydrogen chloride	EH40/2005 WELs (United Kingdom (UK), 12/2011). STEL: 8 mg/m ³ 15 minutes. Form: Gas and aerosol mists STEL: 5 ppm 15 minutes. Form: Gas and aerosol mists TWA: 2 mg/m ³ 8 hours. Form: Gas and aerosol mists TWA: 1 ppm 8 hours. Form: Gas and aerosol mists

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

No DNELs/DMELs available.

PNECs

No PNECs available

8.2 Exposure controls

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

SECTION 8: Exposure controls/personal protection

- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties****Appearance**

- Physical state** : Liquid.
- Colour** : Red. [Dark]
- Odour** : Not available.
- Odour threshold** : Not available.
- pH** : Not available.
- Melting point/freezing point** : Not available.
- Initial boiling point and boiling range** : Not available.
- Flash point** : Not available.
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not available.
- Upper/lower flammability or explosive limits** : Not available.
- Vapour pressure** : Not available.
- Vapour density** : Not available.
- Relative density** : Not available.
- Solubility(ies)** : Not available.
- Partition coefficient: n-octanol/ water** : Not available.
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.
- Viscosity** : Not available.
- Explosive properties** : Not available.
- Oxidising properties** : Not available.
- Minimum ignition energy (mJ)** : Not available.

9.2 Other information

Ruthenium (III) Chloride in Aqueous solution

SECTION 9: Physical and chemical properties

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity : No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : The catalytic properties of this material may give it a low ignition temperature (except when supplied as a paste). The catalytic properties will also promote the oxidation and possible ignition of flammable liquids and vapours. A used, filtered catalyst should, therefore, be kept wet and out of contact with combustible vapours and liquids. The material is supplied in a stable condition and other than the previously mentioned catalytic hazards of this material, no specific reactive hazards are known.

10.3 Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid : No specific data.

10.5 Incompatible materials : Reactive or incompatible with the following materials:
metals

10.6 Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
ruthenium trichloride	LD50 Oral	Rat	595 mg/kg	-

Conclusion/Summary : Not available.

Acute toxicity estimates

Route	ATE value
Oral	1469.1 mg/kg
Inhalation (vapours)	18.75 mg/l

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
hydrogen chloride	Eyes - Mild irritant	Rabbit	-	0.5 minutes	-
	Skin - Mild irritant	Human	-	5 milligrams 24 hours 4 Percent	-

Conclusion/Summary : Not available.

Sensitisation

Product/ingredient name	Route of exposure	Species	Result
hydrogen chloride	skin	Mouse	Not sensitizing
	skin	Guinea pig	Not sensitizing
	skin	Human	Not sensitizing

Conclusion/Summary : Not available.

Mutagenicity

SECTION 11: Toxicological information

Product/ingredient name	Test	Experiment	Result
hydrogen chloride	-	Experiment: In vitro Subject: Mammalian-Animal Cell: Germ Metabolic activation: with and without	Positive
	-	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic Metabolic activation: with	Positive
	-	Experiment: In vitro Subject: Bacteria Metabolic activation: with and without	Negative

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Harmful if inhaled. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.

Skin contact : Causes severe burns.

Ingestion : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

SECTION 11: Toxicological information

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
hydrogen chloride	Sub-chronic NOAEL Inhalation Gas.	Rat - Male, Female	10 ppm	6 hours per day; 5 days per week

Conclusion/Summary : Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Other information : Not available.

Other adverse symptoms : No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
hydrogen chloride	Acute LC50 240000 µg/l Marine water	Crustaceans - Carcinus maenas - Adult Fish - Gambusia affinis - Adult	48 hours
	Acute LC50 282 ppm Fresh water		96 hours

Conclusion/Summary : Not available.

12.2 Persistence and degradability

Conclusion/Summary : Not available.

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
hydrogen chloride	0.25	-	low

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

PBT : Not applicable.

vPvB : Not applicable.

12.6 Other adverse effects : No known significant effects or critical hazards.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Empty containers or liners may retain some product residues. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Return accumulated waste material to the refinery for metal recovery, or dispose of in accordance with local and national regulations.





Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	UN1789	UN1789	UN1789	UN1789
14.2 UN proper shipping name	HYDROCHLORIC ACID	HYDROCHLORIC ACID	HYDROCHLORIC ACID	Hydrochloric acid
14.3 Transport hazard class(es)	8 	8 	8 	8 
14.4 Packing group	II	II	II	II
14.5 Environmental hazards	No.	No.	No.	No.
Additional information	<p>Hazard identification number 80</p> <p>Limited quantity 1 L</p> <p>Special provisions 520</p> <p>Tunnel code (E)</p>	-	<p>Emergency schedules (EmS) F-A, S-B</p>	<p>Passenger and Cargo Aircraft Quantity limitation: 1 L Packaging instructions: 851</p> <p>Cargo Aircraft Only Quantity limitation: 30 L Packaging instructions: 855</p> <p>Limited Quantities - Passenger Aircraft Quantity limitation: 0.5 L Packaging instructions: Y840</p> <p>Special provisions A3</p>

SECTION 14: Transport information

14.6 Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

SECTION 15: Regulatory information

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

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Not applicable.

Other EU regulations

Europe inventory : All components are listed or exempted.

Seveso II Directive

This product is controlled under the Seveso II Directive.

