REDUCTION SOLUTION CU (CH)

Version 3.0
SDS_US_GHS SDS Number: 2202442 Revision Date: 10/30/2018

SECTION 1. IDENTIFICATION

Product name : REDUCTION SOLUTION CU (CH)

Product code : 2202442

Manufacturer or supplier's details

Company name of supplier : Atotech Deutschland GmbH

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Prepared by
Product Safety Department (PSD): product-safety@atotech.com

Inquiries
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Emergency telephone number : CHEMTREC +18004249300

Transport Medical : Rocky Mountain Poison Control Center: 303-623-5716

Recommended use of the chemical and restrictions on use

Recommended use : Plating agents and metal surface treating agents
Surface treatment

Restrictions on use : For industrial use only.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Flammable liquids	:	Category 4
Acute toxicity (Oral)	:	Category 3
Acute toxicity (Inhalation)	:	Category 3
Acute toxicity (Dermal)	:	Category 3
Skin corrosion	:	Category 1B
Serious eye damage	:	Category 1
Skin sensitization	:	Category 1
Germ cell mutagenicity	:	Category 2
Carcinogenicity	:	Category 1B
Specific target organ toxicity - single exposure	:	Category 1 (Eyes, Nervous system)

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements :
H227 Combustible liquid.
H301 + H311 + H331 Toxic if swallowed, in contact with skin or if inhaled.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H341 Suspected of causing genetic defects.
H350 May cause cancer.
H370 Causes damage to organs (Eyes, Nervous system).

Precautionary statements :

Prevention:

P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/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.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : Aqueous solution

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
Formaldehyde	50-00-0	>= 25 - < 40
Methanol	67-56-1	>= 10 - < 25

This product may contain component(s) that are not listed under disclosure. All components not listed, do not contain hazardous materials above deminimus disclosure limits as defined by OSHA, NIOSH, ACGIH or Canadian WHMIS 2015 regulations and or guidelines. Please refer to other sections of the SDS for information on safety, health and environmental guidelines and precautions.

SECTION 4. FIRST AID MEASURES

General advice : Call a physician or poison control center immediately.
Show this safety data sheet to the doctor in attendance.

If inhaled	:	Call a physician or poison control center immediately. Move to fresh air.
In case of skin contact	:	Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Consult a physician.
In case of eye contact	:	In case of contact, immediately flush eyes with plenty of water for at least 30 minutes. Consult a physician.
If swallowed	:	If swallowed, call a poison control centre or doctor immediately. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice.
Most important symptoms and effects, both acute and delayed	:	Toxic if swallowed, in contact with skin or if inhaled. May cause an allergic skin reaction. Causes serious eye damage. Suspected of causing genetic defects. May cause cancer. Causes damage to organs. Causes severe burns.
Protection of first aid responders	:	First Aid responders should pay attention to self-protection and use the recommended protective clothing No artificial respiration, mouth-to-mouth or mouth to nose. Use suitable instruments/apparatus.
Notes to physician	:	For specialist advice physicians should contact the Poison Control Center.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	High volume water jet
Hazardous combustion products	:	Carbon oxides Flammable gases
Specific extinguishing methods	:	Use a water spray to cool fully closed containers. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for fire-fighters	:	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Use the indicated respiratory protection if the occupational exposure limit is exceeded and/or in case of product release (dust).
Environmental precautions	:	Should not be released into the environment. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up	:	Avoid formation of aerosol. Dam up. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Clean contaminated floors and objects thoroughly while observing environmental regulations.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	:	For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Keep away from fire, sparks and heated surfaces. Handle in accordance with good industrial hygiene and safety practice. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid breathing mist or vapors.
Conditions for safe storage	:	Keep containers tightly closed in a dry, cool and well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons. Keep away from sources of ignition - No smoking. May be corrosive to metals.
Recommended storage temperature	:	-5 - 40 °C

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of	Control parameters / Permissible	Basis

		exposure)	concentration	
Formaldehyde	50-00-0	TWA	0.016 ppm	NIOSH REL
		C	0.1 ppm	NIOSH REL
		PEL	0.75 ppm	OSHA CARC
		STEL	2 ppm	OSHA CARC
		TWA	0.016 ppm (Formaldehyde)	NIOSH REL
		C	0.1 ppm (Formaldehyde)	NIOSH REL
		TWA	0.1 ppm	ACGIH
		STEL	0.3 ppm	ACGIH
Methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m3	NIOSH REL
		ST	250 ppm 325 mg/m3	NIOSH REL
		TWA	200 ppm 260 mg/m3	OSHA Z-1
		STEL	250 ppm 325 mg/m3	OSHA P0
		TWA	200 ppm 260 mg/m3	OSHA P0

Engineering measures : Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.

