

Safety Data Sheet

according to UK REACH Regulation

CUAG-XM3S; SAC4-HM3S; SAC3-HM3S; SAC3-XM3S; S9M-XM3S; S9M-HM3S

Revision date: 18.06.2021

Product code: 950618

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SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

CUAG-XM3S; SAC4-HM3S; SAC3-HM3S; SAC3-XM3S; S9M-XM3S; S9M-HM3S

Further trade names

This MSDS covers the following products:

CUAG-XM3S

SAC4-HM3S

SAC3-HM3S

SAC3-XM3S

S9M-XM3S

S9M-HM3S

1.2. Relevant identified uses of the substance or mixture and uses advised against**Use of the substance/mixture**

Solder paste lead free

Uses advised against

Any non-intended use.

1.3. Details of the supplier of the safety data sheet**Manufacturer**

Company name: Cobar Europe BV
 Street: Aluminiumstraat 2
 Place: 4823 AL Breda
 Telephone: +31 76 5445566
 e-mail: info@Cobar.com

Telefax: +31 76 5445577

Supplier

Company name: Balver Zinn Josef Jost GmbH & Co. KG
 Street: Blintroper Weg 11
 Place: D-58802 Balve
 Telephone: +49 2375 915-0
 Responsible Department: cia@BalverZinn.com

Telefax: +49 2375 915-114

1.4. Emergency telephone**number:**

+49 (0) 700 24 112 112 (Contract-ID:BZW)
 from USA/Canada pls call 011 49 700 24 112 112

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture****GB CLP Regulation**

Hazard categories:

Skin corrosion/irritation: Skin Irrit. 2

Serious eye damage/eye irritation: Eye Dam. 1

Hazardous to the aquatic environment: Aquatic Chronic 3

Hazard Statements:

Causes skin irritation.

Causes serious eye damage.

Harmful to aquatic life with long lasting effects.

2.2. Label elements**GB CLP Regulation****Hazard components for labelling**

N-(n-octyl)-2-pyrrolidone

Signal word: Danger

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Pictograms:



Hazard statements

| | |
|------|--|
| H315 | Causes skin irritation. |
| H318 | Causes serious eye damage. |
| H412 | Harmful to aquatic life with long lasting effects. |

Precautionary statements

| | |
|----------------|--|
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P302+P352 | IF ON SKIN: Wash with plenty of water. |
| P362+P364 | Take off contaminated clothing and wash it before reuse. |
| 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. |

2.3. Other hazards

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

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Hazardous components

| CAS No | Chemical name | | | Quantity |
|------------|---|--------------|------------------|----------|
| | EC No | Index No | REACH No | |
| | GHS Classification | | | |
| 7440-31-5 | tin | | | 75-90 % |
| | 231-141-8 | | 01-2119486474-28 | |
| 65997-13-9 | hydrogenated rosin ester | | | 5-10 % |
| 2687-94-7 | N-(n-octyl)-2-pyrrolidone | | | 1-5 % |
| | 403-700-8 | 613-098-00-0 | 01-0000015335-74 | |
| | Skin Corr. 1B, Aquatic Chronic 2; H314 H411 | | | |
| 7440-22-4 | silver | | | 2-5 % |
| | 231-131-3 | | 01-2119555669-21 | |
| 505-48-6 | suberic acid | | | <1 % |
| | 208-010-9 | | 01-2120789593-37 | |
| | Eye Irrit. 2; H319 | | | |
| 7440-50-8 | copper | | | 0,2-1 % |
| | 231-159-6 | | 01-2119480154-42 | |

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

Specific Conc. Limits, M-factors and ATE

| CAS No | EC No | Chemical name | Quantity |
|--------|-------|---------------|----------|
|--------|-------|---------------|----------|

