Technical information

GPS Safety Summary

Triallyl cyanurate (TAC)

This Product Safety Summary is intended to provide a general overview of the chemical substance in the context of ICCA Global Product Strategy. The information on the summary is basic information and is not intended to provide emergency response information, medical information or treatment information.

Substance name

Triallyl cyanurate (TAC)
CAS-No.: 101-37-1

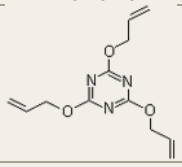
General statement

TAC is used as an intermediate in the production of other chemicals such as rubbers, resins and polymers. It is also used as a processing aid in the manufacture of plastics.

The environmental effects, ecotoxicology and toxicology information available for TAC is provided based on studies and/or a reliable evaluation of its hazardous properties.

TAC should not enter surface water, groundwater and soil. General and substance specific operational conditions and risk management measures are in place preventing exposure to workers and release to the environment.

Chemical identity

Name	Triallyl cyanurate
Brand names	TAC
Chemical name (IUPAC)	2,4,6-triallyloxy-1,3,5-triazine
CAS number	101-37-1
EC number	202-936-7
Molecular formula	$C_{12}H_{15}N_3O_3$
Structure	

Synonyms	TAC; 1,3,5-triazine - 2,4,6-tris(2-propen-1-yloxy)

Uses and application

TAC is used as an intermediate in the production of other chemicals such as rubbers, resins and polymers. It is also used as a processing aid in the manufacture of plastics.

Physical/chemical properties

TAC is a colorless solid with a faint pungent odor at standard temperature and pressure. Its melting point is expected to be at approx. 26°C and it decomposes at 156°C (3 hPa). It has a density of 1.234 g/cm^3, which is higher than that of water and a vapor pressure of <0.001 hPa at 25°C. The substance is not classified as flammable, explosive or oxidizing. It will self-ignite at 410°C. Due to polymerisation risk above 60°C temperatures, temperatures exceeding 40°C should be avoided for longer periods.

Property	Value
Physical state	solid
Color	colorless
Odor	faint pungent
Density	1.234 g/cm3 (25°C)
Melting / boiling point	approx. 26°C /156°C at 3 hPa (decomposition)
Flammability	not a flammable solid
Explosive Properties	no indications for explosive properties
Self-ignition temperature	410 °C
Vapor pressure	<0.001 hPa (25°C)
Molecular weight	249.27 g/mol
Water solubility	0.31 g/l (at 20 °C)
Flash point	175.5°C (1013 hPa)
Octanol-water partition coefficient	2.8 (at 20°C)
Viscosity	5.79 mm^2/s (50°C, static) 12.85 mPas (30 °C, dynamic) 6.34 mPas (50 °C, dynamic) 3.63 mPas (70 °C, dynamic)

Health effects

Consumer exposure is very unlikely as the substance is manufactured and handled in industrial settings. Consumers will not come into contact with relevant levels of TAC. Based on data available, TAC is harmful via oral exposure, not irritating to the eye or the skin and is not a skin sensitizer. It

has not shown mutagenic and genotoxic effects. Based on the available data there is no evidence that TAC is carcinogenic. No data are available to determine whether TAC is a reproductive or developmental toxin.

Effect Assessment	Result
Acute toxicity (oral, dermal and inhalation)	harmful if swallowed; low toxicity via dermal and inhalation exposure.
Eye / Skin irritation	not irritating to the eyes or skin
Sensitization	not a sensitizer
Toxicity after repeated exposure	low toxicity; no target organ specific toxicity
Genotoxicity/mutagenicity	not mutagenic / not genotoxic
Carcinogenicity	based on available data no evidence for carcinogenic potential
Toxicity for reproduction	no data available

Environmental effects

Based on available data for the pure substance, TAC is considered to be toxic to aquatic organisms with long lasting effects. The substance is not readily biodegradable and due to its physico-chemical properties is not likely to bioaccumulate. TAC does not fulfill the PBT / vPvB criteria.

Effect Assessment	Result
Aquatic toxicity	toxic to aquatic life with long-lasting effects

Fate and Behavior	Result
Biodegradation	not readily biodegradable
Bioaccumulation potential	no bioaccumulation expected
PBT / vPvB conclusion	not considered to be either PBT or vPvB

Exposure

Human health

Consumers will not come in contact with this chemical as it is manufactured exclusively in chemical industry in a closed process. Personnel exposure to this chemical in the manufacturing facilities is low because the process, storage and handling operations are enclosed. Normal industrial practices assure limited workplace exposures. These practices include handling with good ventilation. When containers and tanks are cleaned, residues are disposed of as hazardous waste. All workers are trained in the properties and safe practices of using chemicals including using personal protective clothing.

Environment

Direct use by consumers is not intended. The manufacture is a closed and automated process and no exposure to the environment is expected. Any exposures will generally be lower than concern levels.

Risk management recommendations

When using chemicals make sure that there is adequate ventilation. Always use appropriate chemical resistant gloves to protect your hands and skin and always wear eye protection such as chemical goggles. All releases that may include the substance must be directed to a wastewater treatment plant that removes the substance from the final releases to the receiving water. Releases to air are not expected and therefore no specific recommendations are required. Waste is disposed of according to local authority regulations.

State agency review

- Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
- EU REACH registration number: 01-2119519242-49-0000
- EU-GHS Regulation (EU) No. 1272/2008
- EU-Risk Assessment (Regulation 793/93)
- IPCS International Chemical Safety Card
- ICCA HPV

Regulatory information/classification and labelling

GHS-Labeling

Statutory basis	GHS as per Regulation ST/SG/AC.10/30
Symbol(s)	
Signal word(s)	Warning
Hazard statement(s)	H302 - Harmful if swallowed. H401 - Toxic to aquatic life. H411 - Toxic to aquatic life with long lasting effects.
Precautionary statement(s)	P264 - Wash hands thoroughly with soap and water after handling. P273 - Avoid release to the environment.

	P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. P330 - Rinse mouth.	

Glossary

Acute toxicity	harmful effects after a single exposure
Biodegradable	breakdown of materials by a physiological environment
Bioaccumulation	accumulation of substances in the environment
Carcinogenicity	effects causing cancer
Chronic toxicity	harmful effects after repeated exposures
GHS	Global Harmonized System on Classification and Labelling of Chemicals
Mutagenicity	effects that change genes
PBT	Persistent, bioaccumulative and toxic
REACH	Registration, Evaluation and Authorisation of Chemicals
Reprotoxicity	combining teratogenicity, embryo toxicity and harmful effects on fertility
Sensitising	allergenic
Teratogenic	effects on fetal morphology

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Performance of the chemical described herein should be verified by testing which should be carried out only by qualified experts.

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