

## Polycarboxylic acid based polymer

The document of the safety summary provides the safety information of the chemical substance 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	Polycarboxylic acid based polymer
Substance Name	Sodium polyacrylate, Copolymer of acrylic acid/maleic acid sodium salt
CAS Number	9003-04-7, 52255-49-9, 60472-42-6

### 2. Product Uses and Benefits

Polycarboxylic acid based polymer (PBP) is a salt of polyacrylic acid (P-AA), and acrylic acid/maleic acid copolymer (P-AA/MA), and is mainly used as sodium salt. PBP is widely used as consumer products contained in laundry detergents kitchen detergents. For the industrial use, PBP is used as colour dispersant and thickener.

### 3. Physical/Chemical Properties

As a typical structure of PBP, the physicochemical characteristics of P-AA (molecular weight 1,000-70,000) and P-AA/MA (molecular weight 15,000-70,000) were calculated using computer software EPI suite 4.11 of U.S. Environmental Protection Agency or measured value (melting point) are shown below.

## Physicochemical properties of PBP

Property	P-AA	P-AA/MA
Molecular weight	1000-70000	15000-70000
Melting point (°C)	>150°C(decomp.)	>150°C(decomp.)
Boiling point (°C)	Not applicable	Not applicable
Vapor pressure (Pa, at 25°C)	Not applicable	Not applicable
Water solubility (g/L)	>400	>400

## 4. Human Health Safety Assessment

Consumer: The exposure to PBP is at safe levels.

Worker: The Short-term and repeated exposure of PBP does not cause any toxic effects

Effect Assessment	Result
Acute Toxicity oral/ dermal	No acute toxicity after oral/ dermal exposure in practical use The substance does not cause damage to any organs following single exposure
Irritation skin/ eye	Based on the available data, unlikely to cause irritation/corrosivity to skin or eyes
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
Mutagenicity	Based on the available data, unlikely to cause genetic defects
Carcinogenicity	Based on the available data, unlikely to cause cancer
Toxicity for reproduction	Based on the available data, 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 PBP is not to cause toxicity for aquatic organism. From the information of general polymer, it seems to be not readily biodegradable, but it is considered to be removed by sewage treatment etc. It is not bioaccumulative because of high molecular weight of polymer.

Effect Assessment	Result
Aquatic Toxicity	Suggests not to cause toxicity for aquatic organism.
Biodegradation	It seems to be not readily biodegradable
PBT/ vPvB conclusion*	It is not applicable to PBT / vPvB

\*PBT=Persistent, Bioaccumulative and Toxic

vPvB=Very Persistent and Very Bioaccumulative

## 6. Exposure

- **Consumer**

The consumer can come into contact with the substance in use of the detergents, but the concentration of PBP 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 PBP manufacturing facilities or in the various industrial facilities when PBP is used. Those workers in industrial operations during maintenance, sampling, testing, or other procedures could be exposed with PBP. Only qualified and trained workers handle the substance. The manufacturing facilities offer thorough training program for employees and appropriate work processes, as well as safety equipment (goggles, gloves and dust mask) in place to prevent 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 waste water treatment plants from industrial sites such as manufacturing, preparation, handling, storage and use of the substance as well as from consumer households. However, this material is considered to be efficiently removed at the wastewater treatment plants. Even if it remains slightly in the wastewater, it is considered not toxic to aquatic organisms. Furthermore, this substance does not accumulate in the food chain, so that there is no concern of human exposure through environmental pathway.

## 7. Risk management recommendations

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. Please wear appropriate dust mask to prevent inhalation. 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. When it causes your eyes irritation, consult doctor (medical diagnosis/therapy)

Waste water containing the substance must be passed the waste water treatment plants in order to remove the substance. In work environments where dust is expected, install appropriate dustproof / dust collecting equipment. 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.

**PBP is not assigned any GHS classification.**

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

PBP is thought to be not readily biodegradable, but since it shows no toxicity to aquatic organisms, the risk to the environment is not considered to be a concern. In the PBT/vPvB assessments for PBP, the substance is not applicable to PBT/vPvB. Although PBP is not considered to exhibit toxicity due to short-term and repeated exposure, workers need to refer to Safety Data Sheet according to standard safety measures. Consumers are not considered to have a risk in use.

## 10. Contact

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

Name	Kao Corporation
URL	<a href="https://ssl.kao.com/en/chemical/">https://ssl.kao.com/en/chemical/</a>

## 11. Glossary

Hazard	Hazardous property for human health or environments
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
Acute Toxicity	Adverse effects that result from a single exposure
Sensitization	Inducibility of allergy
Mutagenicity	Effects to induce gene mutations
Toxicity after repeated exposure	Adverse effects that result from repeated exposure
Toxicity for reproduction	Adverse effects for teratogenicity, embryotoxicity, and reproductivity
Carcinogenicity	Action influence to cause a cancer
Biodegradation	Biological degradation of a substance in environments
Bioaccumulation	Accumulation of substances in environments

## 12. Date of Issue

June 14, 2019