Product Safety Summary Sheet

DuPont™ Vinyl Acetate

Chemical Identification, Product Identification or Common Name:
- CAS number: 108-05-4
- CAS name: Acetic acid ethenyl ester
- EC Number: 203-545-4
- IUPAC name: Ethenyl acetate

Product Uses and Applications:
Vinyl acetate is a monomer, used to make polyvinyl acetate and vinyl acetate copolymers, such as ethylene-vinyl acetate (EVA). Vinyl acetate based (co)polymers are used in making a broad range of industrial and consumer use articles. Uses include: food packaging films, adhesives, sealants, caulks, or paints.

Physical Properties of the Chemical or Product:
Vinyl acetate is a clear, colorless liquid with a sweet odor that can be detected at relatively low concentrations (odor detection threshold of approximately 0.5 ppm). Vinyl acetate has a water solubility of approximately 20,000 mg/L (20°C).

Vinyl acetate should be handled with care due to its flammability, volatility (89 mm Hg vapor pressure at 20°C) and low flashpoint (-9°C). Vinyl acetate vapors are heavier than air and may travel some distance before settling in low areas where they can be ignited if contact occurs with ignition sources such as electrical sparks.

The Material Safety Data Sheet (MSDS) contains the most current information on physical properties and hazards associated with vinyl acetate.
**Exposure Potential:**

**Workplace exposure:**
Due to its flammability and reactivity, precautions should be taken when handling or using vinyl acetate. Vinyl acetate should be used within closed, controlled industrial processes. Engineering controls and use of closed systems should be used wherever possible minimize emissions to the workplace. In the workplace, process safety management guidance should be developed to indicate the types of personal protective equipment (PPE) required for protection against accidental dermal and inhalation exposure for general and specific tasks. In addition, workplace air sampling should be performed to confirm that exposure controls for vinyl acetate are effective in maintaining exposures below occupational exposure limits.

Users should refer to the *Vinyl Acetate Safe Handling Guide, April 2010*, published by the Vinyl Acetate Council.

Workers should always follow all recommended safety measures contained within the (Material) Safety Data Sheet ((M)SDS) and on any product packaging. Employees should be trained in the appropriate work processes, the use of proper personal protective equipment (PPE), storage and handling requirements, occupational safety, and all applicable regulations to limit exposure to vinyl acetate. Occupational use of this substance is considered to be safe provided the recommended safety measures given in the (M)SDS are followed.

**Consumer exposure:**
Vinyl acetate is not sold to consumers and is not known to be intentionally added as an ingredient in consumer applications. However, vinyl acetate may be a trace-level contaminant in articles arising from residues remaining in the article during polymer manufacture. Residual levels of vinyl acetate in consumer articles are further reduced from its rapid off-gassing out of the polymer after polymer manufacture.

**Environmental exposure:**
Should vinyl acetate be released into the environment, the substance is expected to eventually evaporate into the atmosphere.

If vinyl acetate is released into the air, it is expected to stay in the atmosphere for only a short while because reactions with sunlight will cause its rapid degradation. Atmospheric releases of vinyl acetate must be in compliance with all federal, state, and local regulations.

If vinyl acetate is released into water, some will dissipate to air from volatilization. Vinyl acetate will hydrolyze in water, decomposing to other substances (acetic acid and acetaldehyde) with the speed of decomposition dependent upon temperature and water pH. Environmental organisms and hydrolysis will readily degrade vinyl acetate so it is considered to be readily biodegradable. Neither vinyl acetate nor its hydrolysis products are expected to bioaccumulate. Releases of vinyl acetate into water must be in compliance with all federal, state, and local regulations.

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If vinyl acetate is released into the soil, some volatilization of the material will occur. Vinyl acetate is not expected to be adsorbed into sediments or soils.

Vinyl acetate wastes should be properly treated or disposed in compliance with all federal, state, and local regulations. Incineration of liquid vinyl acetate is recommended; due to its flammability, it should not be sent into a landfill.

Should a major release of vinyl acetate occur, all persons near the release area should be evacuated immediately to a safe location in accordance with emergency response plans.

**Health Information**

*Note: The information contained in this section may be useful to someone handling the pure undiluted substance such as a manufacturer or transporter. Consumers are not likely to come in contact with the pure substance. For more information on health hazards and recommended protective equipment, please refer to the (M)SDS.*

Exposures may affect human health as follows:

<table>
<thead>
<tr>
<th>Effect Assessment</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Toxicity</td>
<td>Oral: Considered to be of low acute oral toxicity by ingestion Inhalaition: Considered to be of low acute inhalation toxicity. May cause irritation of the upper respiratory tract if inhaled.</td>
</tr>
<tr>
<td></td>
<td>Dermal: Considered to be of low acute toxicity by skin contact.</td>
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<tr>
<td>Irritation</td>
<td>Skin: May cause skin irritation. Eye: May cause eye irritation.</td>
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<tr>
<td>Sensitization</td>
<td>Not considered to be a skin sensitizer.</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>Metabolism of vinyl acetate in the body can generate acetic acid and acetaldehyde. Acetaldehyde is also formed naturally in the body during digestion of food and following ingestion of alcoholic beverages. Vinyl acetate can be mutagenic, secondary to metabolism to acetaldehyde at high exposure concentrations. Acetaldehyde is considered to be mutagenic when the body’s normal defense mechanisms are overwhelmed.</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Vinyl acetate has produced tumors in rats and mice at high exposure concentrations. Tumors occurred at sites directly contacting vinyl acetate (the nose by inhalation and the mouth/throat by ingestion). Tumors are considered to be secondary to metabolism to acetaldehyde and occur when the normal defense mechanisms are overwhelmed at exposure high concentrations. Tumors are considered to be unlikely to occur under realistic human exposure scenarios which are much lower than those used in the studies with laboratory animals.</td>
</tr>
<tr>
<td>Toxicity after repeated exposure</td>
<td>After repeated inhalation exposure, vinyl acetate may cause upper respiratory tract irritation, particularly to the tissues lining the nose.</td>
</tr>
<tr>
<td>Toxicity for reproduction</td>
<td>Not considered to be a reproductive or developmental toxicant.</td>
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</tbody>
</table>
Environmental Information

Note: The information in this chapter is intended to provide brief and general information of this substance’s environmental impact. The results in the table below refer to testing performed with the non formulated, undiluted substance. The data does not replace the data given in the (M)SDS. For more information and recommended protective measures, please refer to the (M)SDS.

<table>
<thead>
<tr>
<th>Effect Assessment</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Aquatic Toxicity</td>
<td>Vinyl acetate is considered to be moderately toxic to aquatic organisms. Acute aquatic toxicity values range from approximately 12-18 mg/L for freshwater fish, algae and invertebrates over an exposure period of 48-96 hours.</td>
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<tr>
<td>BiodegradabilityPersistence</td>
<td>Readily biodegradable. Not expected to persist due to rapid degradation in the environment.</td>
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<tr>
<td>Bioaccumulation potential</td>
<td>Expected to have low potential for bioaccumulation.</td>
</tr>
</tbody>
</table>

Overall, vinyl acetate is not considered to be either persistent or bioaccumulative, or to present a significant risk to aquatic organisms.

Risk Management

Workplace Management:
Due to the hazardous nature of vinyl acetate, workplace risk management should include use of engineering controls and personal protective equipment (PPE), including approved respirators, impervious gloves and apparel, splash goggles and face shields as appropriate for the task. Vinyl acetate should be controlled at all times by storing the material in a cool, well-ventilated location, in properly grounded vessels that prevent static buildup, and must include sufficient volumes of hydroquinone (HQ) inhibitor to prevent any possible uncontrollable polymerizations from occurring.

Exposure to heat, ultraviolet light, and x-rays and cross-contamination with other chemicals may create additional opportunities for polymerization. Pressure generated during such polymerizations may rupture containers, causing liquid spills, odorous vapor emissions, and fire. Therefore, all vinyl acetate containers should be equipped with appropriate pressure-relief devices and properly vented routes for the material.

Since vinyl acetate vapors are heavier than air, they may concentrate and travel along the ground some distance and may ignite if it comes in contact with an ignition source such as an electrical outlet or switch. Therefore, every precaution should be taken to prevent the release of any vinyl acetate vapors.

Emergency plans for handling emissions, spills, releases, fires, or natural disasters should be in place prior to using vinyl acetate. Full protective personal protective equipment should be used during any clean-up procedures. Always refer to the (Material) Safety Data Sheet ((M)SDS) for guidance on the appropriate personal protective equipment to be used and on the safe handling of this material.
**Consumer Risk Management:**
Vinyl acetate is not sold to consumers and is not known to be intentionally added as an ingredient in consumer applications. Vinyl acetate may be a trace-level contaminant in articles arising from residues remaining in the article during polymer manufacture. No or minimal exposure to vinyl acetate is likely among general consumers of articles made from vinyl acetate; such levels are not considered to present a significant risk.

**Regulatory Information:**
Refer to the (Material) Safety Data Sheet ((M)SDS) for guidance on regulatory restrictions that may govern the manufacture, sale, transportation, use and/or disposal of this chemical or product. Regulations may vary by region, country, state, county, city, or local government.

**First Aid Information:**
For all First Aid or Emergency information, consult the (Material) Safety Data Sheet ((M)SDS).

**Information Sources:**
Data is compiled from a variety of sources, including publicly available documents, DuPont internal data and other sources such as, but not limited to, Chemical Safety Reports and (Material) Safety Data Sheets ((M)SDS). Users should refer to the *Vinyl Acetate Safe Handling Guide, April 2010*, published by the Vinyl Acetate Council².

**Contact Information:**
E.I. du Pont de Nemours and Company, Wilmington, DE 19880
USA Customer Service:
Toll Free: 1-800-774-1000
Global: 1-843-335-5912
Hours: 8:00 a.m. - 7 p.m. EST

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² Vinyl Acetate Council, 1250 Connecticut Avenue, NW, Suite 700, Washington, DC 20036, USA. 202.419.1500
Website: www.vinylacetate.org.