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| Specific Conc. Limits, M-factors and ATE | | | |
|--|--|---------------------------|---------|
| 7440-31-5 | 231-141-8 | tin | 75-90 % |
| | inhalation: LC50 = (>4,75) mg/l (dusts or mists); dermal: LD50 = >2000 mg/kg; oral: LD50 = >2000 mg/kg | | |
| 2687-94-7 | 403-700-8 | N-(n-octyl)-2-pyrrolidone | 1-5 % |
| | dermal: LD50 = >2000 mg/kg; oral: LD50 = 2050 mg/kg | | |
| 7440-22-4 | 231-131-3 | silver | 2-5 % |
| | inhalation: LC50 = >5,16 mg/l (dusts or mists); dermal: LD50 = >2000 mg/kg; oral: LD50 = >2000 mg/kg | | |
| 505-48-6 | 208-010-9 | suberic acid | <1 % |
| | oral: LD50 = >2000 mg/kg | | |
| 7440-50-8 | 231-159-6 | copper | 0,2-1 % |
| | inhalation: LC50 = >5,11 mg/l (dusts or mists) | | |

Further Information

Product does not contain listed SVHC substances > 0,1 % according to Regulation (EC) No. 1907/2006 Article 59 (REACH)

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

After inhalation

In case of accident by inhalation: remove casualty to fresh air and keep at rest. In case of respiratory tract irritation, consult a physician.

After contact with skin

Gently wash with plenty of soap and water. In case of skin irritation, seek medical treatment.

After contact with eyes

Rinse cautiously with water for several minutes. In case of troubles or persistent symptoms, consult an ophthalmologist.

After ingestion

Rinse mouth thoroughly with water. Let water be drunken in little sips (dilution effect). Do NOT induce vomiting. In all cases of doubt, or when symptoms persist, seek medical advice.

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

No information available.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Carbon dioxide (CO₂). Dry extinguishing powder. alcohol resistant foam. Atomized water.

Unsuitable extinguishing media

High power water jet.

5.2. Special hazards arising from the substance or mixture

Can be released in case of fire: Carbon monoxide. Carbon dioxide (CO₂).

5.3. Advice for firefighters

In case of fire: Wear self-contained breathing apparatus.

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Additional information

Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.
Co-ordinate fire-fighting measures to the fire surroundings.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures****General measures**

Safe handling: see section 7

For non-emergency personnel

Personal protection equipment: see section 8

For emergency responders

No special measures are necessary.

6.2. Environmental precautions

Discharge into the environment must be avoided.

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

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

Treat the recovered material as prescribed in the section on waste disposal.

For cleaning up

Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Disposal: see section 13

SECTION 7: Handling and storage**7.1. Precautions for safe handling****Advice on safe handling**

Wear suitable protective clothing. See section 8.

Advice on protection against fire and explosion

Usual measures for fire prevention.

Advice on general occupational hygiene

Always close containers tightly after the removal of product. When using do not eat, drink, smoke, sniff. Wash hands before breaks and after work.

Further information on handling

General protection and hygiene measures: See section 8.

7.2. Conditions for safe storage, including any incompatibilities**Requirements for storage rooms and vessels**

Keep container tightly closed in a cool, well-ventilated place.

Hints on joint storage

Do not store together with: Explosives. Oxidizing solids. Oxidizing liquids. Radioactive substances. Infectious substances. Food and animal feedingstuff.

Further information on storage conditions

Keep the packing dry and well sealed to prevent contamination and absorption of humidity.

Recommended storage temperature: 20°C

Protect against: frost. UV-radiation/sunlight. heat. Humidity

7.3. Specific end use(s)

See section 1.

SECTION 8: Exposure controls/personal protection

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8.1. Control parameters

Exposure limits (EH40)

| CAS No | Substance | ppm | mg/m ³ | fibres/ml | Category | Origin |
|-----------|---------------------------------|-----|-------------------|-----------|---------------|--------|
| 7440-50-8 | Copper, dusts and mists (as Cu) | - | 1 | | TWA (8 h) | WEL |
| | | - | 2 | | STEL (15 min) | WEL |
| 7440-50-8 | Copper, fume | - | 0.2 | | TWA (8 h) | WEL |
| 7440-22-4 | Silver, metallic | - | 0.1 | | TWA (8 h) | WEL |

