US

Safety Data Sheet acc. to OSHA HCS

Printing date 11/09/2022

Reviewed on 11/09/2022

1 Identification

- · Product identifier
- · Trade name: COLLOIDAL SILVER PASTE
- · Article number: 12640
- · Application of the substance / the mixture Laboratory chemicals
- Details of the supplier of the safety data sheet
- · Manufacturer/Supplier: Electron Microscopy Sciences 1560 Industry Road USA-Hatfield, PA 19440 Tel: 215-412-8400 Fax: 215-412-8450 email: sgkcck@aol.com www.emsdiasum.com
- · Information department: Product safety department • Emergency telephone number:
- ChemTrec 1-800-424-9300 Contract CCN7661 1-703-527-3887

2 Hazard(s) identification

· Classification of the substance or mixture GHS02 Flame Flammable Liquids 2 H225 Highly flammable liquid and vapor. Substances and mixtures which, in contact with water, H260 In contact with water releases flammable gases, emit flammable gases 1 which may ignite spontaneously. GHS06 Skull and crossbones Acute Toxicity - Oral 3 H301 Toxic if swallowed. GHS08 Health hazard Carcinogenicity 1A H350 May cause cancer. Toxic to Reproduction 2 H361 Suspected of damaging fertility or the unborn child. Specific Target Organ Toxicity - Repeated Exposure 2 H373 May cause damage to organs through prolonged or repeated exposure. GHS07 Skin Irrititation 2 H315 Causes skin irritation. Eve Irritation 2A H319 Causes serious eye irritation. Sensitization - Skin 1 H317 May cause an allergic skin reaction. Specific Target Organ Toxicity - Single Exposure 3 H336 May cause drowsiness or dizziness. (Contd. on page 2)

• GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

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· Label elements

· Hazard pictograms

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GHS02 GHS06 GHS07 GHS08 · Signal word Danger · Hazard-determining components of labeling: toluene 1,7,7-Trimethylbicyclo[2.2.1]heptan-2-one (*R*)-*p*-mentha-1,8-diene Ethyl alcohol · Hazard statements Highly flammable liquid and vapor. In contact with water releases flammable gases, which may ignite spontaneously. Toxic if swallowed. Causes skin irritation. Causes serious eye irritation. May cause an allergic skin reaction. May cause cancer. Suspected of damaging fertility or the unborn child. May cause drowsiness or dizziness. May cause damage to organs through prolonged or repeated exposure. · Precautionary statements Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not allow contact with water. Handle under inert gas. Protect from moisture. Ground/bond container and receiving equipment. *Use explosion-proof electrical/ventilating/lighting/equipment.* Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. If swallowed: Immediately call a poison center/doctor. Specific treatment (see on this label). Rinse mouth. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. *IF INHALED:* Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention. Call a poison center/doctor if you feel unwell. Get medical advice/attention if you feel unwell. Take off contaminated clothing and wash it before reuse.

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(Contd. of page 2) If skin irritation or rash occurs: Get medical advice/attention. Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages. If eye irritation persists: Get medical advice/attention. Wash contaminated clothing before reuse. In case of fire: Use CO2, sand, extinguishing powder to extinguish. Store in a dry place. Store in a closed container. Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up. Dispose of contents/container in accordance with local/regional/national/international regulations.

· NFPA ratings (scale 0 - 4)



The substance demonstrates unusual reactivity with water. • HMIS-ratings (scale 0 - 4)

HEALTH*2Health = *2FIRE3Fire = 3REACTIVITY2Reactivity = 2

· Other hazards

· Results of PBT and vPvB assessment

· **PBT:** Not applicable.

· vPvB: Not applicable.

3 Composition/information on ingredients

· Chemical characterization: Mixtures

• Description: Mixture of the substances listed below with nonhazardous additions.

· Dangerous components:		
108-88-3	toluene	>10-≤25%
		>2.5-≤10%
	(1) p mention 1,6 where	>2.5-≤10%
	Ethyl alcohol	≤2.5%
	propan-2-ol	≤2.5%
76-22-2	1,7,7-Trimethylbicyclo[2.2.1]heptan-2-one	≤2.5%

4 First-aid measures

• Description of first aid measures

• General information:

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

In case of irregular breathing or respiratory arrest provide artificial respiration.