Use NIOSH approved respiratory protection.
In case of insufficient ventilation, wear suitable respiratory equipment.
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hand protection

Remarks : Impervious gloves

Eye protection : Tightly fitting safety goggles
Face-shield
Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection : Impervious clothing
Apron
Boots

Hygiene measures : Avoid contact with skin, eyes and clothing.
Wash hands before breaks and immediately after handling the product.
When using do not eat, drink or smoke.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Color	:	colorless
Odor	:	No information available.
Odor Threshold	:	No data available
pH	:	2.5 - 5.5
Melting point/freezing point	:	not determined
Initial boiling point and boiling range	:	99 °C
Flash point	:	62 °C Method: closed cup
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapor pressure	:	ca. 23 hPa (20 °C)
Relative vapor density	:	No data available
Density	:	1.01 - 1.11 g/cm3
Solubility(ies)		
Water solubility	:	completely miscible
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Oxidizing properties	:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	In use, may form flammable/explosive vapor-air mixture. May be corrosive to metals.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	Gives off hydrogen by reaction with metals. Potential for exothermic hazard
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Metals Acids Strong oxidizing agents
Hazardous decomposition products	:	Carbon oxides Flammable gases

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation
Ingestion
Eye contact
Skin Absorption

Acute toxicity

Toxic if swallowed, in contact with skin or if inhaled.

Product:

Acute oral toxicity	:	Acute toxicity estimate: 250 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Acute toxicity estimate: 7.5 mg/l Exposure time: 4 h Test atmosphere: vapour Method: Calculation method
Acute dermal toxicity	:	Acute toxicity estimate: 750 mg/kg Method: Calculation method

Remark: The acute toxicity estimate (ATE) of the ingredients are derived using the LD50/LC50 values where available.

Components:

Formaldehyde:

Acute oral toxicity	:	Acute toxicity estimate: 100 mg/kg
Acute inhalation toxicity	:	Acute toxicity estimate: 3 mg/l Exposure time: 4 h

Test atmosphere: vapour

Acute dermal toxicity : Acute toxicity estimate: 300 mg/kg

Methanol:

Acute oral toxicity : Acute toxicity estimate: 100 mg/kg

Acute inhalation toxicity : Acute toxicity estimate: 3 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Converted acute toxicity point estimate

Acute dermal toxicity : Acute toxicity estimate: 300 mg/kg

Skin corrosion/irritation

Causes severe burns.

Product:

Remarks: Extremely corrosive and destructive to tissue.
May cause irreversible skin damage such as necrosis, ulcers or burns.

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Remarks: May cause irreversible eye damage such as corneal damage and blindness.

Respiratory or skin sensitization

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified based on available information.

Product:

Remarks: Causes sensitization.

Germ cell mutagenicity

Suspected of causing genetic defects.

Carcinogenicity

May cause cancer.

IARC	Group 1: Carcinogenic to humans	
	Formaldehyde	50-00-0
ACGIH	Confirmed human carcinogen	
	Formaldehyde	50-00-0
OSHA specified	OSHA specifically regulated carcinogen	

	Formaldehyde	50-00-0
NTP	Known to be human carcinogen	
	Formaldehyde	50-00-0

Reproductive toxicity
Not classified based on available information.

STOT - single exposure
Causes damage to organs (Eyes, Nervous system).

Product:
Target Organs: No specific target organs noted

Components:

Methanol:
Target Organs: Eyes, Nervous system
Assessment: Causes damage to organs.

STOT - repeated exposure
Not classified based on available information.

Aspiration toxicity
Not classified based on available information.

Further information

Product:
Remarks: No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity
No data available

Persistence and degradability
No data available

Bioaccumulative potential

Components:

Methanol:
Partition coefficient: n-octanol/water : log Pow: -0.773

Mobility in soil
No data available

Other adverse effects

Product:

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Dispose of in accordance with local regulations. Dispose of wastes in an approved waste disposal facility.
Contaminated packaging	:	Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No.	:	UN 2922
Proper shipping name	:	Corrosive liquid, toxic, n.o.s.
Technical name(s)		(Formaldehyde, Methanol)
Class	:	8
Subsidiary risk	:	6.1
Packing group	:	II
Labels	:	Corrosive, Toxic
Packing instruction (cargo aircraft)	:	855
Packing instruction (passenger aircraft)	:	851

