Kao Corporation

Ethylenediaminetetraacetic acid

The document of the safety summary provides usage of chemical substances and safety information to the general public. The safety summary is NOT intended to be an alternative document of Safety Data Sheet which is described from the recommendable detailed safety measures for each use. The safety summary is NOT intended to be an alternate document of the instructions for use nor the warning of consumer products including this substance. The contents of this summary are based on the laws, documents, information, and data available at present, without any warranty.

1. Chemical Identity

Category Name	Ethylenediaminetetraacetic acid
Substance Name	*N*, *N*'-1,2-Ethanediylbis(N-carboxymethyl)-glycine
CAS Number	139-33-3、150-38-9、64-02-8、6381-92-6、13235-36-4

2. Product Uses and Benefits

Ethylenediaminetetraacetic acid (EDTA) is a chelating agent also known as Edetic acid. EDTA is commonly used as sodium salt or calcium salt. EDTA has the property of quickly forming complex salts with metal ions. It is widely blended in products used in general households, such as household detergents, cosmetics, deodorants, and air fresheners, mainly for the purpose of cleaning, oxidation, and preventing discoloration.

3. Physical/Chemical Properties

As the representative structure of EDTA, the physicochemical properties of EDTA・2Na and EDTA・4Na were calculated using computer software EPI suite 4.11 of the U.S. Environmental Protection Agency or measured values are shown below.

Physicochemical properties of EDTA

Property	Representative structure	
	EDTA・2Na	EDTA・4Na
Molecular weight	338.22	380.17
Boiling point (℃)	335.19 [1]	246.56 [1]
Melting point (℃)	242	300
Vapor pressure (Pa) 25℃	7.57×10^{-17}	1.99×10^{-10} [1]
Water solubility (mg/L)	1.00×10^{6}	1.00×10^{6} [1]
Octanol/water partition coefficient (Log Kow)	-11.7 [1]	-13.17 [1]
Soil adsorption coefficient (Log Koc)	312.7 [1]	312.7 [1]

4. Human Health Safety Assessment

Consumer: The exposure to EDTA is at safe levels.
Worker: The repeated exposure of EDTA does not cause any toxic effects.

Effect Assessment	Result
Acute Toxicity oral	Based on the available data, harmful if swallowed The substance does not cause damage to any organs following single exposure
Irritation skin/ eye	Undiluted substance causes skin irritation and serious eye irritation
Sensitization	Based on the available data, unlikely to cause allergic skin reaction
Toxicity after repeated exposure	Unlikely to cause any toxic effects through prolonged or repeated oral exposure in practical use
Genotoxicity	Based on the available data, unlikely to cause genetic defects
Carcinogenicity	Based on the available data, unlikely to cause cancer
Toxicity for reproduction	Unlikely to be damaging to fertility or the unborn child

5. Environmental Safety Assessment

The test results with fish, aquatic invertebrates and algae suggest that EDTA could cause toxicity for aquatic organism and a long-term harmful effect to aquatic organisms. EDTA is persistent under biodegradability test conditions but is expected to degrade under the actual environments. EDTA does not bioaccumulate in the food chain.

Effect Assessment	Result
Aquatic Toxicity	Suggests to cause toxicity for aquatic organism and toxic to aquatic life with long lasting effects
Biodegradation	Based on the available data, it is considered to be degraded in actual environments
PBT/ vPvB conclusion	Not persistent in the environment, not bioaccumulating in organisms and not toxic nor very persistent and very bioaccumulating

6. Exposure

- **Consumer**

The consumer can come into contact with the substance in use of the detergents etc., but the concentration of EDTA in use is below the level which would give rise harmful effects of concern. When it's used as the recommended use, consumer should always read product information before use and follow the label/ use instructions.