DNEL/DMEL values

| CAS No | Substance | Exposure route | Effect | Value |
|-----------|---------------------------|----------------|----------|-------------------------|
| 7440-31-5 | tin | | | |
| | Consumer DNEL, long-term | inhalation | systemic | 3,476 mg/m ³ |
| | Consumer DNEL, acute | inhalation | systemic | 3,476 mg/m ³ |
| | Worker DNEL, long-term | inhalation | systemic | 11,75 mg/m ³ |
| | Worker DNEL, acute | inhalation | systemic | 11,75 mg/m ³ |
| | Consumer DNEL, long-term | dermal | systemic | 80 mg/kg bw/day |
| | Worker DNEL, acute | dermal | systemic | 133,3 mg/kg bw/day |
| | Consumer DNEL, acute | dermal | systemic | 80 mg/kg bw/day |
| | Worker DNEL, long-term | dermal | systemic | 133,3 mg/kg bw/day |
| | Consumer DNEL, acute | oral | systemic | 80 mg/kg bw/day |
| | Consumer DNEL, long-term | oral | systemic | 80 mg/kg bw/day |
| 2687-94-7 | N-(n-octyl)-2-pyrrolidone | | | |
| | Worker DNEL, long-term | inhalation | systemic | 18,52 mg/m ³ |
| 7440-22-4 | silver | | | |
| | Worker DNEL, long-term | inhalation | systemic | 0,1 mg/m ³ |
| | Consumer DNEL, long-term | inhalation | systemic | 0,04 mg/m ³ |
| | Consumer DNEL, long-term | oral | systemic | 1,2 mg/kg bw/day |
| 7440-50-8 | copper | | | |
| | Worker DNEL, acute | dermal | systemic | 273 mg/kg bw/day |
| | Consumer DNEL, acute | dermal | systemic | 273 mg/kg bw/day |
| | Consumer DNEL, acute | inhalation | systemic | 20 mg/m ³ |
| | Worker DNEL, long-term | inhalation | local | 1 mg/m ³ |
| | Consumer DNEL, long-term | dermal | systemic | 137 mg/kg bw/day |
| | Worker DNEL, long-term | dermal | systemic | 137 mg/kg bw/day |
| | Worker DNEL, acute | inhalation | systemic | 20 mg/m ³ |
| | Consumer DNEL, long-term | inhalation | local | 1 mg/m ³ |

PNEC values

| CAS No | Substance | Value |
|-----------|---------------------------|-------|
| | Environmental compartment | |
| 2687-94-7 | N-(n-octyl)-2-pyrrolidone | |

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| | |
|--|--------------|
| Freshwater | 0,012 mg/l |
| Marine water | 0,0012 mg/l |
| Freshwater sediment | 0,08 mg/kg |
| Marine sediment | 0,008 mg/kg |
| Micro-organisms in sewage treatment plants (STP) | 4,6 mg/l |
| Soil | 0,06 mg/kg |
| 7440-22-4 | silver |
| Freshwater | 0,00004 mg/l |
| Marine sediment | 438,13 mg/kg |
| Freshwater sediment | 438,13 mg/kg |
| Marine water | 0,00086 mg/l |
| Micro-organisms in sewage treatment plants (STP) | 0,025 mg/l |
| Soil | 1,41 mg/kg |
| 7440-50-8 | copper |
| Freshwater | 0,0078 mg/l |
| Marine water | 0,0052 mg/l |
| Freshwater sediment | 87 mg/kg |
| Marine sediment | 678 mg/kg |
| Micro-organisms in sewage treatment plants (STP) | 0,23 mg/l |
| Soil | 65 mg/kg |

8.2. Exposure controls



Appropriate engineering controls

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

Provide adequate ventilation.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses; chemical goggles (if splashing is possible). BS/EN 166

Hand protection

Wear suitable gloves.

