



Product Safety Assessment

Primary Amyl Acetate

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Names

- CAS No. 628-63-7
- EC No. 211-047-3
- Primary amyl acetate, mixed isomers
- *n*-Amyl acetate
- CAS No. 624-41-9
- EC No. 210-843-8
- 1-Pentyl acetate
- 2-Methyl butyl acetate

Product Overview

- Primary amyl acetate is a colorless liquid with a mild banana-like odor. Dow manufactures primary amyl acetate as an isomeric mixture of 1-pentyl acetate and 2-methyl butyl acetate.¹ For further details, see [Product Description](#).
- Primary amyl acetate is mainly used as a solvent in the manufacture of factory-applied automotive paints and clearcoats. It is also used as a starting material and solvent in the manufacture of pharmaceuticals.² For further details, see [Product Uses](#).
- Primary amyl acetate liquid and vapor are combustible. Vapors are heavier than air and can travel long distances, posing an explosion hazard. Primary amyl acetate is stable under recommended storage conditions. It is incompatible with oxidizers, reducing agents, and strong acids and bases, and contact should be avoided.³ For further details, see [Physical Hazard Information](#).
- Eye contact with primary amyl acetate may cause slight irritation. Prolonged skin contact may cause moderate irritation with local redness and drying and flaking of the skin. Excessive inhalation may cause irritation to the nose, throat, and lungs, as well as anesthetic or narcotic effects such as dizziness or drowsiness.³ For further details, see [Health Information](#).
- Primary amyl acetate is highly biodegradable, unlikely to bioaccumulate in the food chain, and is slightly toxic to harmful to fish and aquatic organisms.
- Workplace exposure to primary amyl acetate is limited because it is produced in closed systems with engineering controls. The components of primary amyl acetate, 1-pentyl acetate and 2-methyl butyl acetate, occur naturally in fruits and cooked food. Manufactured primary amyl acetate is not used as a food additive.⁴ The National Institutes of Health (NIH) Household Products Database indicates that no consumer products in the U.S. contain primary amyl acetate.⁵ For further details, see [Exposure Potential](#).

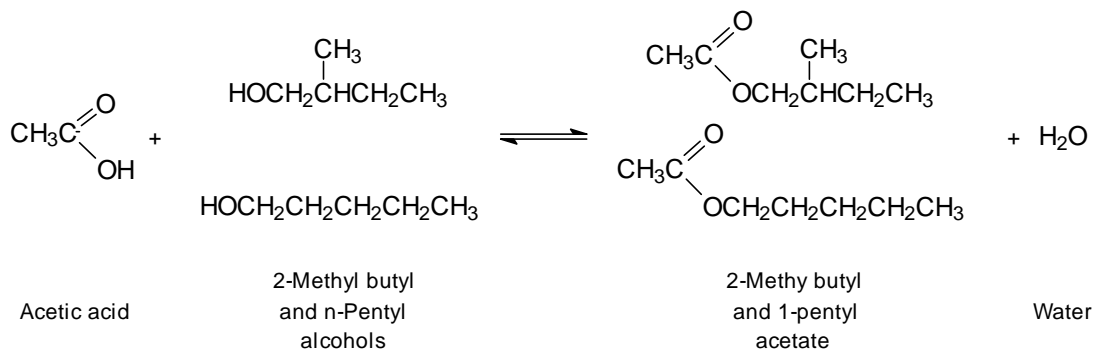
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Manufacture of Product⁶

Capacity –Dow manufactures primary amyl acetate at facilities in Texas City, Texas, in the United States.

Process – Primary amyl acetate is manufactured in a continuous process in enclosed equipment. Dow manufactures primary amyl acetate by reacting acetic acid with primary amyl alcohol, a mixture of the isomers n-pentanol and 2-methyl butyl alcohol, in the presence of a catalyst. The reaction is as follows:



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Product Description^{2,7}

Primary amyl acetate is a colorless liquid with a mild banana-like odor. Dow manufactures primary amyl acetate as an isomeric mixture of 1-pentyl acetate (65.0%) and 2-methyl butyl acetate (35.0%). 1-Pentyl acetate and 2-methyl butyl acetate occur naturally in very low concentrations in nectarines, apples, kiwi fruit, banana oil, pear oil, yeast, liquors, baked potatoes, and fried chicken.

