SAFETY DATA SHEET

CYANEX® 923 EXTRACTANT

Revision Date 17.01.2018

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

1.1 Product identifier

- Trade name CYANEX® 923 EXTRACTANT

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

Uses of the Substance/Mixture

- Extraction agents

1.3 Details of the supplier of the safety data sheet

Company

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1.4 Emergency telephone number

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Trademark disclaimer

The ® indicates a Registered Trademark in the United States and the ™ indicates a trademark in the United States. The mark may also be registered, subject of an application for registration, or a trademark in other countries.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (Regulation (EC) No 1272/2008)

Skin corrosion, Sub-category 1B	H314: Causes severe skin burns and eye damage.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Reproductive toxicity, Category 2	H361: Suspected of damaging fertility or the unborn child.
Acute aquatic toxicity, Category 1	H400: Very toxic to aquatic life.
Chronic aquatic toxicity, Category 1	H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Regulation (EC) No 1272/2008

Hazardous products which must be listed on the label

- Mixture of: hexyldioctylphosphineoxide; dihexyloctylphosphineoxide; trioctylphosphineoxide

Pictogram

Signal word

- Danger

Hazard statements

- H314	Causes severe skin burns and eye damage.
- H361	Suspected of damaging fertility or the unborn child.
- H410	Very toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

- P201	Obtain special instructions before use.
- P273	Avoid release to the environment.
- P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

- P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
- P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
- P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

2.3 Other hazards which do not result in classification

None known.

SECTION 3: Composition/information on ingredients

3.1 Substance

- Not applicable, this product is a mixture.

3.2 Mixture

Information on Components and Impurities

Chemical name	Identification number	Classification Regulation (EC) No 1272/2008	Concentration [%]
Mixture of: hexyldioctylphosphineoxide; dihexyloctylphosphineoxide; trioctylphosphineoxide		Skin corrosion, Sub-category 1B ; H314 Serious eye damage, Category 1 ; H318 Reproductive toxicity, Category 2 ; H361 Acute aquatic toxicity, Category 1 ; H400 Chronic aquatic toxicity, Category 1 ; H410	>= 99 - <= 100

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

In case of inhalation

- Quickly move the person away from the contaminated area. Make the affected person rest.
- Immediate medical attention is required.
- Show this sheet to the doctor.
- Be aware to maintain life support if necessary.

In case of skin contact

- Wash off immediately with plenty of water for at least 15 minutes.

- Use appropriate protective equipment when treating a contaminated person.
- Immediate medical attention is required.
- Show this sheet to the doctor.
- Be aware to maintain life support if necessary.

In case of eye contact

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- Keep eye wide open while rinsing.
- Show this sheet to the doctor.
- Always obtain medical advice, even if there are no symptoms.
- Be aware to maintain life support if necessary.

In case of ingestion

- Do NOT induce vomiting.
- Immediate medical attention is required.
- Show this sheet to the doctor.
- Do not give anything to drink.
- Be aware to maintain life support if necessary.

4.2 Most important symptoms and effects, both acute and delayed

Effects

- Effects on health may appear after exposure.
- The effects will depend on target organs.
- Chronic exposure is suspected of causing effects on fertility or on the unborn child on basis of animal data. Effects on human have not been proven.
- Chronic exposure may cause allergic dermatitis.
- Exposure may cause allergic rhinitis, conjunctivitis, asthma or shock.
- If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.
- In case of inhalation, irritation/corrosion of the respiratory tract.
- Risk of respiratory disorder
- May cause irreversible skin damage.
- Chronic exposure may cause dermatitis.
- May cause irreversible eye damage.
- Loss of the eye

Symptoms

- Symptoms will depend on the target organs.
- Inhalation may provoke the following symptoms:
- Cough
- Breathing difficulties
- Irritation
- Redness
- Swelling of tissue
- Ingestion may provoke the following symptoms:
- Nausea
- Diarrhoea
- Abdominal pain
- May cause respiratory tract irritation.
- allergic rhinitis
- Severe allergic skin reactions, bronchiospasm and anaphylactic shock
- Itching
- Dermatitis
- Causes skin burns.
- Lachrymation
- Conjunctivitis
- Causes eye burns.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician

- Be aware to maintain life support if necessary.
- Take victim immediately to hospital.
- Immediate medical attention is required.
- Consult with an ophthalmologist immediately in all cases.
- Burns must be treated by a physician.
- Treat symptomatically.
- Contact a poison control center.
- Keep under medical supervision for at least 48 hours.
- Contact the occupational physician in case of exposure.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

- Water spray
- Foam
- Carbon dioxide (CO2)
- Multi-purpose powders

Unsuitable extinguishing media

- High volume water jet

5.2 Special hazards arising from the substance or mixture

- Under fire conditions:
- Will burn
- On combustion, toxic gases are released.

5.3 Advice for firefighters

Special protective equipment for firefighters

- In the event of fire, wear self-contained breathing apparatus.
- Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing
- For further information refer to section 8 "Exposure controls/personal protection".

Specific fire fighting methods

- Cool containers/tanks with water spray.
- Do not use a solid water stream as it may scatter and spread fire.

Further information

- Standard procedure for chemical fires.
- 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.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Where exposure level is not known, wear approved, positive pressure, self-contained respirator.
- Where exposure level is known, wear approved respirator suitable for level of exposure.
- In addition to the protective clothing/equipment in Section 8, wear a two piece PVC suit with hood or PVC overalls with hood.

6.2 Environmental precautions

- Stop the leak. Turn leaking containers leak-side up to prevent the escape of liquid.
- Contain the spilled material by bunding.
- Do not let product enter drains.

- Do not allow uncontrolled discharge of product into the environment.

6.3 Methods and materials for containment and cleaning up

- Stop leak if safe to do so.
- Keep in properly labelled containers.
- Keep in suitable, closed containers for disposal.
- Wash non-recoverable remainder with large amounts of water.
- Soak up with inert absorbent material and dispose of as hazardous waste.
- Decontaminate tools, equipment and personal protective equipment in a segregated area.
- Dispose of in accordance with local regulations.
- Never return spills in original containers for re-use.

6.4 Reference to other sections

- 7. HANDLING AND STORAGE
- 8. EXPOSURE CONTROLS/PERSONAL PROTECTION
- 13. DISPOSAL CONSIDERATIONS

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Do not release to water.

Hygiene measures

- Handle in accordance with good industrial hygiene and safety practice.
- Wash hands before breaks and at the end of workday.
- When using do not eat, drink or smoke.
- Eye wash bottles or eye wash stations in compliance with applicable standards.
- Ensure that eyewash stations and safety showers are close to the workstation location.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Recommended storage temperature: > 4 °C

- To guarantee the quality and properties of the product keep according to Storage temperature and conditions.

7.3 Specific end use(s)

- no data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

- Contains no substances with occupational exposure limit values above their regulatory reporting threshold.

8.2 Exposure controls

Control measures

Engineering measures
- Ensure adequate ventilation.
- Apply technical measures to comply with the occupational exposure limits.

Individual protection measures

Respiratory protection
- Self-contained breathing apparatus in confined spaces/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.
- Use only respiratory protection that conforms to international/ national standards.
- Respirator with a vapour filter (EN 141)
- Respirator with a full face mask

Hand protection
- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).
- Impervious gloves

Suitable material
- Nitrile or fluorinated rubber gloves.

Eye protection
- Chemical resistant goggles must be worn.
- Tightly fitting safety goggles

Skin and body protection
- Impervious clothing
- Full protective suit
- Change working clothes after each workshift.
- Contaminated work clothing should not be allowed out of the workplace.

Hygiene measures
- Handle in accordance with good industrial hygiene and safety practice.
- Wash hands before breaks and at the end of workday.
- When using do not eat, drink or smoke.
- Eye wash bottles or eye wash stations in compliance with applicable standards.
- Ensure that eyewash stations and safety showers are close to the workstation location.

