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## Product Safety Assessment

### *DOW™ Dipropylene Glycol Phenyl Ether Products*

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#### Names

- CAS No. 51730-94-0
- Dipropylene glycol phenyl ether
- Propanol, (methyl-2-phenoxyethoxy)
- (Methyl-2-phenoxyethoxy)propanol
- DOW™ DiPPH Technical
- DOW™ DiPPH products
- DiPPH
- Propanol, 1-(methyl-2-phenoxyethoxy)-
- Propanol, 2-(methyl-2-phenoxyethoxy)-
- DOW™ PPh Basic

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#### Product Overview

- DOW™ dipropylene glycol phenyl ether (DiPPH) is a colorless to yellow liquid with a mild odor. Dow manufactures several commercial products that contain diPPH, including DOW DiPPH Technical and DOW PPh Basic, which are propylene glycol ether blends whose major component is dipropylene glycol phenyl ether (>75% and >40%, respectively). These products are slightly soluble in water, have a low evaporation rate, and a high flash point.<sup>1</sup> For further details, see [Product Description](#).
- DOW DiPPH products are primarily used as chemical intermediates (or building blocks) for the production of other chemicals. They are also used in polymer coating formulations as coalescents (film-forming aids).<sup>2</sup> For further details, see [Product Uses](#).
- The hazards associated with DOW diPPH products differ significantly due to the presence of caustic soda (caustic, NaOH) in DOW™ PPh Basic. For more information on the hazards associated with caustic, see the [Product Safety Assessment for caustic soda](#).
- Eye contact with DOW PPh Basic (which contains caustic) may cause severe irritation with corneal injury, possibly resulting in permanent impairment of vision or even blindness. Chemical burns to the eye may occur following contact with diPPH products containing caustic. Brief skin contact may cause severe burns. Swallowing diPPH products containing caustic may result in burns of the mouth and throat.<sup>3</sup>
- Eye contact with DOW DiPPH Technical (which does not contain caustic) may cause severe irritation with slight corneal injury. Prolonged skin contact may cause slight skin irritation with local redness. Low toxicity is expected following ingestion. For further details, see [Health Information](#).
- At room temperature, vapors of diPPH products are minimal due to low volatility. Vapor from heated material or mist may be hazardous on single exposure. For further details, see [Health Information](#) or [Physical Hazard Information](#).

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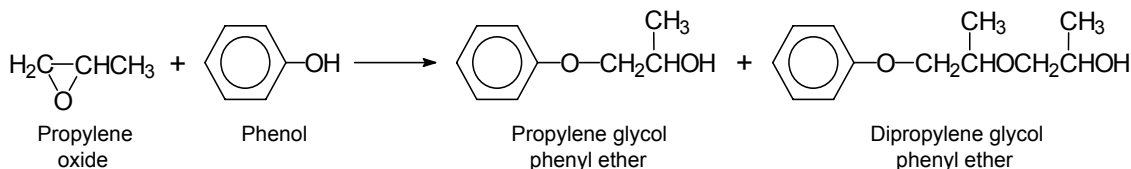
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- DOW™ diPPh products are not sold for direct consumer use. Worker exposure to these products is possible at propylene glycol ether manufacturing sites or at facilities using these products in fuel or mining applications or to produce other chemicals or coating formulations. For further details, see [Exposure Potential](#).
- DOW DiPPh products are stable at typical use and storage temperatures. These products can oxidize at elevated temperatures creating pressure build-up in closed systems. Avoid contact with strong acids, strong bases, and strong oxidizers.<sup>4</sup> For further details, see [Physical Hazard Information](#).
- Dipropylene glycol phenyl ether is readily biodegradable, unlikely to accumulate in the food chain, and is slightly to moderately toxic to fish and other aquatic organisms. For further details, see [Environmental Information](#).

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### Manufacture of Product<sup>5,6</sup>

- **Capacity** – DOW™ dipropylene glycol phenyl ether (DiPPh) products are manufactured at facilities in Freeport, Texas (USA). The estimated 2007 U.S. production capacity for all propylene oxide-based glycol ethers was 194,000 metric kilotonnes (428 million pounds).
- **Process** – DOW dipropylene glycol phenyl ether, a by-product from the manufacture of [propylene glycol phenyl ether \(PPh\)](#), is produced when two molecules of propylene oxide combine with phenol. Although the reaction product is purified by distillation, both compounds are present in the final product. The reaction sequence is shown below.



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### Product Description<sup>7</sup>

DOW™ dipropylene glycol phenyl ether (DiPPh) is a colorless to yellow liquid with a mild odor. Dow manufactures several commercial products that contain diPPh, including DOW DiPPh Technical and DOW PPh Basic, which are propylene glycol ether blends whose major component is dipropylene glycol phenyl ether (>75% and >40%, respectively). Components of the products include: dipropylene glycol phenyl ether, propylene glycol phenyl ether, and other reaction products. PPh Basic also contains up to 5% sodium hydroxide (caustic).

These products are slightly soluble in water, have a low evaporation rate, and a high flash point.<sup>8</sup>

For more information about blend components propylene glycol phenyl ether (PPh) and caustic, see the relevant [Safety Data Sheet](#) or [Product Safety Assessment](#).

