

Piperylene Product Stewardship Summary

(CAS number 504-60-9)

Chemical Formula for Piperylene

C₅H₈

What is Piperylene?

Piperylene, also known as 1,3 Pentadiene is a colourless to light-coloured volatile liquid with an unpleasant odour. Piperylene is derived from the crude C₅ stream of a steam cracker by using an extractive distillation process.

Commercial piperylene has a purity of about 75%.

How is Piperylene Used?

Piperylene is used as an intermediate monomer in the manufacture of plastics, adhesives and resins. Piperylene-based products are notably present in modern adhesives, such as those used in the manufacture of envelopes, parcel tapes and diaper fastenings, - and across the world in road markings.

Health, Safety and Environmental Considerations

Piperylene is highly flammable in its liquid and vapour forms and presents a significant fire and explosion hazard. Any environment where Isoprene is being used needs to be well ventilated. It should be kept away from heat and open flame. As the vapour is heavier than air, it may spread along the ground, so care needs to be taken that the vapour is not ignited by a distant source.

Piperylene is a static accumulator. Even with proper grounding and bonding, this material can still accumulate an electric charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur. Prior to handling, persons need to be thoroughly trained to recognize and safely manage all aspects of the risks associated with static electricity.

Piperylene (75 %) is classified as hazardous to health under the Globally Harmonized System as a potential carcinogen and mutagen. Pure piperylene is not listed as a carcinogen by international or national organizations. However, piperylene-rich streams contain more than 0.1% isoprene which is classified as a Group 2B product (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Piperylene (75%) is classified as harmful via the oral, dermal, ingestion and inhalation routes of

exposure. Piperylene can be irritating to the eyes, skin and respiratory system. Prolonged and repeated skin contact can result in dermatitis. High exposure to piperylene can cause central nervous system depression, resulting in dizziness, light-headedness, headache, nausea and loss of coordination. If swallowed, it can cause lung damage and chemical pneumonia, which can be fatal.

Storing and Transporting Piperylene

Piperylene should be stored in mild steel or stainless-steel tanks. Piperylene shipped is transported by tank truck, rail car and vessel/barge. Piperylene is highly flammable and can accumulate static electricity during transfer; therefore precautionary measures to prevent static discharge must be taken. To prevent peroxide formation, which could lead to uncontrolled polymerisation when the product is transported or stored, another chemical is added to stabilise piperylene and it is stored under a non-flammable (inert) gas.

Risk Characterization Summary

Risks associated with exposure to this product have been evaluated for the following “chain-of-commerce” activities: manufacture, storage, product transfer, transportation, and customers/markets. Due to health, safety and environmental considerations, it is only manufactured, stored and transported to customers in closed systems. Likewise, customers are limited to those who only use the product in closed systems as an intermediate for the manufacture of other chemicals. Proper equipment design and handling procedures maintain low risk from exposure to the product where the product is used as a chemical intermediate.

This product stewardship summary is intended to give general information about the chemical or categories of chemicals addressed. It is not intended to provide an in-depth discussion of health and safety information. Additional information is available through the chemical’s applicable [Safety Data Sheet](#), which should be consulted before use of the chemical. This product stewardship summary does not supplant or replace required regulatory and/or legal communication documents.



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