



Product Stewardship Summary for Toluene

This Product Stewardship Summary provides high level information to the public regarding the product safety of the subject chemical product. This summary is not intended to provide detailed information regarding emergency or medical treatment or detailed environmental and health information. Please refer to the Safety Data Sheet (SDS) for specific information related to this chemical.

Product Overview

Toluene is a chemical intermediate used in industrial applications. Exposure to toluene occurs at home, ambient air, as well as industrial work sites. Toluene exposure at home occurs primarily with products used such as paints, inks, and cigarette smoke. In the ambient air, toluene is sourced from automobile and industrial facility emissions.

Chemical Identity

Product Name: Toluene
Common Names: toluene, Benzene, methyl-
CAS No.: 108-88-3
EC/List No.: 203-625-9

Product Uses/Benefits

Toluene is primarily used as a gasoline additive to improve octane ratings. It is also used as a solvent in inks, adhesives, paints, paint thinners, etc. as well as to produce benzene. In addition, it is used for organic chemical synthesis and used in the production of nylon, polyurethanes, and plastics.

Physical/Chemical Properties

At room temperature, toluene is a clear, colorless liquid with an aromatic (sweet, pungent) odor. Toluene becomes a vapor when exposed to air at room temperature. Toluene is classified as a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200 and is classified as a Flammable Liquid, Category 2 under GHS (Globally Harmonized System) classification and labeling.

Odor threshold: Air: 2.9 ppm
Relative density: 0.87
Structural formula: $C_6H_5CH_3$
Molecular weight: 92.14 g/mol
Melting point/Freezing point: -139.0°F/ -95.0°C
Relative Vapor Density: 3.1
Vapor pressure: 25 kPa at 77°F/25°C

Boiling point: 231.8°F/111°C
Flammability limits, lower/upper: 1.2/7.1 %vol
Flash point: 39.2°F/4.0°C
Autoignition temperature: 896°F/480°C
Partition coefficient (n-octanol/water): 2.72

Exposure Potential

Health Effects

The below table summarizes the toxicological effects of toluene.

Toxicological Category	Human Health Effects
Acute Toxicity (Inhalation/oral)	• Causes reversible central nervous system (CNS) dysfunction • May cause narcosis • Inhalation – Harmful and may be fatal at higher exposures • Oral (ingestion) – Harmful if swallowed and may be fatal
Chronic Toxicity – repeated exposure	• Causes CNS depression • Causes damage to organs
Skin and Eye	• Skin contact – Irritating • Eye contact – Irritating
Sensitization	Not classified as a sensitizer
Carcinogenicity	• International Agency for Research on Cancer (IARC) – Not classifiable as to its carcinogenicity to humans (Group 3)
Specific target organ toxicity – single exposure	May cause drowsiness or dizziness
Specific target organ toxicity – repeated exposure	Causes damage to organs (CNS, blood/blood-forming, auditory, liver, and kidney)
Germ Cell Mutagenicity- Genotoxicity in Vitro/ in Vivo	May cause genetic defects
Developmental/Reproductive Toxicity	Suspected of damaging fertility or the unborn child

Environmental Effects

Toluene is moderately acutely toxic to aquatic life. It readily biodegrades and evaporates in the environment and does not significantly bioaccumulate. Toluene is highly flammable and may form a highly flammable air/vapor mixture.

Exposure Information

Consumers

Americas Styrenics does not sell toluene for direct consumer use. Due to the use of toluene in the production of nylon, plastics, and polyurethanes, consumers could potentially be exposed to residual toluene in these consumer goods.

Workers

Exposure for workers can occur in the various industrial facilities that use toluene. Each facility should have a thorough training program for employees and appropriate work processes, engineering controls, and personal protective equipment to maintain exposures below the established exposure limits. Only trained personnel should handle toluene. The below table summarizes the Occupational Exposure Limits for toluene.

	Type	Value
U.S. OSHA Table Z-2 (29 CFR 1910.1000)	TWA (Time Weighted Average) Ceiling Peak (10 minutes)	200 ppm 300 ppm 500 ppm
U.S. ACGIH Threshold Limit Values	TWA (Time Weighted Average)	20 ppm

Risk Management/Product Stewardship

Americas Styrenics LLC has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our Product Stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employees, public health, and our environment. The success of our Product Stewardship program rests with every individual involved with Americas Styrenics LLC products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Information Sources

1. AmSty Toluene Safety Data Sheet (SDS)
2. *Toluene*. (2012). <https://www.epa.gov/sites/default/files/2016-09/documents/toluene.pdf>.
3. Flowers, Lynn. Toxicological Review of Toluene. September 2005.
https://www.epa.gov/sites/default/files/2014-03/documents/toluene_toxicology_review_0118tr_3v.pdf.

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