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## Product Safety Assessment

### **DOW™ Louisiana Blendstock**

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#### Names

- CAS No. 68477-54-3
- Petroleum distillate, steam-cracked, C8–C12 fraction
- Gasoline blend products
- DOW™ Louisiana Blendstock

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#### Product Overview

- DOW™ Louisiana Blendstock is a gasoline blending component made by The Dow Chemical Company (“Dow”) in the U.S. It consists of mainly unsaturated C9 to C12 hydrocarbons. Its chief component is dicyclopentadiene (CAS No. 77-73-6). It is a clear to yellow liquid, with a strong aromatic or camphor-like odor. This material originates from high-temperature cracking of petroleum fractions and is separated during the recovery of benzene from pyrolysis gasoline.<sup>1</sup> For further details, see [Product Description](#).
- The main application of this product is for blending into gasoline sold as motor fuel.<sup>1</sup> For further details, see [Product Uses](#).
- DOW Louisiana Blendstock is harmful if swallowed and if aspirated into the lungs, this material may cause lung damage or injury to other body systems; even death due to chemical pneumonia. Eye contact may cause pain and slight irritation, but corneal injury is unlikely. Prolonged or repeated skin contact may cause irritation. Repeated exposure may cause flaking or drying of the skin. A single prolonged skin contact is unlikely to result in absorption of harmful amounts. Excessive vapor concentrations are attainable and may cause irritation to the respiratory tract and central nervous system depression. Components in DOW Louisiana Blendstock can cause cancer. Health hazards have been associated with some components of DOW Louisiana Blendstock, such as styrene, xylene, vinyl toluene, and naphthalene.<sup>2</sup> For further details, see [Health Information](#).
- The most likely exposure route for these products occurs in the workplace through inhalation of low-level concentrations in air of vapors that escape from the closed process. General and/or local exhaust ventilation is required to ensure airborne concentrations are below exposure guidelines. Workers should wear safety glasses and gloves impervious to this material when prolonged or repeated contact could occur. As a general precaution, consumers should avoid inhalation of vapors when fueling vehicles since gasoline can contain benzene and other components. For further details, see [Exposure Potential](#).
- Groundwater contamination is possible in the event of accidental spills or leaks from production, transportation, or storage equipment.<sup>3</sup> Based on information for the components

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of DOW™ Louisiana Blendstock, the bioconcentration potential is low to moderate and biodegradation would be expected to be low to moderate. DOW Louisiana Blendstock is toxic to aquatic organisms with long lasting effects. For further details, see [Environmental Information](#).

- DOW Louisiana Blendstock is flammable. Its vapors may travel a long distance—ignition and/or flashback may occur. It is stable under recommended storage conditions, but elevated temperatures can cause hazardous decomposition. Hazardous polymerization can occur, especially at elevated temperatures or when catalyzed by aluminum chloride. Avoid temperatures above 140°C (284°F), which can accelerate decomposition. Decomposition can cause rapid pressure build-up in closed systems.<sup>2</sup> Avoid contact with oxidizing materials, acid catalyst, acids, and boron trifluoride.<sup>2</sup> For further details, see [Physical Hazard Information](#).

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### Manufacture of Product<sup>1</sup>

- **Process** – DOW™ Louisiana Blendstock originates from high temperature cracking of petroleum fractions and is separated by distillation during the recovery of benzene from pyrolysis gasoline.
- **Production** – Dow produces this material in Plaquemine, Louisiana, U.S.

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### Product Description<sup>1</sup>

DOW™ Louisiana Blendstock is a mixture of mainly unsaturated C9 to C12 hydrocarbons. The major components of DOW Louisiana Blendstock are dicyclopentadiene, vinyl toluene, and indene. It may also contain small amounts of naphthalene, xylene, and benzene. It is a clear to yellow liquid with a strong, obnoxious odor. The product does not mix with water. The freezing point and boiling point vary with composition and are usually described by a range. DOW Louisiana Blendstock is part of a category of materials described in the U.S. Environmental Protection Agency (EPA) High Production Volume (HPV) Program as the Resin Oil and Cycloidiene Dimer Concentrate category.

For more detailed composition information, see the relevant [Safety Data Sheet](#) or [Product Information Sheet](#).

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### Product Uses<sup>1,4,5</sup>

DOW™ Louisiana Blendstock is used for blending into gasoline pools sold as motor fuel.