IMDG-Code

UN number	:	UN 2922
Proper shipping name	:	CORROSIVE LIQUID, TOXIC, N.O.S.
Technical name(s)		(Formaldehyde, Methanol)
Class	:	8
Subsidiary risk	:	6.1
Packing group	:	II
Labels	:	8 (6.1)
EmS Code	:	F-A, S-B
Marine pollutant	:	no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation

DOT / 49 CFR

UN/ID/NA number	:	UN 2922
Proper shipping name	:	CORROSIVE LIQUIDS, TOXIC, N.O.S. (Formaldehyde, Methanol)
Class	:	8
Subsidiary risk	:	6.1
Packing group	:	II

Labels : CORROSIVE, POISON
ERG Code : 154
Marine pollutant : no

SECTION 15. REGULATORY INFORMATION

TSCA 5a : No substances are subject to a Significant New Use Rule.

TSCA_12b : No substances are subject to TSCA 12(b) export notification requirements.

DEA : Not applicable

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Formaldehyde	50-00-0	100	357
Methanol	67-56-1	5000	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Formaldehyde	50-00-0	100	357

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation
Respiratory or skin sensitisation
Germ cell mutagenicity
Carcinogenicity
Specific target organ toxicity (single or repeated exposure)

SARA 302 : The following components are subject to reporting levels established by SARA Title III, Section 302:

Formaldehyde 50-00-0

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Formaldehyde 50-00-0

Methanol 67-56-1

US State Regulations

Massachusetts Right To Know

Formaldehyde	50-00-0	25 - 40 %
Methanol	67-56-1	10 - 25 %

Pennsylvania Right To Know

Formaldehyde	50-00-0	25 - 40 %
Methanol	67-56-1	10 - 25 %

New Jersey Right To Know

Formaldehyde	50-00-0	25 - 40 %
Methanol	67-56-1	10 - 25 %

California Prop. 65

WARNING: This product can expose you to chemicals including Methanol, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Remarks: Components which are only displayed in Section 15 are being reported for local regulatory purposes. These components are not displayed in Section 3 due to one or more of the following conditions being met: being present in the product at concentration(s) below threshold limit values for reporting, not considered hazardous materials, health hazards or because they do not contribute to the overall GHS Classification of the final product as required by OSHA HazCom 2012 final rule (29 CFR 1910.1200).

Substances currently restricted by WEEE/RoHS (European Directives 2015/863/EU, 2012/19/EU and 2011/65/EU) or ELV (European Directive 2000/53/EC):

PBDE	PBB	CrVI	Hg	Pb	Cd
-	-	-	-	-	-

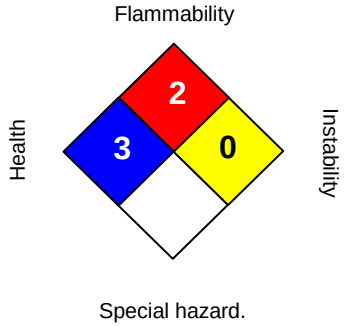
	DEHP	BBP	DBP	DIBP
Phthalates:	-	-	-	-

Please note: Current legislation according to WEEE/RoHS or ELV restricting the use of certain substances applies to "homogeneous material" in finished articles being supplied to the market. Substances deposited during surface finishing may have a composition (weight percent) higher than the weight percent of the substance in the operating solution from which the deposit is made. Atotech encourages its customers to implement systems to ensure their finished products comply with the regulations in force.

SECTION 16. OTHER INFORMATION

Further information

NFPA:



Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA CARC	:	OSHA Specifically Regulated Chemicals/Carcinogens
OSHA P0	:	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST	:	STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
NIOSH REL / C	:	Ceiling value not be exceeded at any time.
OSHA CARC / PEL	:	Permissible exposure limit (PEL)
OSHA CARC / STEL	:	Excursion limit
OSHA P0 / TWA	:	8-hour time weighted average
OSHA P0 / STEL	:	Short-term exposure limit
OSHA Z-1 / TWA	:	8-hour time weighted average

(Q)SAR - (Quantitative) Structure Activity Relationship; ASTM - American Society for the Testing of Materials; bw - Body weight; DIN - Standard of the German Institute for Standardisation; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISO - International Organisation for Standardization; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect

Loading Rate; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; DOT - Department of Transportation; EHS - Extremely Hazardous Substance; HMIS - Hazardous Materials Identification System; MSHA - Mine Safety and Health Administration; NFPA - National Fire Protection Association; RCRA - Resource Conservation and Recovery Act; RQ - Reportable Quantity; SARA - Superfund Amendments and Reauthorization Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; GLP - Good Laboratory Practice; ERG - Emergency Response Guide; NTP - National Toxicology Program; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods

Revision Date : 10/30/2018

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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