Environmental exposure controls
- Dispose of rinse water in accordance with local and national regulations.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	Physical state: Colour:	liquid colourless to light brown.
Odour	sweet	
Odour Threshold	No data available	
Molecular weight	348 g/mol Average	
pH	Not applicable	

Melting point/freezing point	Melting point/range: -5 - 0 °C
Initial boiling point and boiling range	ca. Boiling point/boiling range: 310 °C (66.66 hPa)
Flash point	182 °C Seta closed cup
Evaporation rate (Butylacetate = 1)	Not applicable
Flammability (solid, gas)	No data available
Flammability (liquids)	No data available
Flammability/Explosive limit	Lower flammability/explosion limit: Type: Lower flammability limit Not applicable Upper flammability/explosion limit: Type: Upper flammability limit Not applicable
Auto-ignition temperature	281 °C
Vapour pressure	0.12 hPa (31 °C)
Vapour density	Not applicable
Density	0.88 g/cm3 (25 °C)
Relative density	No data available
Solubility	Water solubility: negligible
Partition coefficient: n-octanol/water	Not applicable
Decomposition temperature	No data available
Viscosity	Viscosity, kinematic : Not applicable
Explosive properties	No data available
Oxidizing properties	Not considered as oxidizing

9.2 Other information

Corrosion of Metals	Not corrosive to metals
Peroxides	The substance or mixture is not classified as organic peroxide.

SECTION 10: Stability and reactivity

10.1 Reactivity

- no data available

10.2 Chemical stability

- Stable

10.3 Possibility of hazardous reactions

- no data available

10.4 Conditions to avoid

- no data available

10.5 Incompatible materials

- none

10.6 Hazardous decomposition products

Hazardous decomposition products
- Carbon dioxide (CO2)
- Carbon monoxide
- Oxides of phosphorus

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity	LD50 : > 5,000 mg/kg - Rat Published data
Acute inhalation toxicity	Not classified as hazardous for acute inhalation toxicity according to GHS. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.
Acute dermal toxicity	LD50 > 2,000 mg/kg - Rabbit Published data
Acute toxicity (other routes of administration)	Not applicable
Skin corrosion/irritation	Rabbit Causes burns. Published data
Serious eye damage/eye irritation	Rabbit Risk of serious damage to eyes. Published data

Respiratory or skin sensitisation

Mixture of: hexyldioctylphosphineoxide; dihexyloctylphosphineoxide; trioctylphosphineoxide	Buehler Test - Guinea pig Responding animals in Buelher test < 15 % The substance or mixture is not considered to be sensitizing by skin contact. Method: Regulation (EC) No. 440/2008, Annex, B.6 Unpublished internal reports

Mutagenicity

Genotoxicity in vitro

Ames test
Strain: Salmonella typhimurium
negative
Published data

Chromosome aberration test in vitro
Strain: Human lymphocytes
negative
Published data

Genotoxicity in vivo

In vivo micronucleus test - Mouse
negative
Published data

Carcinogenicity

The product is not considered to be carcinogenic.
According to the available data on the components.
According to the classification criteria for mixtures.
Unpublished reports and/or published data.

Toxicity for reproduction and development

Toxicity to reproduction/Fertility

The product is not considered to affect fertility.,According to the available data on the components.
According to the classification criteria for mixtures.
Unpublished reports and/or published data.

Developmental Toxicity/Teratogenicity

The product is not considered to be toxic for development.,According to the available data on the components.
According to the classification criteria for mixtures.
Unpublished reports and/or published data.

STOT

STOT - single exposure

The substance or mixture is not classified as specific target organ toxicant, single exposure according to GHS criteria.
According to the available data on the components.
According to the classification criteria for mixtures.
Unpublished reports and/or published data.

STOT - repeated exposure

The substance or mixture is not considered to cause damage to organs through prolonged or repeated exposure.
According to the available data on the components.
According to the classification criteria for mixtures.
Unpublished reports and/or published data.

Dermal Subacute exposure 28 Days - Rat
NOEL: 1 mg/kg bw/day
Published data

Experience with human exposure

Experience with human exposure : Inhalation

No data is available on the product itself.