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### Exposure Potential<sup>2,6</sup>

Based on the use of DOW™ Louisiana Blendstock, the public could be exposed through:

- **Workplace exposure** – For industrial workers at hydrocarbon processing facilities, the most likely exposure route is inhalation of low-level concentrations in air of vapors that escape from the closed process, such as fugitive emissions from valve packings and pump seals. Other potentials for exposure may result during operations such as sampling, loading of bulk transportation vessels (tank cars, tanks trucks, and barges), from emissions at floating-roof storage tanks, during equipment maintenance, and from emissions from control devices, such as flares. Adequate ventilation should be used to maintain vapor levels below recommended guidelines. Workers should wear safety glasses and protective gloves and

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clothing to prevent exposure when prolonged or frequently repeated contact could occur. Each manufacturing facility should have a thorough training program for employees and appropriate work processes and safety equipment in place to limit unnecessary exposure. The American Conference of Governmental Industrial Hygienists (ACGIH) has established threshold limit values (TLV) and the U.S. Occupational Safety and Health Administration (OSHA) has established permissible exposure limits (PEL) for many of the components in DOW™ Louisiana Blendstock. These occupational exposure limits are used in the workplace to limit exposure to the components of this material.<sup>7</sup> See [Health Information](#).

- **Consumer exposure** – DOW Louisiana Blendstock is blended into gasoline, where it becomes one of many components in gasoline products. Prior to its use in gasoline products, DOW Louisiana Blendstock is not used by consumers and it is produced, transported, and processed within industrial facilities in which there is no expected consumer exposure. Consumers may come into contact with this material when they fuel vehicles, since it may be a component of gasoline. As a general precaution, consumers should avoid inhalation of gasoline vapors to minimize the risk of exposure to benzene and other components that are likely components of gasoline. For exposure guidelines, see [Health Information](#).
- **Environmental releases** – Environmental exposure to DOW Louisiana Blendstock is limited since the material is produced, processed, and stored in industrial facilities in which the product is contained in closed systems, pipes, and storage vessels. Transport is by pipeline, barge, railroad tank car, or tank truck so that the material is typically contained within the transport container except for accidental spills or leaks. When this material is blended into a gasoline product, releases into the environment are limited to accidental spills and leaks of the gasoline product. In its primary application as a component of fuels, DOW Louisiana Blendstock is not intended to be released into the environment, but rather to be consumed / “burned” as a fuel. DOW Louisiana Blendstock and gasoline blended with this product are flammable liquids. The major component of DOW Louisiana Blendstock is dicyclopentadiene (DCPD), with a concentration of 40–55% by weight. Although emissions of DCPD from DOW Louisiana Blendstock are only a portion of the total reported emissions of DCPD from all sources, reports to the U.S. EPA Toxics Release Inventory (TRI) indicate a 76% decrease in DCPD emissions from 1998 to 2002.<sup>8</sup> In the event of a leak or spill, appropriate actions should be taken to avoid fire, contamination of the environment, or exposure to the pure material or gasoline blends. See the [Safety Data Sheet](#) for more information regarding actions to take if a spill or leak of this material occurs. See [Environmental](#), [Health](#), and [Physical Hazard Information](#).
- **Large release** – Industrial spills or releases are infrequent and generally contained. A large spill or release can be hazardous due to the physical properties, effects to the environment, or health hazards associated with this product or its components. If a large release occurs, contact local and/or state or provincial authorities. See [Environmental](#), [Health](#), and [Physical Hazard Information](#).

For more information, see the relevant [Safety Data Sheet](#).

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## Health Information<sup>2</sup>

Brief eye contact with DOW™ Louisiana Blendstock may cause pain or slight, temporary irritation. Corneal injury is unlikely.

Prolonged or repeated exposure may cause skin irritation. Repeated contact may cause drying or flaking of the skin. A single prolonged exposure is not likely to result in the material being absorbed through the skin in harmful amounts.

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The single dose oral toxicity is moderate. Small amounts swallowed incidental to normal handling operations are not likely to cause injury. However, swallowing large amounts may cause injury. If aspirated into the lungs, material may cause lung damage (or even death) due to chemical pneumonia or may be rapidly absorbed through the lungs and result in injury to other body systems.

Excessive vapor concentrations are attainable and excessive exposure may cause respiratory irritation and central nervous system depression. Symptoms of central nervous system depression (in order of increasing exposure) are headache, dizziness, drowsiness, and lack of coordination. In repeated excessive exposure studies with animals, effects have been reported on the central nervous and respiratory system, as well as the kidney, liver, and lungs.

#### **Health Considerations for Minor Components**

DOW™ Louisiana Blendstock contains several minor components that have demonstrated toxic effects. Several of these minor components have caused cancer in laboratory animals: benzene, naphthalene, and styrene. Benzene is classified by the International Agency for Research on Cancer (IARC) as Group 1: Carcinogenic to humans. Benzene is also classified as a known carcinogen by National Toxicology Program (NTP). Styrene and naphthalene are classified by IARC as Group 2B: Possibly carcinogenic to humans. For styrene, an increased incidence of lung tumors was observed in an inhalation study involving mice. However, data from other long-term animal studies and from studies of workers exposed to styrene do not conclude that styrene is carcinogenic. Although this product has not undergone chronic toxicity testing, cancer warnings are included in the Safety Data Sheet for this product based on the component information.

Some studies in humans report that repeated exposure to styrene may result in slight decreases in the ability to discriminate between colors. On exposure to high concentrations, styrene is also reported to have caused hearing loss in laboratory animals.