Named substances

Name
hydrogen chloride

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

International lists

National inventory

Australia : All components are listed or exempted.

Canada : All components are listed or exempted.

China : All components are listed or exempted.

Japan : All components are listed or exempted.

Malaysia : Not determined.

SECTION 15: Regulatory information

- New Zealand** : All components are listed or exempted.
Philippines : Not determined.
Republic of Korea : All components are listed or exempted.
Taiwan : Not determined.
United States : **United States inventory (TSCA 8b)**: All components are listed or exempted.

- 15.2 Chemical Safety Assessment** : This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

- Abbreviations and acronyms** :
- ATE = Acute Toxicity Estimate
 - CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
 - DMEL = Derived Minimal Effect Level
 - DNEL = Derived No Effect Level
 - EUH statement = CLP-specific Hazard statement
 - PBT = Persistent, Bioaccumulative and Toxic
 - PNEC = Predicted No Effect Concentration
 - RRN = REACH Registration Number
 - vPvB = Very Persistent and Very Bioaccumulative

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Met. Corr. 1, H290 Acute Tox. 4, H302 Acute Tox. 4, H332 Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Chronic 3, H412	Expert judgment Calculation method Calculation method Calculation method Calculation method Calculation method

- Full text of abbreviated H statements** :
- | | |
|-------------------|---|
| H281 | Contains refrigerated gas; may cause cryogenic burns or injury. |
| H290 | May be corrosive to metals. |
| H302 (oral) | Harmful if swallowed. |
| H314 | Causes severe skin burns and eye damage. |
| H318 | Causes serious eye damage. |
| H319 | Causes serious eye irritation. |
| H331 (inhalation) | Toxic if inhaled. |
| H332 (inhalation) | Harmful if inhaled. |
| H412 | Harmful to aquatic life with long lasting effects. |

- Full text of classifications [CLP/GHS]** :
- | | |
|---------------------------------|---|
| Acute Tox. 3, H331 | ACUTE TOXICITY (inhalation) - Category 3 |
| Acute Tox. 4, H302 | ACUTE TOXICITY (oral) - Category 4 |
| Acute Tox. 4, H332 | ACUTE TOXICITY (inhalation) - Category 4 |
| Aquatic Chronic 3, H412 | LONG-TERM AQUATIC HAZARD - Category 3 |
| Eye Dam. 1, H318 | SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1 |
| Eye Irrit. 2, H319 | SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2 |
| Met. Corr. 1, H290 | CORROSIVE TO METALS - Category 1 |
| Press. Gas Refr. Liq. Gas, H281 | GASES UNDER PRESSURE - Refrigerated liquefied gas |
| Skin Corr. 1A, H314 | SKIN CORROSION/IRRITATION - Category 1A |

- Full text of abbreviated R phrases** :
- R23- Toxic by inhalation.
 - R22- Harmful if swallowed.
 - R20/22- Harmful by inhalation and if swallowed.
 - R34- Causes burns.
 - R35- Causes severe burns.
 - R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Ruthenium (III) Chloride in Aqueous solution

SECTION 16: Other information

Full text of classifications [DSD/DPD] : T - Toxic
C - Corrosive
Xn - Harmful

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Date of previous issue : 13/03/2015.

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Notice to reader

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Johnson Matthey National Sales Offices

Johnson Matthey PLC, Orchard Road, Royston, Hertfordshire, SG8 5HE United Kingdom Tel: +44(0)1763 253000 Fax: +44(0)1763 253492
 Johnson Matthey PLC, 33 Jeffreys Road, Brimsdown, Enfield, Middlesex, EN3 7PW United Kingdom Tel: 020 8211 2500 Fax: 020 8211 2641
 SA Johnson Matthey N.V., 8 Avenue de Bale, B-1140, Brussels, België / Belgique Tel: 2 729 0711 Fax: 2 216 9061
 Johnson Matthey A/S, Frederikssundsvej 274 D, Brønshøj DK-2700, Copenhagen, Denmark Tel: 38 89 62 00 Fax: 38 89 62 01
 Oy Johnson Matthey A.B, Virnatie 5B, 01300 Vantaa, Suomi Tel: 09 8574 800 Fax: 09 8574 807
 Johnson Matthey GmbH Alfa Products, Zeppelinstrasse 7, Postfach 6540, D-7500 Karlsruhe 1, Deutschland Tel: 721 8400 70 Fax: 721 849674
 Johnson Matthey SA, 13 Rue de la Perdrix, ZI Paris Nord II, BP 51240, 95956, Roissy, CDG Cedex France Tel: 1 48 63 22 99 Fax: 1 48 63 27 02
 Johnson Matthey GmbH Otto-Volger-Strasse 9B, D-65843, Sulzbach/Ts, Deutschland Tel: (0 61 96)70 38-21 Fax: (0 61 96)70 38 12
 Johnson Matthey PLC, Unit 1-2, Blanchardstown Business Centre, Clonsilla Road, Blanchardstown, Dublin 15, Republic of Ireland Tel 1 820 7722 Fax: 1 820 7733
 Johnson Matthey AB, Victor Hasselblads Gata 8, S-421 31 Västra Frölunda, Gothenburg, Sverige Tel: 031 891390 Fax: 031 477795
 Johnson Matthey & Brandenberger AG, Glattalstrasse 18, CH-8052, Zurich, Switzerland Tel: 01 307 1919 Fax: 01 307 1920