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• 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.

· After eye contact:

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

• After swallowing: Do not induce vomiting; immediately call for medical help.

· Information for doctor:

• Most important symptoms and effects, both acute and delayed No further relevant information available.

· Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5 Fire-fighting measures

- · Extinguishing media
- Suitable extinguishing agents: CO2, sand, extinguishing powder. Do not use water.
- For safety reasons unsuitable extinguishing agents: Water with full jet
- Special hazards arising from the substance or mixture No further relevant information available.
- · Advice for firefighters
- · Protective equipment: No special measures required.

6 Accidental release measures

• *Personal precautions, protective equipment and emergency procedures Wear protective equipment. Keep unprotected persons away.*

• *Environmental precautions:* Inform respective authorities in case of seepage into water course or sewage system. Do not allow to enter sewers/ surface or ground water.

• 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.

Do not flush with water or aqueous cleansing agents

· 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.

· Protective Action Criteria for Chemicals

• PAC-1:		
7440-22-4	silver	$0.3 mg/m^3$
108-88-3	toluene	67 ppm
141-78-6	ethyl acetate	1,200 ppm
5989-27-5	(R)-p-mentha-1,8-diene	15 ppm
	Ethyl alcohol	1,800 ppm
67-63-0	propan-2-ol	400 ppm
· PAC-2:		
7440-22-4	silver	170 mg/m ³
108-88-3	toluene	560 ppm
141-78-6	ethyl acetate	1,700 ppm
		(Contd. on page 5

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		(Contd. of page 4)
5989-27-5	(R)-p-mentha-1,8-diene	67 ppm
64-17-5	Ethyl alcohol	3300* ppm
67-63-0	propan-2-ol	2000* ppm
• PAC-3:		
7440-22-4	silver	990 mg/m ³
108-88-3	toluene	3700* ppm
141-78-6	ethyl acetate	10000**ppm
5989-27-5	(R)-p-mentha-1,8-diene	170 ppm
64-17-5	Ethyl alcohol	15000* ppm
67-63-0	propan-2-ol	12000** ppm

7 Handling and storage

· Handling:

- **Precautions for safe handling** Ensure good ventilation/exhaustion at the workplace. Prevent formation of aerosols.
- *Information about protection against explosions and fires: Keep ignition sources away - Do not smoke. Protect from heat. Protect against electrostatic charges.*
- · Conditions for safe storage, including any incompatibilities

· Storage:

- Requirements to be met by storerooms and receptacles: Store in a cool location.
- · Information about storage in one common storage facility: Not required.
- Further information about storage conditions:

Keep receptacle tightly sealed.

Store in cool, dry conditions in well sealed receptacles.

Protect from heat and direct sunlight.

· Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

• Additional information about design of technical systems: No further data; see item 7.

· Control parameters

· Components with limit values that require monitoring at the workplace:

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.

At this time, the remaining constituent has no known exposure limits.

108-88-3 toluene

- PEL Long-term value: 200 ppm Ceiling limit value: 300; 500* ppm *10-min peak per 8-hr shift
- REL Short-term value: 560 mg/m³, 150 ppm Long-term value: 375 mg/m³, 100 ppm
- *TLV* Long-term value: 20 ppm BEI, OTO, A4