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Product Uses^{1,2,8}

Primary amyl acetate is a process solvent for the following applications:

- **Automotive paints** – for factory-applied OEM (original equipment manufacturer) automotive paints and clearcoats
- **Pharmaceuticals** – for pharmaceutical manufacturing as a starting material and extraction solvent (primary amyl acetate does not remain in the final product)

Primary amyl acetate may also be present as a fragrance enhancer in perfumes in part per million concentrations.

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Exposure Potential

Primary amyl acetate is used in the production of industrial and consumer products. Based on the uses for primary amyl acetate, the public could be exposed through:

- **Workplace exposure^{9,10}** – Primary amyl acetate is manufactured in a closed system using engineering controls that prevent the escape of liquid or vapors and minimize release to the environment. Worker exposure could occur during maintenance, sampling, testing, or other procedures. Chance of exposure is reduced by engineering controls and personal protective equipment. Facilities that manufacture or use primary amyl acetate should have a thorough training program for employees and appropriate work processes and safety equipment in place to limit unnecessary exposure. See [Health Information](#).

- **Consumer exposure to products containing primary amyl acetate⁴** – Dow does not sell primary amyl acetate for direct consumer use. Consumers may be exposed to the components of this product (1-pentyl acetate and 2-methyl butyl acetate) by eating foods that contain it naturally. Manufactured primary amyl acetate is not used as a food additive. The individual components of primary amyl acetate may be released from landfills and sewage. See [Health Information](#).
- **Environmental releases³** – Primary amyl acetate may slowly evaporate from products containing it. The substance is only slightly soluble in water, and when introduced, will have a tendency to evaporate from water. Because primary amyl acetate is highly biodegradable, it will be removed from water and soil environments, including biological wastewater treatment plants.. 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. Isolate the area and evacuate unnecessary personnel. Eliminate all sources of ignition. Ventilate the area. Primary amyl acetate vapors are heavier than air and may travel long distances, posing an explosion hazard. Use appropriate safety equipment. Ground and bond all containers and handling equipment. Pump any recovered material with explosion-proof equipment into suitable and properly labeled containers. If available, use foam to smother or suppress the vapors.
- **In case of fire** – Keep people away and deny unnecessary entry. Stay upwind, keeping out of low-lying areas where vapors can accumulate. Wear positive-pressure, self-contained breathing apparatus (SCBA) and protective fire-fighting clothing. Use water fog or fine spray, dry-chemical or carbon-dioxide fire extinguishers, or foam. **Do not use** a direct water stream as it may spread the fire. Use a water spray to cool containers exposed to fire and the fire-affected zone until the fire is out and danger of reignition has passed. Follow emergency procedures carefully. See [Environmental](#), [Health](#), and [Physical Hazard Information](#).

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

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Health Information³

Eye and Skin Contact – Eye contact with primary amyl acetate may cause slight irritation and corneal injury is unlikely. Prolonged skin contact may cause moderate irritation with local redness and drying and flaking. Prolonged skin contact is not likely to result in absorption of harmful amounts.

Inhalation – Inhaling excessive amounts of primary amyl acetate may cause irritation to the nose, throat, and lungs. Anesthetic effects such as dizziness and drowsiness may also occur. Vapor concentrations are attainable that could be hazardous on single exposure.

Ingestion – Primary amyl acetate has low toxicity if swallowed. Harmful effects are not anticipated from swallowing small amounts.

Toxicity Information – Primary amyl acetate has been toxic to the fetus in lab animals at doses toxic to the mother. It did not cause birth defects in laboratory animals and did not interfere with reproduction. In vitro genetic toxicity studies were negative

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

Environmental Information³

Primary amyl acetate has low volatility, and may evaporate from products containing it. The substance is only slightly soluble in water, and when introduced, will have a tendency to evaporate from water. It has minimal tendency to bind to soil or sediment.