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## Product Uses<sup>9,10</sup>

DOW™ DiPPH Technical is an industrial chemical used for the following applications:

- Chemical intermediate for the manufacture of surfactants
- Coalescing agent in coatings formulations
- Other

DOW PPH Basic is also an industrial chemical, with the following uses:

- Fuel
- Mining

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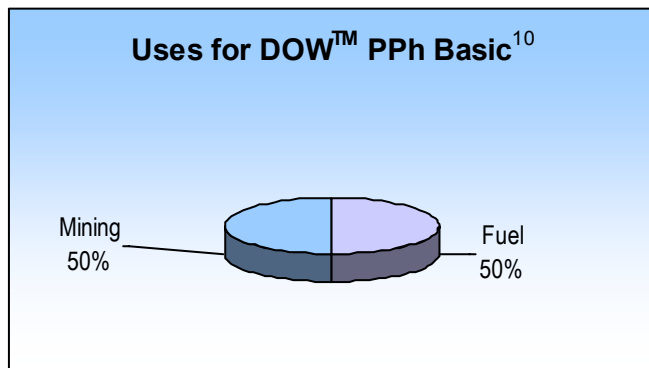
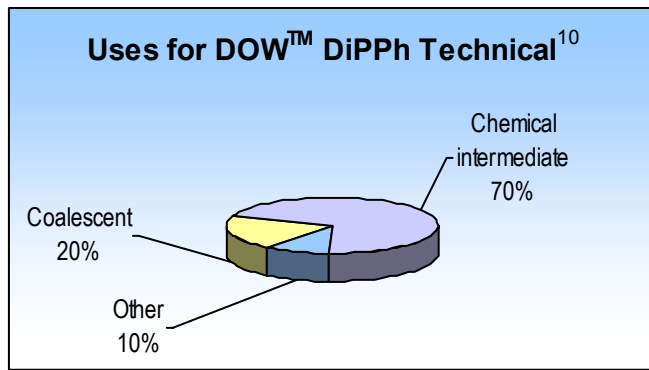
## Exposure Potential<sup>11</sup>

DOW™ dipropylene glycol phenyl ether (DiPPH) products are used in industrial applications. Based on the uses for these materials, the public could be exposed through:

- **Workplace exposure** – Exposure can occur either in a dipropylene glycol phenyl ether manufacturing facility or in the various industrial or manufacturing facilities that use this material. It is produced, distributed, and stored in closed systems. Those working with this material in manufacturing operations or fuel, formulation and mining applications could be exposed during maintenance, sampling, testing, or other procedures. Each facility should have a thorough training program for employees and appropriate work processes, ventilation, and safety equipment in place to limit unnecessary exposure. See [Health Information](#).
- **Consumer exposure to products containing dipropylene glycol phenyl ether** – DOW DiPPH products are not sold for direct consumer use. They are industrial products for commercial applications only. Consumer contact is unlikely. See [Health Information](#).
- **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil and surface or ground water. For small spills, absorb material with sand or vermiculite. Collect in suitable and properly labeled containers. See [Environmental](#), [Health](#), and [Physical Hazard Information](#).
- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, dike the area to contain the spill. Evacuate the area and keep upwind of the spill. Ventilate the area. Pump recovered material into suitable and properly labeled containers. Use appropriate safety equipment. See [Environmental](#), [Health](#), and [Physical Hazard Information](#).
- **In case of fire** – Keep people away and deny unnecessary entry. Extinguish fires with water fog or fine spray, dry-chemical or carbon-dioxide extinguishers, or foam. Use of a direct water stream may spread the fire. Water fog applied gently may be used as a blanket for fire extinguishment. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Follow emergency procedures carefully. See [Environmental](#), [Health](#), and [Physical Hazard Information](#).

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

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## Health Information<sup>12</sup>

**Eye contact** – Eye contact with DOW™ PPh Basic (contains caustic) may cause severe irritation with corneal injury, which may result in permanent impairment of vision, even blindness. Chemical burns may occur. Eye contact with DOW DiPPh Technical may cause severe irritation with slight corneal injury.

**Skin contact** – Brief contact with DOW PPh Basic may cause severe skin burns. Symptoms may include pain, severe local redness, and tissue damage. Prolonged skin contact may cause slight skin irritation with local redness. Prolonged skin contact is unlikely to result in absorption of harmful amounts of DOW PPh Basic or DOW DiPPh Technical.

**Inhalation** – At room temperature, vapors of these products are minimal due to low volatility. Based on information from similar substances, vapor from heated material or mist may be hazardous on single exposure, and mist may cause severe irritation of the upper respiratory tract (nose and throat).

**Ingestion** – Swallowing DOW™ PPh Basic may result in burns of the mouth and throat and gastrointestinal irritation or ulceration due to the hazards associated with caustic. DOW DiPPh Technical, and dipropylene glycol phenyl ether alone are expected to have low toxicity if swallowed.

**Repeated exposure** – Based on available data with similar substances, repeated exposures to dipropylene glycol phenyl ether itself is not anticipated to cause additional significant adverse effects.

