Safety Data Sheet
ZEUS

Safety Data Sheet dated 31/10/2022, version 4.0
This version cancels and substitutes any previous version

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

1.1. Product identifier
Mixture identification:
Trade name: ZEUS

1.2. Relevant identified uses of the substance or mixture and uses advised against
Recommended use:
Flushing Fluid for Vehicle Cooling Systems
1.3. Details of the supplier of the safety data sheet
Company:
ERRECOM SPA
Via Industriale, 14
Corzano (BS) Italy
Tel. +39 030/9719096
Competent person responsible for the safety data sheet:
lab@errecom.it
1.4. Emergency telephone number
+39 02-6610-1029 Poison Control Center Niguarda Ca' Granda - Milano - ITALY

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
EC regulation criteria 1272/2008 (CLP)

Warning, Skin Irrit. 2, Causes skin irritation.


Warning, Eye Irrit. 2, Causes serious eye irritation.

Adverse physicochemical, human health and environmental effects:
No other hazards
2.2. Label elements
Hazard pictograms:

Warning
Hazard statements:
H315 Causes skin irritation.
H319 Causes serious eye irritation.
Precautionary statements:
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P362+P364 Take off contaminated clothing and wash it before reuse.
Special Provisions:
None
Contains
tetrasodium ethylene diamine tetraacetate

Special provisions according to Annex XVII of REACH and subsequent amendments:
None

2.3. Other hazards
No PBT, vPvB or endocrine disruptor substances present in concentration >= 0.1%
Other Hazards:
No other hazards

SECTION 3: Composition/information on ingredients

3.1. Substances
N.A.
3.2. Mixtures
Hazardous components within the meaning of the CLP regulation and related classification:

Qty	Name	Ident. Number		Classification
>= 1% - < 2.5%	tetrasodium ethylene diamine tetraacetate	Index number: CAS: EC: REACH No.:	607-428-00-2 64-02-8 200-573-9 01-2119486762-27-XXXX	3.1/4/Inhal Acute Tox. 4 H332 3.1/4/Oral Acute Tox. 4 H302 3.3/1 Eye Dam. 1 H318 3.9/2 STOT RE 2 H373
>= 0.5% - < 1%	sodium hydroxide	Index number: CAS: EC: REACH No.:	011-002-00-6 1310-73-2 215-185-5 01-2119457892-27-XXXX	2.16/1 Met. Corr. 1 H290 3.2/1A Skin Corr. 1A H314 3.3/1 Eye Dam. 1 H318 Specific Concentration Limits: C >= 5%: Skin Corr. 1A H314 2% <= C < 5%: Skin Corr. 1B H314 0,5% <= C < 2%: Skin Irrit. 2 H315 0,5% <= C < 2%: Eye Irrit. 2 H319

SECTION 4: First aid measures

4.1. Description of first aid measures
In case of skin contact:
After contact with skin, wash immediately with soap and plenty of water.
In case of eyes contact:
After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an opthalmologist immediately.
Protect uninjured eye.
In case of Ingestion:
Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.
In case of Inhalation:
Remove casualty to fresh air and keep warm and at rest.
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
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
Treatment:

No information available.

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media:
Water.
Carbon dioxide (CO_2).
Extinguishing media which must not be used for safety reasons:
None in particular.

5.2. Special hazards arising from the substance or mixture
Do not inhale explosion and combustion gases.
Burning produces heavy smoke.

5.3. Advice for firefighters
Use suitable breathing apparatus.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Move undamaged containers from immediate hazard area if it can be done safely.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
For non emergency personnel:
Wear personal protection equipment.
Remove persons to safety.
See protective measures under point 7 and 8.
For emergency responders:
Wear personal protection equipment.

6.2. Environmental precautions
Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.
Retain contaminated washing water and dispose it.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.
Suitable material for taking up: absorbing material, organic, sand

6.3. Methods and material for containment and cleaning up
For cleaning up:
Suck up the leaked product into a suitable container. Evaluate the compatibility of the container to be used with the product, checking section 10. Absorb the remainder with inert absorbent material.

6.4. Reference to other sections
See also section 8 and 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Advice on general occupational hygiene:
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.

7.2. Conditions for safe storage, including any incompatibilities
Store away from direct sunlight.
Do not store at temperatures below + 5 ° C / + 41 ° F.
Keep away from food, drink and feed.

