



Product Safety Assessment **DOW™ Pyrolysis Gasoline (Pygas)**

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Names

- CAS No. 68921-67-5
- CAS No. 68606-10-0
- CAS No. 68410-96-8
- Pygas
- DOW™ pyrolysis gasoline

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Product Overview

- DOW™ pyrolysis gasoline is a by-product of ethylene production. It is produced in the pyrolysis (high-temperature) furnaces in steam-cracker operations. Pyrolysis gasoline contains a mixture of hydrocarbon compounds in the C5–C12 boiling range. The primary constituent is benzene, which can range from 25–45% of the stream mass. For further details, see [Product Description](#).
- Pyrolysis gasoline has been historically used as an octane booster for motor fuels and in petrochemical production. DOW pyrolysis gasoline is used internally as a source for benzene and fuel oil products. For further details, see [Product Uses](#).
- Worker exposure is possible at ethylene manufacturing facilities or at sites that formulate pyrolysis gasoline into motor fuels, or use it as a source for benzene and other bulk hydrocarbon products. Worker exposure may also occur during transport or handling. Exposure is minimized through engineering controls and the use of personal protective equipment. For further details, see [Exposure Potential](#).
- Eye contact with pyrolysis gasoline may cause moderate irritation and moderate corneal injury. Vapor may cause eye irritation experienced as mild discomfort, redness, and tears. Brief skin contact may cause irritation with local redness. Prolonged contact may burn the skin and result in absorption of harmful amounts. In confined or poorly ventilated areas, vapor can readily accumulate and cause unconsciousness and death.¹ For further details, see [Health Information](#).
- Pyrolysis gasoline is a complex mixture of components. The major component, Benzene, is readily biodegradable while other components biodegrade more slowly in the environment. The components of pyrolysis gasoline have a low to moderate bioconcentration potential (tendency to accumulate in the food chain), and are toxic to fish and other aquatic organisms. For further details, see [Environmental Information](#).

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- DOW™ pyrolysis gasoline is highly flammable in both liquid and vapor (gas) form. The vapor may cause a flash fire. It is thermally stable at typical use temperatures. Exposure to elevated temperatures can cause pyrolysis gasoline to decompose. Avoid contact with oxidizing materials.¹ For further details, see [Physical Hazard Information](#).

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Manufacture of Product

- **Capacity** –Dow produces pyrolysis gasoline at facilities in Plaquemine and St. Charles, Louisiana, and Freeport, Texas, USA; Terneuzen, The Netherlands; Tarragona, Spain; and Boehlen, Germany.
- **Process** – DOW™ pyrolysis gasoline is a product of the pyrolysis (high-temperature) furnaces in steam-cracker operations.

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Product Description¹

DOW™ pyrolysis gasoline is a yellow liquid with an aromatic, gasoline-like odor. It evaporates easily and does not mix with water. Because the density of pyrolysis gasoline is lower than water it will float on water surfaces and spread out like oil. Pyrolysis gasoline contains a mixture of hydrocarbon compounds in the C5–C12 boiling range. The primary constituent of pyrolysis gasoline is benzene, which can range from 25–45% of the stream mass.

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Product Uses²

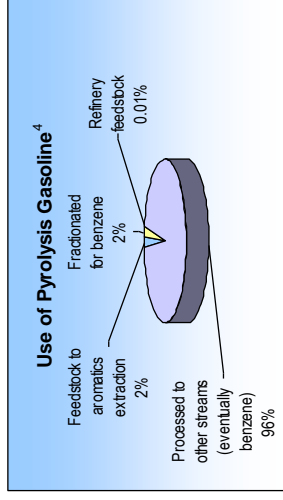
DOW™ pyrolysis gasoline is mainly used as a source for recovering benzene and other hydrocarbons. A small amount is sometimes used as refinery feedstock to boost octane in motor fuels.

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Exposure Potential^{1,3}

Pyrolysis gasoline is used in petrochemical production and for blending into motor fuels. Based on these uses, the public could be exposed through:

- **Workplace exposure** – Pyrolysis gasoline is manufactured in closed systems using engineering controls that prevent the escape of liquid or vapors and minimize environmental releases. The potential for exposure is further reduced through the use of personal protective equipment. Occupational exposure is possible at ethylene production facilities or facilities using pyrolysis gasoline as a source for benzene. Workers could be exposed during maintenance, sampling, testing, or other procedures. Worker exposure is also possible during formulation into motor fuels and during transport and handling of these fuels. Facilities that manufacture or use pyrolysis gasoline should have a thorough training program for employees and appropriate work processes and safety equipment in place to limit exposure. See [Health Information](#).



- **Consumer exposure to products containing DOW™ pyrolysis gasoline** – Dow does not sell pyrolysis gasoline for direct consumer use. However, it may be blended into commercial gasoline, which consumers could contact while fueling their vehicle. See [Health Information](#).
- **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil, ditches, sewers, waterways, or ground water. Pyrolysis gasoline is toxic to fish and other aquatic organisms on an acute basis. See [Environmental, Health, and Physical Hazard Information](#).
- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, contain spilled material if possible. If available, use foam to smother or suppress vapors. This material is a vapor explosion hazard. Isolate the area and evacuate unnecessary personnel, keeping upwind of the spill. Eliminate all sources of ignition. Ground and bond all containers and handling equipment. Check the area with a combustible gas detector before reentry. Pump recovered material with explosion-proof equipment. Collect in suitable and properly labeled containers. Use appropriate safety equipment. Warn public of downwind explosion hazard.
- **In case of fire** – Isolate the fire and deny unnecessary entry. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Avoid contact with this material during firefighting operations. Use water fog or fine spray, dry-chemical or carbon-dioxide fire extinguishers, or foam. General-purpose synthetic foams (including AFFF type) are preferred. Water may not be effective in extinguishing fire. A direct water stream may spread the fire. A water spray may be used to cool fire-exposed containers and the fire-affected zone until fire is extinguished and the danger of reignition is passed. Contain fire water run-off, if possible. Fire water run-off, if not contained, may cause environmental damage. Follow emergency procedures carefully. See [Environmental, Health, and Physical Hazard Information](#).