For more information on products containing dipropylene glycol phenyl ether, see the relevant [Safety Data Sheet](#).

For more information about blend components [propylene glycol phenyl ether \(PPh\)](#) and [caustic](#), see the relevant [Safety Data Sheet](#) or [Product Safety Assessment](#).

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## Environmental Information<sup>13</sup>

DOW™ DiPPh products are propylene glycol ether blends containing diPPh and propylene glycol phenyl ether (PPh). DiPPh and PPh have very low volatility and are moderately soluble in water. When introduced to water, they will have a tendency to remain in water. They have minimal tendency to bind to soil or sediment. They are unlikely to persist in the environment and are readily biodegradable, which suggests they will be rapidly and completely removed from water and soil environments, including biological wastewater treatment plants. These materials and their mixtures have a low potential to accumulate in the food chain and are slightly to moderately toxic to fish and other aquatic organisms on an acute basis.

The Organisation for Economic Co-operation and Development (OECD) Screening Information Data Set (SIDS) Initial Assessment Profile for the PPh component concluded that the chemical has a low hazard profile and, thus, is currently of low priority for further work. The profile document may be accessed at <http://www.chem.unep.ch/irptc/sids/OECD/SIDS/770354.pdf>.

For more information on products containing dipropylene glycol phenyl ether, see the relevant [Safety Data Sheet](#).

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For more information about blend components [propylene glycol phenyl ether \(PPH\)](#) and [caustic](#), see the relevant [Safety Data Sheet](#) or [Product Safety Assessment](#).

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### Physical Hazard Information<sup>14</sup>

DOW™ dipropylene glycol phenyl ether products are stable at typical use and storage temperatures. This material can oxidize at elevated temperatures, creating pressure build-up in closed systems. Do not distill to dryness.

Avoid contact with strong acids, strong bases, and strong oxidizers.

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

For more information about blend components [propylene glycol phenyl ether \(PPH\)](#) and [caustic](#), see the relevant [Safety Data Sheet](#) or [Product Safety Assessment](#).

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### Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of dipropylene glycol phenyl ether. 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/webapps/msds/msdssearch.aspx>)
- Contact Us (<http://www.dow.com/oxysolvents/contact/index.htm>)
- Chinn, Henry, *et al.*, "Glycol Ethers," *Marketing Research Report: Chemical Economics Handbook*, SRI Consulting, November 2007

For more business information about DOW™ dipropylene glycol phenyl ether products, visit the Dow Oxygenated Solvents website at [www.dow.com/oxysolvents/](http://www.dow.com/oxysolvents/).

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### References

- <sup>1</sup> *PPH, Basic Material Safety Data Sheet*, The Dow Chemical Company, ID No. 1010291/1001, Version 5.0 February 24, 2009, pages 1 and 4.
- <sup>2</sup> The Dow Oxygenated Solvents website – P Series Glycol Ethers (<http://www.dow.com/oxysolvents/prod/pseries.htm>).
- <sup>3</sup> *PPH, Basic Material Safety Data Sheet*, The Dow Chemical Company, ID No. 1010291/1001, Version 5.0 February 24, 2009, pages 1–2 and 5.
- <sup>4</sup> *PPH, Basic Material Safety Data Sheet*, The Dow Chemical Company, ID No. 1010291/1001, Version 5.0 February 24, 2009, pages 4–5.
- <sup>5</sup> Capacity estimates provided by The Dow Chemical Company.
- <sup>6</sup> Chinn, Henry, *et al.*, "Glycol Ethers," *Marketing Research Report: Chemical Economics Handbook*, SRI Consulting, November 2007, pages 18 and 27.
- <sup>7</sup> *PPH, Basic Material Safety Data Sheet*, The Dow Chemical Company, ID No. 1010291/1001, Version 5.0 February 24, 2009, pages 1, 2 and 4.

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- <sup>8</sup> PPH, *Basic Material Safety Data Sheet*, The Dow Chemical Company, ID No. 1010291/1001, Version 5.0 February 24, 2009, pages 1 and 4.
- <sup>9</sup> The Dow Oxygenated Solvents website – P Series Glycol Ethers (<http://www.dow.com/oxysolvents/prod/pseries.htm>).
- <sup>10</sup> Product usage estimates provided by The Dow Chemical Company.
- <sup>11</sup> PPH, *Basic Material Safety Data Sheet*, The Dow Chemical Company, ID No. 1010291/1001, Version 5.0 February 24, 2009, pages 2–4.
- <sup>12</sup> PPH, *Basic Material Safety Data Sheet*, The Dow Chemical Company, ID No. 1010291/1001, Version 5.0 February 24, 2009, pages 1–2 and 5.
- <sup>13</sup> PPH, *Basic Material Safety Data Sheet*, The Dow Chemical Company, ID No. 1010291/1001, Version 5.0 February 24, 2009, pages 5–7.
- <sup>14</sup> PPH, *Basic Material Safety Data Sheet*, The Dow Chemical Company, ID No. 1010291/1001, Version 5.0 February 24, 2009, pages 4–5.

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NOTICES:

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