Suitable material:

FKM (fluororubber). - Thickness of glove material: 0,4 mm

Breakthrough time \geq 8 h

Butyl rubber. - Thickness of glove material: 0,5 mm

Breakthrough time \geq 8 h

CR (polychloroprenes, Chloroprene rubber). - Thickness of glove material: 0,5 mm

Breakthrough time \geq 8 h

NBR (Nitrile rubber). - Thickness of glove material: 0,35 mm

Breakthrough time \geq 8 h

PVC (Polyvinyl chloride). - Thickness of glove material: 0,5 mm

Breakthrough time \geq 8 h

The selected protective gloves have to satisfy the specifications of EU Directive EC/2016/425 and the standard EN 374 derived from it.

Check leak tightness/impermeability prior to use. In the case of wanting to use the gloves again, clean them

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before taking off and air them well.

Skin protection

Protective clothing (heat-resistant.)

Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500 (D).

Respiratory protection

With correct and proper use, and under normal conditions, breathing protection is not required.

Respiratory protection necessary at:

- exceeding exposure limit values
- Insufficient ventilation and aerosol or mist formation

Suitable respiratory protective equipment: particulates filter device (DIN EN 143). Type: P1-3

The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used.

Environmental exposure controls

Do not allow uncontrolled discharge of product into the environment.

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

| | |
|-----------------|----------------|
| Physical state: | Paste |
| Colour: | metallic grey |
| Odour: | characteristic |

Changes in the physical state

| | |
|---|----------------|
| Melting point/freezing point: | 217-219 °C |
| Boiling point or initial boiling point and boiling range: | not determined |
| Sublimation point: | not determined |
| Softening point: | not determined |
| Pour point: | not determined |
| Flash point: | not determined |

Explosive properties

none

| | |
|----------------------------|----------------|
| Lower explosion limits: | not determined |
| Upper explosion limits: | not determined |
| Auto-ignition temperature: | not determined |

Self-ignition temperature

Gas:

| | |
|----------------------------|----------------|
| Decomposition temperature: | not determined |
|----------------------------|----------------|

Oxidizing properties

none

| | |
|------------------------|----------------|
| pH-Value: | not determined |
| Viscosity / dynamic: | not determined |
| Viscosity / kinematic: | not determined |
| Flow time: | not determined |
| Water solubility: | insoluble |

Solubility in other solvents

not determined

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| | |
|--|----------------|
| Partition coefficient n-octanol/water: | not determined |
| Vapour pressure: | not determined |
| Density: | not determined |
| Relative vapour density: | not determined |

9.2. Other information

Information with regard to physical hazard classes

Sustaining combustion: Not sustaining combustion

Other safety characteristics

| | |
|--------------------------|----------------|
| Solvent separation test: | not determined |
| Solvent content: | not determined |
| Solid content: | not determined |
| Evaporation rate: | not determined |

Further Information

No information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

No information available.

10.2. Chemical stability

The product is chemically stable under recommended conditions of storage, use and temperature.

10.3. Possibility of hazardous reactions

Refer to chapter 10.5.

10.4. Conditions to avoid

Protect against: UV-radiation/sunlight. heat.

10.5. Incompatible materials

Materials to avoid: Oxidizing agents, strong. Reducing agents, strong.

10.6. Hazardous decomposition products

Does not decompose when used for intended uses.

Can be released in case of fire: Carbon monoxide. Carbon dioxide (CO₂).

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in GB CLP Regulation

Toxicokinetics, metabolism and distribution

No data available.

Acute toxicity

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

| CAS No | Chemical name | | | | |
|-----------|--------------------------|-------------------|---------|--------------|--------|
| | Exposure route | Dose | Species | Source | Method |
| 7440-31-5 | tin | | | | |
| | oral | LD50 >2000 mg/kg | Rat | ECHA Dossier | |
| | dermal | LD50 >2000 mg/kg | Rat | ECHA Dossier | |
| | inhalation (4 h) aerosol | LC50 (>4,75) mg/l | Rat | ECHA Dossier | |