Incompatible materials:
See subsection 10.5
Instructions as regards storage premises:
Adequately ventilated premises.
7.3. Specific end use(s)
Information not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
tetrasodium ethylene diamine tetraacetate - CAS: 64-02-8
TLV - TWA: 10 mg/m3 - Notes: inhalable fraction
TLV - TWA: 3 mg/m3 - Notes: respirable fraction
sodium hydroxide - CAS: 1310-73-2
ACGIH - STEL: Ceiling 2 mg/m3 - Notes: URT, eye, and skin irr
DNEL Exposure Limit Values
tetrasodium ethylene diamine tetraacetate - CAS: 64-02-8
Worker Professional: 1.5 mg/m³ - Consumer: 0.6 mg/m³ - Exposure: Human Inhalation - Frequency: Long Term, systemic effects
Worker Professional: 1.5 mg/m³ - Consumer: 0.6 mg/m³ - Exposure: Human Inhalation - Frequency: Long Term, local effects
Worker Professional: 3 mg/m³ - Consumer: 1.2 mg/m³ - Exposure: Human Inhalation - Frequency: Short Term, systemic effects
Worker Professional: 3 mg/m³ - Consumer: 1.2 mg/m³ - Exposure: Human Inhalation - Frequency: Short Term, local effects
Consumer: 25 mg/kg - Exposure: Human Oral - Frequency: Long Term, systemic effects - Notes: bw/day
Consumer: 25 mg/kg - Exposure: Human Oral - Frequency: Long Term, local effects
sodium hydroxide - CAS: 1310-73-2
Worker Professional: 1 mg/m³ - Consumer: 1 mg/m³ - Exposure: Human Inhalation - Frequency: Long Term, local effects
PNEC Exposure Limit Values
tetrasodium ethylene diamine tetraacetate - CAS: 64-02-8
Target: Fresh Water - Value: 2.2 mg/L
Target: Marine water - Value: 0.22 mg/L
Target: Microorganisms in sewage treatments - Value: 43 mg/L
Target: Soil (agricultural) - Value: 0.72 mg/kg
Target: Occasional emission - Value: 1.2 mg/L
8.2. Exposure controls
Eye protection:
Tightly fitting safety goggles.
Protection for skin:
Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.
Protection for hands:
work gloves resistant to penetration (ref. standard EN 374).
Suitable material:
NBR (nitrile rubber).
NR (natural rubber, natural latex).
Material thickness: 0.4 mm minimum.
Break through time : > 480 min
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).
Respiratory protection:
Not necessary for normal use.

Thermal Hazards:
None
Environmental exposure controls:
None
Appropriate engineering controls:
None

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Value	Method:	Notes:
Physical state:	Liquid	--	--
Colour:	Light blue	--	--
Odour:	characteristic	--	--
Melting point/freezing point:	N.A.	--	--
Boiling point or initial boiling point and boiling range:	N.A.	--	--
Flammability:	N.A.	--	--
Lower and upper explosion limit:	N.A.	--	--
Flash point:	N.A.	--	--
Auto-ignition temperature:	N.A.	--	--
Decomposition temperature:	N.A.	--	--
pH:	13	--	--
Kinematic viscosity:	N.A.	--	--
Solubility in water:	total	--	--
Solubility in oil:	insoluble	--	--
Partition coefficient n-octanol/water (log value):	N.A.	--	--
Vapour pressure:	N.A.	--	--
Density and/or relative density:	1.1 g/mL (+20°C / +68°F)	ASTM-D4052	--
Relative vapour density:	N.A.	--	--
Particle characteristics:			
Particle size:	N.A.	--	--

9.2. Other information
No other relevant information

SECTION 10: Stability and reactivity

10.1. Reactivity
Stable under normal conditions
10.2. Chemical stability
Stable under normal conditions
10.3. Possibility of hazardous reactions
Under normal use and storage conditions, no hazardous reactions are expected.
10.4. Conditions to avoid
Store away from direct sunlight.
10.5. Incompatible materials

Strong acids.

10.6. Hazardous decomposition products

No data available

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Toxicological information of the product:

a) acute toxicity
Not classified
Based on available data, the classification criteria are not met

b) skin corrosion/irritation
The product is classified: Skin Irrit. 2 H315

c) serious eye damage/irritation
The product is classified: Eye Irrit. 2 H319

d) respiratory or skin sensitisation
Not classified
Based on available data, the classification criteria are not met

e) germ cell mutagenicity
Not classified
Based on available data, the classification criteria are not met

f) carcinogenicity
Not classified
Based on available data, the classification criteria are not met

g) reproductive toxicity
Not classified
Based on available data, the classification criteria are not met

h) STOT-single exposure
Not classified
Based on available data, the classification criteria are not met

i) STOT-repeated exposure
Not classified
Based on available data, the classification criteria are not met

j) aspiration hazard
Not classified
Based on available data, the classification criteria are not met