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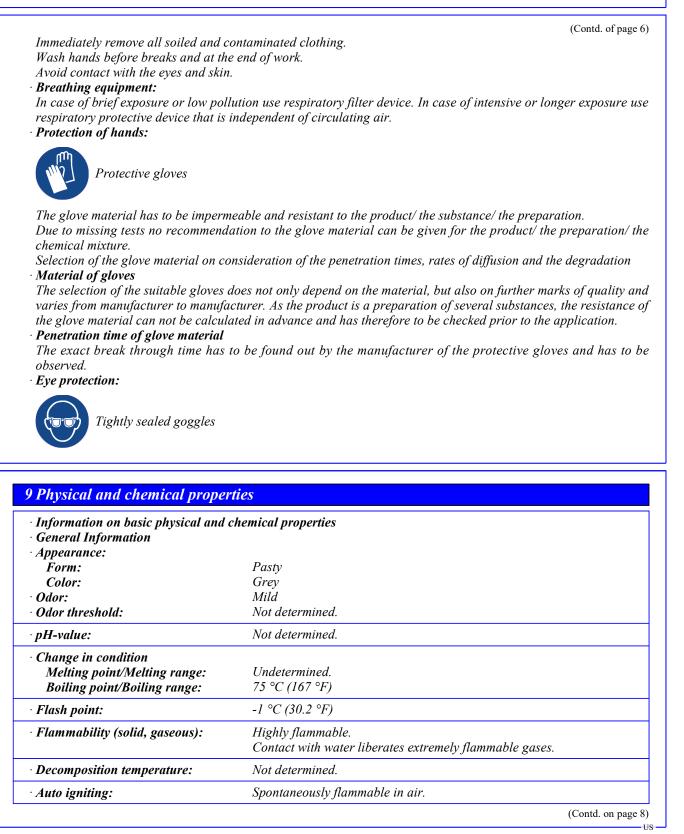
		(Contd. of page 5)
	78-6 ethyl acetate	
1	Long-term value: 1400 mg/m³, 400 ppm	
1	Long-term value: 1400 mg/m³, 400 ppm	
	Long-term value: 400 ppm	
64-1	7-5 Ethyl alcohol	
PEL	Long-term value: 1900 mg/m³, 1000 ppm	
REL	Long-term value: 1900 mg/m³, 1000 ppm	
TLV	Short-term value: 1000 ppm A3	
67-6	3-0 propan-2-ol	
	Long-term value: 980 mg/m ³ , 400 ppm	
	Short-term value: 1225 mg/m ³ , 500 ppm	
TILL I	Long-term value: 980 mg/m ³ , 400 ppm	
TLV	Short-term value: 400 ppm	
	Long-term value: 200 ppm BEL A4	
76-2	2-2 1,7,7-Trimethylbicyclo[2.2.1]heptan-2-one	
PEL	Long-term value: 2 mg/m ³	
REL	Long-term value: 2 mg/m ³	
TLV	Short-term value: 3 ppm	
	Long-term value: 2 ppm	
	<i>A4</i>	
· Ingr	edients with biological limit values:	
108-	88-3 toluene	
BEI	0.02 mg/L	
	Medium: blood	
	Time: prior to last shift of workweek	
	Parameter: Toluene	
	0.03 mg/L	
	Medium: urine	
	Time: end of shift	
	Parameter: Toluene	
	0.3 mg/g creatinine	
	Medium: urine	
	Time: end of shift	
	Parameter: o-Cresol with hydrolysis (background)	
	3-0 propan-2-ol	
BEI	40 mg/L	
	Medium: urine	
	<i>Time: end of shift at end of workweek</i> <i>Parameter: Acetone (background, nonspecific)</i>	
· Add	tional information: The lists that were valid during the creation were used as basis.	
	posure controls	
	onal protective equipment:	
	eral protective equipment: eral protective and hygienic measures:	
	o away from foodstuffs, beverages and feed.	
		(Contd. on page 7)

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Danger of explosion:	Product is not explosive. However, formation of explosive air/vapo mixtures are possible.
Explosion limits:	
Lower:	1.2 Vol %
Upper:	7 Vol %
Vapor pressure at 20 °C (68 °F):	29 hPa (21.8 mm Hg)
Density:	Not determined.
Relative density	Not determined.
Vapor density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with	
Water:	Not miscible or difficult to mix.
Partition coefficient (n-octanol/wate	er): Not determined.
Viscosity:	
Dynamic at 20 °C (68 °F):	50,000 mPas
Kinematic:	Not determined.
Solvent content:	
Organic solvents:	35.0 %
VOC content:	35.00 %
	350.0 g/l / 2.92 lb/gal
Solids content:	60-70 %
Other information	No further relevant information available.

10 Stability and reactivity

· Reactivity No further relevant information available.

