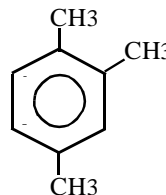


1,2,4-TRIMETHYLBENZENE

CAS Registry Number: 95-63-6

Molecular Formula: C₉H₁₂



1,2,4-Trimethylbenzene is a liquid that is practically insoluble in water. It is soluble in alcohol, ether, benzene, acetone, and petroleum ether (HSDB, 1991).

Physical Properties of 1,2,4-Trimethylbenzene

Synonyms: pseudocumene; pseudocumol; asymmetrical trimethylbenzene

Molecular Weight:	120.19
Boiling Point:	169 - 171 °C
Melting Point:	-43.8 °C
Flash Point:	130 °F
Vapor Density:	4.15 (air = 1)
Density/Specific Gravity:	0.8761 at 20/4 °C (water = 1)
Conversion Factor:	1 ppm = 4.92 mg/m ³

(HSDB, 1993; Merck, 1989; Sax, 1987)

SOURCES AND EMISSIONS

A. Sources

1,2,4-Trimethylbenzene is used in the manufacture of trimellitic anhydride, dyes, perfumes, resins, pharmaceuticals, and pseudocumidine (HSDB, 1991). The primary sources that have reported emissions of 1,2,4-trimethylbenzene in California are petroleum refining facilities, nonferrous foundries (castings), and manufacturers of miscellaneous plastics products (ARB, 1997b).

1,2,4-Trimethylbenzene has also been detected but not quantified in motor vehicle exhaust by the Air Resources Board (ARB) (ARB, 1995e).

B. Emissions

The total emissions of 1,2,4-trimethylbenzene from stationary sources in California are estimated to be at least 52,000 pounds per year, based on data reported under the Air Toxics “Hot Spots” Program (AB 2588) (ARB, 1997b).

C. Natural Occurrence

1,2,4-Trimethylbenzene occurs naturally in coal tar and in many petroleum (HSDB, 1993).

AMBIENT CONCENTRATIONS

No ARB data exist for ambient concentrations of 1,2,4-trimethylbenzene.

However, an in-vehicle study of gasoline-related volatile organic compounds (VOCs) was conducted in Raleigh, North Carolina during the summer of 1988 to more accurately determine the total exposure to these compounds. The average ambient concentration of 1,2,4-trimethylbenzene during this study was 2.7 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) or 0.55 parts per billion (ppb). The maximum concentration was 13.7 $\mu\text{g}/\text{m}^3$ (2.8 ppb) (Chan et al., 1991a).

INDOOR SOURCES AND CONCENTRATIONS

No information about the indoor sources of 1,2,4-trimethylbenzene was found in the readily-available literature. However, 1,2,4-trimethylbenzene was measured within vehicles during the summer of 1988 in Raleigh, North Carolina. The mean and maximum concentrations were 15.6 $\mu\text{g}/\text{m}^3$ (3.2 ppb) and 39.0 $\mu\text{g}/\text{m}^3$ (7.9 ppb), respectively (Chan et al., 1991a).

ATMOSPHERIC PERSISTENCE

1,2,4-Trimethylbenzene exists in the atmosphere in the gas phase. The dominant tropospheric loss process for 1,2,4-trimethylbenzene is by reaction with the hydroxyl (OH) radical. The calculated half-life and lifetime of 1,2,4-trimethylbenzene due to reaction with the OH radical is estimated to be 7 hours and 11 hours, respectively (Atkinson, 1995).

AB 2588 RISK ASSESSMENT INFORMATION

Although 1,2,4-trimethylbenzene is reported as being emitted in California from stationary sources no health values (cancer or non-cancer) are listed in the California Air Pollution Control Officers Association Air Toxics “Hot Spots” Program Revised 1992 Risk Assessment Guidelines for use in risk assessments (CAPCOA, 1993).

HEALTH EFFECTS

Probable routes of human exposure to 1,2,4-trimethylbenzene are inhalation, ingestion, and dermal contact.

Non-Cancer: Inhalation of 1,2,4-trimethylbenzene has been reported to cause headache, fatigue, drowsiness, decreases in levels of red and white blood cells, impairment of blood coagulation, and bronchitis. Direct contact with 1,2,4-trimethylbenzene can cause skin irritation (HSDB, 1995).

The United States Environmental Protection Agency (U.S. EPA) has not established a Reference Concentration (RfC) or an oral Reference Dose (RfD) for 1,2,4-trimethylbenzene (U.S. EPA, 1994a).

Cancer: No studies of the carcinogenic potential of 1,2,4-trimethylbenzene have been reported (HSDB, 1995). 1,2,4-trimethylbenzene has not been evaluated for carcinogenicity by the International Agency for Research on Cancer or the U.S. EPA (IARC, 1987a; U.S. EPA, 1995a).