Experience with human exposure : Skin contact

No data is available on the product itself.

Experience with human exposure : Eye contact

No data is available on the product itself.

Experience with human exposure : Ingestion

No data is available on the product itself.

CMR effects

Mutagenicity

Mixture of: hexyldioctylphosphineoxide; dihexyloctylphosphineoxide; trioctylphosphineoxide — Not classified as mutagen according to GHS criteria.

Reproductive toxicity

Mixture of: hexyldioctylphosphineoxide; dihexyloctylphosphineoxide; trioctylphosphineoxide — Some evidence of adverse effects on development, based on animal experiments.

Aspiration toxicity — No aspiration toxicity classification, According to the available data on the components, According to the classification criteria for mixtures.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic Compartment

Acute toxicity to fish

LC50 - 96 h : 0.42 mg/l - Lepomis macrochirus (Bluegill sunfish)
Method: OECD Test Guideline 203
Published data

LC50 - 96 h : 0.14 mg/l - Oncorhynchus mykiss (rainbow trout)
Method: OECD Test Guideline 203
Published data

LC50 - 96 h : 0.71 mg/l - Cyprinodon variegatus (sheepshead minnow)
static test
Method: OTS 797.1400
Published data

Acute toxicity to daphnia and other aquatic invertebrates.

EC50 - 48 h : 0.37 mg/l - Daphnia magna (Water flea)
Method: OECD Test Guideline 202
Published data

LC50 - 96 h : 0.19 mg/l - Mysidopsis bahia (opossum shrimp)
static test
Method: according to a standardised method
Published data

Toxicity to aquatic plants — The product itself has not been tested.

Toxicity to microorganisms — The product itself has not been tested.

Chronic toxicity to fish — The product itself has not been tested.

Chronic toxicity to daphnia and other aquatic invertebrates.	The product itself has not been tested.
Chronic Toxicity to aquatic plants	The product itself has not been tested.

Sediment compartment

Toxicity to benthic organims	The product itself has not been tested.

Terrestrial Compartment

Toxicity to soil dwelling organisms	The product itself has not been tested.
Toxicity to terrestrial plants	The product itself has not been tested.
Toxicity to above ground organisms	The product itself has not been tested.

12.2 Persistence and degradability

Abiotic degradation

Stability in water	Conclusion is not possible for a mixture as a whole.
Photodegradation	Conclusion is not possible for a mixture as a whole.
Other Physico-Chemical reactions	Conclusion is not possible for a mixture as a whole.

Physical- and photo-chemical elimination

Physico-chemical removability	Conclusion is not possible for a mixture as a whole.

Biodegradation

Biodegradability	Ready biodegradability study: Method: OECD Test Guideline 301 D 96.2 % - 28 Days The substance fulfills the criteria for ultimate aerobic biodegradability and ready biodegradability Published data
Ratio BOD/COD	Conclusion is not possible for a mixture as a whole.
Ratio BOD/ThOD	Conclusion is not possible for a mixture as a whole.
Biochemical Oxygen Demand (BOD)	Conclusion is not possible for a mixture as a whole.
Dissolved organic carbon (DOC)	Conclusion is not possible for a mixture as a whole.
Chemical Oxygen Demand (COD)	Conclusion is not possible for a mixture as a whole.
Adsorbed organic bound halogens (AOX)	Conclusion is not possible for a mixture as a whole.
Degradability assessment	The product is considered to be rapidly degradable in the environment

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water	
Mixture of: hexyldioctylphosphineoxide; dihexyloctylphosphineoxide; trioctylphosphineoxide	Due to the distribution coefficient n-octanol/water, accumulation in organisms is possible.
Bioconcentration factor (BCF)	No data available

12.4 Mobility in soil

Adsorption potential (Koc)	Conclusion is not possible for a mixture as a whole.
Known distribution to environmental compartments	No data available

12.5 Results of PBT and vPvB assessment

Mixture of: hexyldioctylphosphineoxide; dihexyloctylphosphineoxide; trioctylphosphineoxide	This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects

Ecotoxicity assessment

Acute aquatic toxicity	Very toxic to aquatic life. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.
Chronic aquatic toxicity	Toxic to aquatic life with long lasting effects. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product Disposal

- The Company encourages the recycle, recovery and reuse of materials, where permitted. If disposal is necessary, The Company recommends that organic materials, especially when classified as hazardous waste, be disposed of by thermal treatment or incineration at approved facilities. All local and national regulations should be followed.