- · Chemical stability
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- · Possibility of hazardous reactions Contact with water releases flammable gases.
- · Conditions to avoid No further relevant information available.
- · Incompatible materials: No further relevant information available.
- · Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

· Information on toxicological effects

- Acute toxicity:
- Primary irritant effect:
- on the skin: Irritant to skin and mucous membranes.
- on the eye: Irritating effect.
- · Sensitization: Sensitization possible through skin contact.
- Additional toxicological information:

The product shows the following dangers according to internally approved calculation methods for preparations: Toxic

Irritant

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 Carcinogenic catego 	ories
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· IARC (International Agency for Research on Cancer)

108-88-3 toluene

5989-27-5 (R)-p-mentha-1,8-diene

64-17-5 Ethyl alcohol

67-63-0 propan-2-ol

· NTP (National Toxicology Program)

None of the ingredients is listed.

· OSHA-Ca (Occupational Safety Health Administration)

None of the ingredients is listed.

12 Ecological information

· Toxicity

- · Aquatic toxicity: No further relevant information available.
- · Persistence and degradability No further relevant information available.
- · Behavior in environmental systems:
- · Bioaccumulative potential No further relevant information available.
- *Mobility in soil* No further relevant information available.
- · Ecotoxical effects:
- **Remark:** Toxic for fish
- · Additional ecological information:
- · General notes:

Water hazard class 1 (Self-assessment): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. Also poisonous for fish and plankton in water bodies.

Toxic for aquatic organisms

- · Results of PBT and vPvB assessment
- · PBT: Not applicable.
- **vPvB:** Not applicable.
- · Other adverse effects No further relevant information available.

13 Disposal considerations

· Waste treatment methods

- *Recommendation: Must not be disposed of together with household garbage. Do not allow product to reach sewage system.*
- · Uncleaned packagings:
- *Recommendation:* Disposal must be made according to official regulations.

14 Transport information

· UN-Number · DOT, ADR, IMDG, IATA

UN1993

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UN proper shipping name	
DOT	Flammable liquids, n.o.s.
ADR	1993 FLAMMABLE LIQUID, N.O.S., ENVIRONMENTAL
	HAZARDOUS
IMDG	FLAMMABLE LIQUID, N.O.S., MARINE POLLUTANT
IATA	FLAMMABLE LIQUID, N.O.S.
	TEAMMADLE EIQUID, N.O.S.
Transport hazard class(es)	
DOT	
Class	3 Flammable liquids
Label	3
ADR, IMDG	
Class	3 Flammable liquids
Label	3
IATA	
Class	3 Flammable liquids
Label	3
	5
Packing group	11
DOT, ADR, IMDG, IATA	II
Environmental hazards:	
Marine pollutant:	Yes (DOT)
Po	Symbol (fish and tree)
Special marking (ADR):	Symbol (fish and tree)
Special precautions for user	Warning: Flammable liquids
Hazard identification number (Kemler code):	
Stowage Category	A
Transport in bulk according to Annex II of	
MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
DOT	
Quantity limitations	On passenger aircraft/rail: 5 L
~ ·	On cargo aircraft only: 60 L
Remarks:	Special marking with the symbol (fish and tree).
	1

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· ADR	
\cdot Excepted quantities (EQ)	Code: E2
	Maximum net quantity per inner packaging: 30 ml
	Maximum net quantity per outer packaging: 500 ml
·IMDG	
· Limited quantities (LQ)	1L
\cdot Excepted quantities (EQ)	Code: E2
	Maximum net quantity per inner packaging: 30 ml
	Maximum net quantity per outer packaging: 500 ml
· UN "Model Regulation":	UN 1993 FLAMMABLE LIQUID, N.O.S., 3, 11 ENVIRONMENTALLY HAZARDOUS

15 Regulatory information

· Safety, health and environmental regula	tions/legislation speci	ific for the substance or m	ıixture
No further relevant information available			