Primary amyl acetate is unlikely to persist in the environment. The substance is highly biodegradable, which suggests the chemical will be removed from water and soil environments, including biological wastewater treatment plants.

Primary amyl acetate is not likely to accumulate in the food chain (bioconcentration potential is low) and is slightly toxic or harmful fish and other aquatic organisms on an acute basis.

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

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Physical Hazard Information³

Primary amyl acetate liquid and vapor are combustible. Vapors are heavier than air and can travel long distances, posing an explosion hazard. Primary amyl acetate is stable under recommended storage conditions. Store the material in the original container and minimize sources of ignition, such as static build-up, heat, spark, or flame. Exposure to elevated temperatures can cause primary amyl acetate to decompose. Product decomposition depends on temperature, air supply, and the presence of other materials, and may include carbon monoxide, carbon dioxide, and other compounds.

Primary amyl acetate is incompatible with oxidizing agents, reducing agents, and strong acids and bases, and contact should be avoided.

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

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Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of primary amyl acetate. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant [Safety Data Sheet](#), [Technical 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>)
- *Primary Amyl Acetate Technical Data Sheet*, The Dow Chemical Company, Form No. 327-00026-1001, October 2002
(http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_0119/0901b8038011962a.pdf?filepath=oxysolvents/pdfs/noreg/327-00026.pdf&fromPage=GetDoc)
- Household Products Database – National Institutes of Health/National Library of Medicine, website (<http://hpd.nlm.nih.gov/>)
- *Primary Amyl Acetate (Mixed Isomers)*, *SIDS Initial Assessment Report (22nd SIAM)*, Organisation for Economic Co-operation and Development, Paris, France, April 18–21, 2006, UNEP Publications (<http://www.chem.unep.ch/irptc/sids/OECD/SIDS/PrimaryAmylAcetate.pdf>).

For more business information about primary amyl acetate, visit Dow's [Oxygenated Solvents](#) website: <http://www.dow.com/oxysolvents/index.htm>.

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References

- ¹ *Primary Amyl Acetate Technical Data Sheet*, The Dow Chemical Company, Form No. 327-00026-1001
- ² *Primary Amyl Acetate (Mixed Isomers), SIDS Initial Assessment Report (22nd SIAM)*, Organisation for Economic Co-operation and Development, Paris, France, April 18–21, 2006, UNEP Publications, page 9.
- ³ *Primary Amyl Acetate, Mixed Isomers, Safety Data Sheet for the US*, The Dow Chemical Company
- ⁴ *Primary Amyl Acetate (Mixed Isomers), SIDS Initial Assessment Report (22nd SIAM)*, Organisation for Economic Co-operation and Development, Paris, France, April 18–21, 2006, UNEP Publications, page 16.
- ⁵ Household Products Database – National Institutes of Health/ National Library of Medicine, website: Primary Amyl Acetate (<http://hpd.nlm.nih.gov/>).
- ⁶ *Primary Amyl Acetate (Mixed Isomers), SIDS Initial Assessment Report (22nd SIAM)*, Organisation for Economic Co-operation and Development, Paris, France, April 18–21, 2006, UNEP Publications, pages 5 and 8.
- ⁷ *Primary Amyl Acetate, Mixed Isomers, Safety Data Sheet for the US*, The Dow Chemical Company, November 6, 2012, pages 1-2.
- ⁸ Dow Oxygenated Solvents website – Products Center: Acetic Esters (<http://www.dow.com/oxysolvents/prod/acetic.htm>).
- ⁹ *Primary Amyl Acetate, Mixed Isomers, Safety Data Sheet for the US*, The Dow Chemical Company, November 6, 2012, page 3-4.
- ¹⁰ *Primary Amyl Acetate (Mixed Isomers), SIDS Initial Assessment Report (22nd SIAM)*, Organisation for Economic Co-operation and Development, Paris, France, April 18–21, 2006, UNEP Publications, pages 5 and 15.

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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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