For more information, request the Safety Data Sheet from the [Dow Customer Information Group](#).

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Health Information¹

Eye Contact – Eye contact with pyrolysis gasoline may cause moderate irritation with moderate corneal injury. Vapor may cause lacrimation (tears) and eye irritation experienced as mild discomfort and redness.

Skin Contact – Brief skin contact may cause irritation with local redness. Prolonged contact may burn the skin with symptoms including pain, severe local redness, swelling, and tissue damage. Skin contact may also cause drying and flaking of the skin. The response may be more severe on covered skin (under clothing or gloves). Skin contact has caused an allergic skin reaction in a small proportion of individuals. Prolonged or widespread skin contact may result in absorption of harmful amounts. Human case reports suggest naphthalene, a component of pyrolysis gasoline, may be absorbed through the skin in toxic amounts, especially in children.

Inhalation – In confined or poorly ventilated areas, vapor can readily accumulate causing unconsciousness and death. Symptoms of excessive inhalation may be anesthetic or narcotic effects, such as headache, dizziness, drowsiness, or central nervous system effects. Excessive inhalation may irritate the nose, throat, and lungs. Excessive exposure may also cause increased sensitivity to epinephrine and irregular heartbeats.

Ingestion – Moderate toxicity if swallowed. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause serious injury, even death. Aspiration into the lungs may occur during ingestion or vomiting causing lung damage or death due to chemical pneumonia. Swallowing may result irritation of the mouth, throat, and gastrointestinal tract.

Repeated Exposure – In humans, effects have been reported on the blood, bone marrow, and spleen.

Cancer – Pyrolysis gasoline contains benzene which causes cancer in animals, and is considered by some authorities to cause cancer in humans.

For more information, request the Safety Data Sheet from the [Dow Customer Information Group](#).

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Environmental Information¹

Components of pyrolysis gasoline have a range of vapor pressures and are moderately to poorly soluble in water. If released to water, some of the components will have a tendency to evaporate while other components are expected to be highly mobile in soil, and have the potential to reach underground water supplies.

The major component of pyrolysis gasoline is readily biodegradable while other components biodegrade more slowly in the environment.

Pyrolysis gasoline shows a low to moderate potential for bioconcentration (tendency to accumulate in the food chain), and is toxic to aquatic organisms with long lasting effects.

For more information, request the Safety Data Sheet from the [Dow Customer Information Group](#).

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Physical Hazard Information¹

Pyrolysis gasoline is highly flammable in both liquid and vapor form. The vapor may cause a flash fire. It is thermally stable at typical use temperatures. Flammable mixtures may exist within the vapor space of storage containers at room temperature. Keep container closed. Minimize sources of ignition such as static build-up, heat, spark, or flame. Electrically bond and ground all containers before transfer or use of material. Exposure to elevated temperatures can cause pyrolysis gasoline to decompose. Decomposition products depend on temperature, air supply and the presence of other materials.

Avoid contact with oxidizing materials.

For more information, request the Safety Data Sheet from the [Dow Customer Information Group](#).

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Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of DOW™ pyrolysis gasoline. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant [Safety Data Sheet](#) or [Contact Us](#).

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Additional Information

- Safety Data Sheet (request from the Dow Customer Information Group: www.dow.com/assistance/dowcig.htm)
- Contact Us (www.dow.com/assistance/thoughts.htm)
- "CAS No. 68921-67-5," High Production Volume Information System (HPVIS), U.S. Environmental Protection Agency (<http://iaspub.epa.gov/opptppv/quicksearch.display?pChem=100328>)
- "CAS No. 68606-10-0," High Production Volume Information System (HPVIS), U.S. Environmental Protection Agency (<http://iaspub.epa.gov/opptppv/quicksearch.display?pChem=100353>)

For more business information about DOW™ pyrolysis gasoline, contact the [Dow Customer Information Group](http://www.dow.com/assistance/dowcig.htm) at www.dow.com/assistance/dowcig.htm.

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Reference

- ¹ *Pyrolysis Gasoline Material Safety Data Sheet*, The Dow Chemical Company.
- ² "Use Information," CAS No. 68921-67-5, High Production Volume Information System (HPVIS), U.S. Environmental Protection Agency.
- ³ "Workplace Monitoring," CAS No. 68921-67-5, High Production Volume Information System (HPVIS), U.S. Environmental Protection Agency.

NOTICES:

As part of its 2015 Sustainability Goals, Dow has committed to make publicly available safety assessments for its products globally. This product safety assessment 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 relevant Safety Data Sheet, which should be consulted before use of the chemical. This product safety assessment does not replace required communication documents such as the Safety Data Sheet.

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