· Sara	·	
· Section 35.	5 (extremely hazardous substances):	
None of the	e ingredients is listed.	
· Section 31.	3 (Specific toxic chemical listings):	
7440-22-4	silver	
108-88-3		
67-63-0	propan-2-ol	
· TSCA (Tox	xic Substances Control Act):	
All compon	nents have the value ACTIVE.	
-	s Air Pollutants	
108-88-3 t		
· Proposition		
	known to cause cancer:	
None of the	e ingredients is listed.	
	known to cause reproductive toxicity for females:	
None of the	e ingredients is listed.	
· Chemicals	known to cause reproductive toxicity for males:	
None of the	e ingredients is listed.	
· Chemicals	known to cause developmental toxicity:	
108-88-3 t	toluene	
64-17-5 1	Ethyl alcohol	
· Carcinoger	nic categories	
	ironmental Protection Agency)	
7440-22-4		D
108-88-3	toluene	II
• TLV (Thre	eshold Limit Value)	
108-88-3 t	toluene	A4
		(Contd. on page 12)

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64-17-5 Ethyl alcohol	A3
67-63-0 propan-2-ol	A4
76-22-2 1,7,7-Trimethylbicyclo[2.2.1]heptan-2-one	A4
·NIOSH-Ca (National Institute for Occupational Safety and Health)	
None of the ingredients is listed	

None of the ingredients is listed.

• *GHS label elements* The product is classified and labeled according to the Globally Harmonized System (GHS). • *Hazard pictograms*



· Signal word Danger

Hazard-determining components of labeling: toluene
1,7,7-Trimethylbicyclo[2.2.1]heptan-2-one
(R)-p-mentha-1,8-diene
Ethyl alcohol
Hazard statements
Highly flammable liquid and vapor.
In contact with water releases flammable gases, which may ignite spontaneously. Toxic if swallowed.
Causes skin irritation.

Causes serious eye irritation.

May cause an allergic skin reaction.

May cause cancer.

Suspected of damaging fertility or the unborn child.

May cause drowsiness or dizziness.

May cause damage to organs through prolonged or repeated exposure.

· Precautionary statements

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not allow contact with water. Handle under inert gas. Protect from moisture. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. If swallowed: Immediately call a poison center/doctor. Specific treatment (see on this label). Rinse mouth. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove person to fresh air and keep comfortable for breathing.

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	(Contd. of page 12)
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present	and easy to do.
Continue rinsing.	
IF exposed or concerned: Get medical advice/attention.	
Call a poison center/doctor if you feel unwell.	
Get medical advice/attention if you feel unwell.	
Take off contaminated clothing and wash it before reuse.	
If skin irritation or rash occurs: Get medical advice/attention.	
Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.	
If eye irritation persists: Get medical advice/attention.	
Wash contaminated clothing before reuse.	
In case of fire: Use CO2, sand, extinguishing powder to extinguish.	
Store in a dry place. Store in a closed container.	
Store in a well-ventilated place. Keep container tightly closed.	
Store in a well-ventilated place. Keep cool.	
Store locked up.	
Dispose of contents/container in accordance with local/regional/national/international regulation	<i>s</i> .
· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.	

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.

· Contact:

[·] Date of preparation / last revision 11/09/2022 / -• Abbreviations and acronyms: ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road) IMDG: International Maritime Code for Dangerous Goods DOT: US Department of Transportation IATA: International Air Transport Association 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) NFPA: National Fire Protection Association (USA) HMIS: Hazardous Materials Identification System (USA) VOC: Volatile Organic Compounds (USA, EU) PBT: Persistent, Bioaccumulative and Toxic vPvB: very Persistent and very Bioaccumulative NIOSH: National Institute for Occupational Safety OSHA: Occupational Safety Health TLV: Threshold Limit Value PEL: Permissible Exposure Limit **REL:** Recommended Exposure Limit **BEI:** Biological Exposure Limit Flammable Liquids 2: Flammable liquids – Category 2 Substances and mixtures which, in contact with water, emit flammable gases 1: Substances and mixtures which in contact with water emit flammable gases - Category 1 Acute Toxicity - Oral 3: Acute toxicity – Category 3 Skin Irrititation 2: Skin corrosion/irritation – Category 2 Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A Sensitization - Skin 1: Skin sensitisation - Category 1 Carcinogenicity 1A: Carcinogenicity – Category 1A Toxic to Reproduction 2: Reproductive toxicity – Category 2 Specific Target Organ Toxicity - Single Exposure 3: Specific target organ toxicity (single exposure) - Category 3 Specific Target Organ Toxicity - Repeated Exposure 2: Specific target organ toxicity (repeated exposure) – Category 2