Toxicological information of the main substances found in the product:

tetrasodium ethylene diamine tetraacetate - CAS: 64-02-8

a) acute toxicity:
Test: LC50 - Route: Oral - Species: Rat > 2000 mg/kg
Test: LD50 - Route: Oral - Species: Rat 1780 mg/kg
Test: LC50 - Route: Inhalation - Species: Rat 1 mg/L - Duration: 4h - Notes: 41 h

sodium hydroxide - CAS: 1310-73-2

b) skin corrosion/irritation:
Test: Skin Corrosive - Route: Skin - Species: Rabbit Positive

c) serious eye damage/irritation:
Test: Eye Irritant - Species: Rabbit Positive - Source: OECD TG 405

d) respiratory or skin sensitisation:
Test: Respiratory Sensitization - Route: In vitro Negative - Notes: ECHA
Test: Skin Sensitization - Route: In vitro Negative - Notes: ECHA

e) germ cell mutagenicity:
Test: Ames test - Species: Salmonella Typhimurium Negative

11.2. Information on other hazards

Endocrine disrupting properties:

No endocrine disruptor substances present in concentration >= 0.1%

SECTION 12: Ecological information

12.1. Toxicity

Adopt good working practices, so that the product is not released into the environment.
Not classified for environmental hazards
Based on available data, the classification criteria are not met

tetrasodium ethylene diamine tetraacetate

a) Aquatic acute toxicity:

Endpoint: EC50 - Species: Fish > 1000 mg/L - Duration h: 96 - Notes: Species: lepomis macrochirus
Endpoint: EC50 - Species: Daphnia = 625 mg/L - Duration h: 24 - Notes: Species: Daphnia magna
Endpoint: EC50 - Species: Algae > 100 mg/L - Duration h: 72 - Notes: Species: Pseudokirchneriella subcapitata
Endpoint: LC50 - Species: Fish > 100 mg/L - Duration h: 96 - Notes: Species: lepomis macrochirus; Nominal concentration. The product has not been tested. The indications are derived from substances / products of similar composition or structure.
Endpoint: EC50 - Species: Daphnia 140 mg/L - Duration h: 48 - Notes: Species: Daphnia magna
Endpoint: EC50 - Species: Algae > 100 mg/L - Duration h: 72 - Notes: Species: Scenedsmus obliquus; Nominal concentration

b) Aquatic chronic toxicity:

Endpoint: NOEC - Species: Fish > 36.9 mg/L - Duration h: 840 - Notes: Species: Brachydanio rerio; OECD TG 210 The indications of the toxic action refer to the analytically determined concentration. The product has not been tested. The indications are derived from substances/products of similar composition or structure.
Endpoint: NOEC - Species: Daphnia 25 mg/L - Duration h: 504 - Notes: Species: Daphnia magna; OECD TG 211; Nominal concentration. The product has not been tested. The indications are derived from substances / products of similar composition or structure.

c) Bacteria toxicity:

Endpoint: EC50 > 500 mg/L - Notes: Exposure time: 30' Species: Bacteria

d) Terrestrial toxicity:

Endpoint: LC50 - Species: earthworms 156 mg/kg - Duration h: 336 - Notes: Species: Eisenia foetida; OECD TG 207; The product has not been tested. The indications are derived from substances / products of similar composition or structure.

f) Effects in sewage plants:

Endpoint: EC20 - Species: Microorganisms > 500 mg/L - Duration h: 0.5 - Notes: Species: activated mud; OECD TG 209; Nominal concentration. The correct introduction of low concentrations in a biological purification plant should not compromise the degradation activity of activated sludge. The product has not been tested.

sodium hydroxide

a) Aquatic acute toxicity:

Endpoint: LC50 - Species: Fish 189 mg/L - Duration h: 48
Endpoint: EC0 - Species: Daphnia = 40.4 mg/L - Duration h: 48 - Notes: Species: Ceriodaphnia dubia
Endpoint: LC50 - Species: Fish 125 mg/L - Duration h: 96 - Notes: Species: Gambusia affinis
Endpoint: LC50 - Species: Fish 45.4 mg/L - Duration h: 96 - Notes: Species Oncorhynchus mykiss

c) Bacteria toxicity:

Endpoint: EC50 - Species: Bacteria 22 mg/L - Duration h: 0.25 - Notes: Species: Photobacterium phosphoreum

12.2. Persistence and degradability

N.A.

12.3. Bioaccumulative potential

tetrasodium ethylene diamine tetraacetate - CAS: 64-02-8

Bioaccumulation: Very low bioaccumulative - Test: BCF - Bioconcentrantion factor 1.8 - Duration: 28 d

12.4. Mobility in soil

N.A.

12.5. Results of PBT and vPvB assessment

vPvB Substances: None - PBT Substances: None

12.6. Endocrine disrupting properties

No endocrine disruptor substances present in concentration >= 0.1%

12.7. Other adverse effects

None

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Recover if possible. In so doing, comply with the local and national regulations currently in force.

SECTION 14: Transport information

14.1. UN number or ID number

Not classified as dangerous in the meaning of transport regulations.

14.2. UN proper shipping name

N.A.