SECTION 14: Transport information

ADR

14.1 UN number	UN 1760
14.2 Proper shipping name	CORROSIVE LIQUID, N.O.S. (phosphine oxides)
14.3 Transport hazard class Label(s):	8 8
14.4 Packing group Packing group Classification Code	 II C9
14.5 Environmental hazards	YES
14.6 Special precautions for user Hazard Identification Number: Tunnel restriction code	 80 (E)

For personal protection see section 8.

RID

14.1 UN number	UN 1760
14.2 Proper shipping name	CORROSIVE LIQUID, N.O.S. (phosphine oxides)
14.3 Transport hazard class Label(s):	8 8
14.4 Packing group Packing group Classification Code	 II C9
14.5 Environmental hazards	YES
14.6 Special precautions for user Hazard Identification Number:	 80

For personal protection see section 8.

IMDG

14.1 UN number	UN 1760
14.2 Proper shipping name	CORROSIVE LIQUID, N.O.S. (phosphine oxides)
14.3 Transport hazard class Label(s):	8 8
14.4 Packing group Packing group	II
14.5 Environmental hazards **Marine pollutant**	YES
14.6 Special precautions for user EmS	F-A , S-B

For personal protection see section 8.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
No data available

IATA

14.1 UN number	UN 1760
14.2 Proper shipping name	CORROSIVE LIQUID, N.O.S. (phosphine oxides)
14.3 Transport hazard class Label(s):	8 8
14.4 Packing group Packing group	II
14.5 Environmental hazards	YES
14.6 Special precautions for user	
Packing instruction (cargo aircraft)	855
Max net qty/pkg	30.00 L
Packing instruction (passenger aircraft)	851
Max net qty/pkg	1.00 L

For personal protection see section 8.

ADN

14.1 UN number	UN 1760
14.2 Proper shipping name	CORROSIVE LIQUID, N.O.S. (phosphine oxides)
14.3 Transport hazard class Label(s):	8 8
14.4 Packing group Packing group Classification Code	 II C9
14.5 Environmental hazards	YES
14.6 Special precautions for user Hazard Identification Number:	 80

For personal protection see section 8.

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transport regulations for hazardous materials, it would be advisable to check their validity with your sales office.

SECTION 15: Regulatory information

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

Major Accident Hazard Legislation: Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.
Annex I: E1

Notification status

Inventory Information	Status
United States TSCA Inventory	- Listed on Inventory
Canadian Domestic Substances List (DSL)	- Listed on Inventory
Australia Inventory of Chemical Substances (AICS)	- Listed on Inventory
Japan. CSCL - Inventory of Existing and New Chemical Substances	- One or more components not listed on inventory
Korea. Korean Existing Chemicals Inventory (KECI)	- Listed on Inventory
China. Inventory of Existing Chemical Substances in China (IECSC)	- Listed on Inventory
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	- Listed on Inventory
Taiwan Chemical Substance Inventory (TCSI)	- One or more components not listed on inventory
EU. European Registration, Evaluation, Authorisation and Restriction of Chemical (REACH)	- When purchased from a European Solvay legal entity, this product is compliant with the registration provisions of the REACH Regulation (EC) No. 1907/2006 as all its components are either excluded, exempt, pre-registered and/or registered. When purchased from a legal entity outside of Europe, please contact your local representative for additional information.

15.2 Chemical safety assessment

- no data available

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

- H314 Causes severe skin burns and eye damage.
- H318 Causes serious eye damage.
- H361 Suspected of damaging fertility or the unborn child.
- H400 Very toxic to aquatic life.
- H410 Very toxic to aquatic life with long lasting effects.

Further information

- Distribute new edition to clients

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. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in any other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.