- **Worker**

The exposure can occur either in EDTA manufacturing facilities or in the various industrial facilities when EDTA are used. Those workers in industrial operations during maintenance, sampling, testing, or other procedures could be exposed with EDTA. Only qualified and trained workers handle the undiluted substance. The manufacturing facilities offer thorough training program for employees and appropriate work processes, as well as safety equipment (goggles and gloves) in place to present an unnecessary exposure. Safety showers and eye-wash stations are accessible nearby. Workers are required to be trained in accordance with the safety measures in the Safety Data Sheet.

- **Environment**

Since this substance is used extensively, it is discharged to wastewater treatment plants from industrial sites such as manufacturing, preparation, handling, storage and use of the substance as well as from consumer households. It is partly removed in wastewater treatment plants. Even if it remains in the drainage, it is considered that there is no long-term impact on aquatic organisms based on the results of the risk assessment. Furthermore, the substance dose not accumulate in the food chain, so that there is no concern of human exposure through environmental pathway.

7. Risk management recommendations for industrial use

When you use the substance, make sure to be measured the adequate ventilation. Always use appropriate chemical-resistant gloves to protect your hands and skin and always wear eye protection equipment. Do not eat, drink or smoke where the substance is handled, processed or stored. Wash hands and skin after contact with the substance. When the substance attaches to skin (or hair), take off the contaminated clothes. Wash with a large amount of water and soap. When it causes your skin irritation, consult doctor (medical diagnosis/therapy). If the substance gets into your eyes, rinse your eyes thoroughly for several

minutes. If you wear contact lens, and you can take it off easily, take it off and continue to rinse your eyes. Contact to a doctor immediately.

Wastewater containing the substance must be passed the wastewater treatment plants in order to remove the substance. No specific measures are needed because it is not expected to be released into the air.

8. Regulatory Information/Classification and Labelling

Under GHS classification chemical substances are classified in hazards for physical properties, human health and environment. The hazard information for industrial products are transmitted via specific labels and Safety Data Sheet. GHS offers the standardization for hazard communication. The subjects who could be assumed to be exposed to the substance, workers, consumers, transport workers, and emergency responders, can better understand the hazards of the chemicals in use through the transmission.

Labelling according to UN GHS

UN GHS is the basis for country specific GHS labelling.

EDTA is assigned to GHS classification.

Classification and labelling information

Acute Tox 4

Eye Dam. 2A

Aquatic Acute 2

Aquatic Chronic 2

Hazard Statements:

H302: Harmful if swallowed

H319: Causes serious eye irritation

H401: Toxic to aquatic life

H411: Harmful to aquatic life with long lasting effects

Signal Word

Warning

The laws of manufacturing, sale, transport, use and disposal are different among countries or areas. Details are referred to Safety Data Sheet provided by the supplier.

9. Conclusion

Though EDTA is suggested to cause toxicity to aquatic organisms, the risk to environment organisms is negligible due to the degradation of EDTA in actual environments. In the PBT/vPvB assessments for EDTA, the substance is not applicable to PBT/vPvB. Contact with

the undiluted EDTA may cause serious damage to the eyes. When handling the substance, workers should follow the standard safety measures and refer to the Safety Data Sheet. Consumers will usually not come into contact with the substance bulk and the substance is used diluted in consumer products, therefore, it is considered that EDTA give rise no hazardous effects to human health.

10. Contact

For further information on this substance or Safety Summaries in general, please contact us.

Name	Kao Corporation
URL	https://chemical.kao.com/global/

11. Glossary

Acute Toxicity	Adverse effects that result from a single exposure
Sensitization	Inducibility of allergy
Genotoxicity	Effects to induce gene mutations
Carcinogenicity	Action influence to cause a cancer
Toxicity for Reproduction	Adverse effects for teratogenicity, embryotoxicity, and reproductivity
Biodegradation	Biological degradation of a substance in environments
PBT (Persistent, Bioaccumulative and Toxic)	Substances that are environmentally persistent, bioaccumulative, and toxic
vPvB (Very Persistent and Very Bioaccumulative)	Substances with high persistence in the environment and high accumulation in ecology
GHS	Globally Harmonized System of Classification and Labelling of Chemicals

12. Date of Issue

October 11, 2023