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| | | | | | | |
|-----------|---------------------------|---------------|-------|---------|--------------|--|
| 2687-94-7 | N-(n-octyl)-2-pyrrolidone | | | | | |
| | oral | LD50 mg/kg | 2050 | Rat | RTECS | |
| | dermal | LD50 mg/kg | >2000 | Rabbit. | RTECS | |
| 7440-22-4 | silver | | | | | |
| | oral | LD50 mg/kg | >2000 | Rat | ECHA Dossier | |
| | dermal | LD50 mg/kg | >2000 | Rat | ECHA Dossier | |
| | inhalation (4 h) aerosol | LC50 mg/l | >5,16 | Rat | ECHA Dossier | |
| 505-48-6 | suberic acid | | | | | |
| | oral | LD50 mg/kg | >2000 | Rat. | MSDS extern. | |
| 7440-50-8 | copper | | | | | |
| | inhalation (4 h) aerosol | LC50 mg/l | >5,11 | Rat | ECHA Dossier | |

Irritation and corrosivity

Causes skin irritation.

Causes serious eye damage.

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.

N-(n-octyl)-2-pyrrolidone (CAS-No.: 2687-94-7):

In-vitro mutagenicity: No experimental indications of mutagenicity in-vitro exist.

Literature information: ECHA Dossier

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

No data available.

11.2. Information on other hazards

Endocrine disrupting properties

No data available.

SECTION 12: Ecological information

12.1. Toxicity

The product has not been tested.

| CAS No | Chemical name | | | | | |
|-----------|---------------------------|--------------|-----------|---------|---------------------|--------------|
| | Aquatic toxicity | Dose | [h] [d] | Species | Source | Method |
| 2687-94-7 | N-(n-octyl)-2-pyrrolidone | | | | | |
| | Acute fish toxicity | LC50 mg/l | 17,8 | 96 h | Oncorhynchus mykiss | ECHA Dossier |

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| | | | | | | | |
|--|--------------------------|---------------|------|------|----------------------------|--------------|--|
| | Acute algae toxicity | ErC50 mg/l | 19,5 | 72 h | Desmodesmus subspicatus | ECHA Dossier | |
| | Acute crustacea toxicity | EC50 mg/l | 19,1 | 48 h | Daphnia magna | ECHA Dossier | |

12.2. Persistence and degradability

The product has not been tested.

12.3. Bioaccumulative potential

No indication of bioaccumulation potential.

12.4. Mobility in soil

No data available.

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.

12.6. Endocrine disrupting properties

No data available.

12.7. Other adverse effects

No data available.

Further information

Do not allow to enter into surface water or drains.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal recommendations

Observe in addition any national regulations! Consult the local waste disposal expert about waste disposal.

Non-contaminated packages may be recycled.

According to (EWC) European Waste Catalogue, allocation of waste identity numbers/waste descriptions must be carried out in a specific way for every industry and process.

Control report for waste code/ waste marking according to (EWC) European Waste Catalogue:

List of Wastes Code - residues/unused products

160303 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; off-specification batches and unused products; inorganic wastes containing hazardous substances; hazardous waste

List of Wastes Code - used product

160303 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; off-specification batches and unused products; inorganic wastes containing hazardous substances; hazardous waste

List of Wastes Code - contaminated packaging

150202 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; absorbents, filter materials, wiping cloths and protective clothing; absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by hazardous substances; hazardous waste

Contaminated packaging

Handle contaminated packages in the same way as the substance itself.

SECTION 14: Transport information

Land transport (ADR/RID)

14.1. UN number:

No dangerous good in sense of this transport regulation.

14.2. UN proper shipping name:

No dangerous good in sense of this transport regulation.

14.3. Transport hazard class(es):

No dangerous good in sense of this transport regulation.

14.4. Packing group:

No dangerous good in sense of this transport regulation.

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Inland waterways transport (ADN)

| | |
|--|--|
| 14.1. UN number: | No dangerous good in sense of this transport regulation. |
| 14.2. UN proper shipping name: | No dangerous good in sense of this transport regulation. |
| 14.3. Transport hazard class(es): | No dangerous good in sense of this transport regulation. |
| 14.4. Packing group: | No dangerous good in sense of this transport regulation. |

Marine transport (IMDG)

| | |
|--|--|
| 14.1. UN number: | No dangerous good in sense of this transport regulation. |
| 14.2. UN proper shipping name: | No dangerous good in sense of this transport regulation. |
| 14.3. Transport hazard class(es): | No dangerous good in sense of this transport regulation. |
| 14.4. Packing group: | No dangerous good in sense of this transport regulation. |