Vinyl toluene has been toxic to the fetus but did not cause birth defects in laboratory animal tests. Extreme doses of xylene given orally to pregnant mice resulted in an increase in cleft palate, a common abnormality in mice. Inhalation exposure of pregnant animals to xylene resulted in toxicity to the fetus but did not cause any birth defects.

For more information, see the relevant [Safety Data Sheet](#).

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#### **Environmental Information<sup>2</sup>**

Based on information for the components of DOW™ Louisiana Blendstock, the bioconcentration potential is low to moderate. Likewise, based on information for the components, biodegradation would be expected to be low to moderate. DOW Louisiana Blendstock is toxic to aquatic organisms with long lasting effects.

DOW Louisiana Blendstock will not mix with water and will float on the surface. Prevent spills from entering soil, ditches, sewers, waterways, and/or groundwater.

For more information, see the relevant [Safety Data Sheet](#).

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#### **Physical Hazard Information<sup>2</sup>**

DOW™ Louisiana Blendstock is a flammable liquid. Containers, even those that have been emptied, can contain flammable vapors.

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DOW™ Louisiana Blendstock is stable under recommended storage conditions. Avoid temperatures above 140°C (284°F), which can result in exothermic decomposition. Generation of gas during decomposition can cause rapid pressure build-up in closed systems. Hazardous decomposition products depend upon temperature, air supply, and the presence of other materials.

Avoid contact with oxidizing materials, acid catalysts, acids, and boron trifluoride. Hazardous polymerization can occur, especially at elevated temperatures. Polymerization can be catalyzed by aluminum chloride.

For more information, see the relevant [Safety Data Sheet](#).

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### Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of this DOW™ Louisiana Blendstock. 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 (<http://www.dow.com/hydrocarbons/aromatics/srh/safety.htm>)
- Louisiana Blendstock, Product Data Sheet, The Dow Chemical Company, Form No. 778-01101, August 2005  
<http://www.dow.com/webapps/lit/litorder.asp?filepath=aromatics/pdfs/noreg/778-01101.pdf&pdf=true>
- The Dow Aromatics Co-products web site, The Dow Chemical Company,  
[www.dow.com/hydrocarbons/aromatics/prod/](http://www.dow.com/hydrocarbons/aromatics/prod/)
- U.S. Environmental Protection Agency (EPA) – High Production Volume (HPV) Chemical Program, Category Summary for Resin Oils and CycloDiene Dimer Concentrates Category, submitted by the Olefins Panel of the American Chemistry Council, March 30, 2005 (<http://iaspub.epa.gov/opthpv/quicksearch.display?pChem=100324>)
- European Chemical Substances Information System: [www.echa.eu](http://www.echa.eu), search CAS No. 68477-54-3 to retrieve information

For more information about DOW™ Louisiana Blendstock, see the Dow Aromatics Co-Products web site at [www.dow.com/hydrocarbons/aromatics/prod/](http://www.dow.com/hydrocarbons/aromatics/prod/).

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## References

- <sup>1</sup> *Louisiana Blendstock, Product Data Sheet*, The Dow Chemical Company, Form No. 778-01101, August 2005, pages 1-2.
- <sup>2</sup> *LA Blend Stock, Material Safety Data Sheet*, The Dow Chemical Company
- <sup>3</sup> U.S. Environmental Protection Agency (EPA) – High Production Volume (HPV) Chemical Program, Category Summary for Resin Oils and Cyclodiene Dimer Concentrates Category, submitted by the Olefins Panel of the American Chemistry Council, March 30, 2005, page 14.
- <sup>4</sup> Aromatics website, The Dow Chemical Company (<http://www.dow.com/aromatics/prod/>).
- <sup>5</sup> U.S. Environmental Protection Agency (EPA) – High Production Volume (HPV) Chemical Program, Category Summary for Resin Oils and Cyclodiene Dimer Concentrates Category, submitted by the Olefins Panel of the American Chemistry Council, March 30, 2005, page 11.
- <sup>6</sup> U.S. Environmental Protection Agency (EPA) – High Production Volume (HPV) Chemical Program, Category Summary for Resin Oils and Cyclodiene Dimer Concentrates Category, submitted by the Olefins Panel of the American Chemistry Council, March 30, 2005, pages 9–13.
- <sup>7</sup> U.S. Environmental Protection Agency (EPA) – High Production Volume (HPV) Chemical Program, Category Summary for Resin Oils and Cyclodiene Dimer Concentrates Category, submitted by the Olefins Panel of the American Chemistry Council, March 30, 2005, page 12.
- <sup>8</sup> Toxics Release Inventory (TRI) reporting data at <http://www.epa.gov/tri/> and as reported in U.S. Environmental Protection Agency (EPA) – High Production Volume (HPV) Chemical Program, Category Summary for Resin Oils and Cyclodiene Dimer Concentrates Category, submitted by the Olefins Panel of the American Chemistry Council, March 30, 2005, page 13.

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NOTICES:

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