14.3. Transport hazard class(es)

N.A.

14.4. Packing group

N.A.

14.5. Environmental hazards

ADR-Enviromental Pollutant:	No
IMDG-Marine pollutant:	No

14.6. Special precautions for user

N.A.

14.7. Maritime transport in bulk according to IMO instruments

N.A.

SECTION 15: Regulatory information

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

Dir. 98/24/EC (Risks related to chemical agents at work)
Dir. 2000/39/EC (Occupational exposure limit values)
Regulation (EC) n. 1907/2006 (REACH)
Regulation (EC) n. 1272/2008 (CLP)
Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013
Regulation (EU) n. 2020/878
Regulation (EU) n. 286/2011 (ATP 2 CLP)
Regulation (EU) n. 618/2012 (ATP 3 CLP)
Regulation (EU) n. 487/2013 (ATP 4 CLP)
Regulation (EU) n. 944/2013 (ATP 5 CLP)

Regulation (EU) n. 605/2014 (ATP 6 CLP)
Regulation (EU) n. 2015/1221 (ATP 7 CLP)
Regulation (EU) n. 2016/918 (ATP 8 CLP)
Regulation (EU) n. 2016/1179 (ATP 9 CLP)
Regulation (EU) n. 2017/776 (ATP 10 CLP)
Regulation (EU) n. 2018/669 (ATP 11 CLP)
Regulation (EU) n. 2018/1480 (ATP 13 CLP)
Regulation (EU) n. 2019/521 (ATP 12 CLP)
Regulation (EU) n. 2020/217 (ATP 14 CLP)
Regulation (EU) n. 2020/1182 (ATP 15 CLP)
Regulation (EU) n. 2021/643 (ATP 16 CLP)

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:

Restrictions related to the product:

Restriction 3
Restriction 40

Restrictions related to the substances contained:

Restriction 75

Where applicable, refer to the following regulatory provisions :

Directive 2012/18/EU (Seveso III)
Regulation (EC) nr 648/2004 (detergents).
Dir. 2004/42/EC (VOC directive)

Provisions related to directive EU 2012/18 (Seveso III):

Seveso III category according to Annex 1, part 1

None

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for the mixture.

SECTION 16: Other information

Full text of phrases referred to in Section 3:

H332 Harmful if inhaled.
H302 Harmful if swallowed.
H318 Causes serious eye damage.
H373 May cause damage to organs (respiratory and haematopoietic systems) through prolonged or repeated exposure if inhaled.
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

Hazard class and hazard category	**Code**	**Description**
Met. Corr. 1	2.16/1	Substance or mixture corrosive to metals, Category 1
Acute Tox. 4	3.1/4/Inhal	Acute toxicity (inhalation), Category 4
Acute Tox. 4	3.1/4/Oral	Acute toxicity (oral), Category 4
Skin Corr. 1A	3.2/1A	Skin corrosion, Category 1A
Skin Corr. 1B	3.2/1B	Skin corrosion, Category 1B
Skin Irrit. 2	3.2/2	Skin irritation, Category 2
Eye Dam. 1	3.3/1	Serious eye damage, Category 1
Eye Irrit. 2	3.3/2	Eye irritation, Category 2

STOT RE 2	3.9/2	Specific target organ toxicity - repeated exposure, Category 2

This safety data sheet has been completely updated in compliance to Regulation 2020/878.
Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Classification according to Regulation (EC) Nr. 1272/2008	**Classification procedure**
Skin Irrit. 2, H315	Calculation method
Eye Irrit. 2, H319	Calculation method

This document was prepared by a competent person who has received appropriate training.
Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This MSDS cancels and replaces any preceding release.

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ATE: Acute Toxicity Estimate
ATEmix: Acute toxicity Estimate (Mixtures)
CAS: Chemical Abstracts Service (division of the American Chemical Society).
CLP: Classification, Labeling, Packaging.
DNEL: Derived No Effect Level.
EINECS: European Inventory of Existing Commercial Chemical Substances.
GefStoffVO: Ordinance on Hazardous Substances, Germany.
GHS: Globally Harmonized System of Classification and Labeling of Chemicals.
IATA: International Air Transport Association.
IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).
ICAO: International Civil Aviation Organization.
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO).
IMDG: International Maritime Code for Dangerous Goods.
INCI: International Nomenclature of Cosmetic Ingredients.
KSt: Explosion coefficient.
LC50: Lethal concentration, for 50 percent of test population.
LD50: Lethal dose, for 50 percent of test population.
PNEC: Predicted No Effect Concentration.
RID: Regulation Concerning the International Transport of Dangerous Goods by Rail.
STEL: Short Term Exposure limit.
STOT: Specific Target Organ Toxicity.
TLV: Threshold Limiting Value.
TWA: Time-weighted average

WGK: German Water Hazard Class.