Air transport (ICAO-TI/IATA-DGR)

| | |
|--|--|
| 14.1. UN number: | No dangerous good in sense of this transport regulation. |
| 14.2. UN proper shipping name: | No dangerous good in sense of this transport regulation. |
| 14.3. Transport hazard class(es): | No dangerous good in sense of this transport regulation. |
| 14.4. Packing group: | No dangerous good in sense of this transport regulation. |

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

14.6. Special precautions for user

Refer to section 6-8

14.7. Maritime transport in bulk according to IMO instruments

not relevant

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulatory information**

| | |
|---|--|
| 2010/75/EU (VOC): | No information available. |
| 2004/42/EC (VOC): | No information available. |
| Information according to 2012/18/EU (SEVESO III): | Not subject to 2012/18/EU (SEVESO III) |

Additional information

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (amended by Regulation (EU) No 2020/878)
 The mixture is classified as hazardous according to regulation (EC) No 1272/2008 [CLP].
 REACH 1907/2006 Appendix XVII, No (mixture): 3

National regulatory information

| | |
|--------------------------|--|
| Employment restrictions: | Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). |
| Water hazard class (D): | 2 - obviously hazardous to water |

15.2. Chemical safety assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information**Changes**

Rev. 1.00; 11.05.2015, Initial release
 Rev. 1.01; 12.06.2015, Indication of changes section: 3, 16.
 Rev. 1.02; 06.07.2015, Indication of changes section: 1, 16.
 Rev. 1.1; 25.11.2016, Indication of changes - chapter: 1, 2, 3, 6, 12, 15, 16.

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Revision date: 18.06.2021

Product code: 950618

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Rev. 1.2; 18.06.2021, Indication of changes - chapter: 1-16

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)

AGW: Arbeitsplatzgrenzwert

CAS: Chemical Abstracts Service

CLP: Classification, Labelling and Packaging of substances and mixtures

DNEL: Derived No Effect Level

d: day(s)

EINECS: European INventory of Existing Commercial chemical Substances

ELINCS: European List of Notified Chemical Substances

ECHA: European Chemicals Agency

EWC: European Waste Catalogue

IARC: INTERNATIONAL AGENCY FOR RESEARCH ON CANCER

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

GefStoffV: Gefahrstoffverordnung (Ordinance on Hazardous Substances, Germany)

h: hour

LOAEL: Lowest observed adverse effect level

LOAEC: Lowest observed adverse effect concentration

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

NOAEL: No observed adverse effect level

NOAEC: No observed adverse effect concentration

NLP: No-Longer Polymers

N/A: not applicable

OECD: Organisation for Economic Co-operation and Development

PNEC: predicted no effect concentration

PBT: Persistent bioaccumulative toxic

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

REACH: Registration, Evaluation, Authorisation of Chemicals

SVHC: substance of very high concern

TRGS: Technische Regeln für Gefahrstoffe

UN: United Nations

VOC: Volatile Organic Compounds

Classification for mixtures and used evaluation method according to GB CLP Regulation

| Classification | Classification procedure |
|-------------------------|--------------------------|
| Skin Irrit. 2; H315 | Calculation method |
| Eye Dam. 1; H318 | Calculation method |
| Aquatic Chronic 3; H412 | Calculation method |

Relevant H and EUH statements (number and full text)

| | |
|------|--|
| H314 | Causes severe skin burns and eye damage. |
| H315 | Causes skin irritation. |
| H318 | Causes serious eye damage. |
| H319 | Causes serious eye irritation. |
| H411 | Toxic to aquatic life with long lasting effects. |
| H412 | Harmful to aquatic life with long lasting effects. |

Safety Data Sheet

according to UK REACH Regulation

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Further Information

Classification according to Regulation (EC) No 1272/2008 [CLP] - Classification procedure:

Health hazards: Calculation method.

Environmental hazards: Calculation method.

Physical hazards: On basis of test data and / or calculated and / or estimated.

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.)