



Product Stewardship Summary for Polyethylene

This product stewardship summary is intended to provide general information about polyethylene. It is not intended to provide an in-depth discussion of all health and safety information. Additional information on the product is available through the applicable Safety Data Sheet which should be consulted before use of the product. This product stewardship summary does not supplant or replace required regulatory and/or legal communication documents.

Chemical identity:

Polyethylene is a polymer made from ethylene monomer and may contain comonomer and other additives. Currently hexene is used as the comonomer in all copolymer products that are produced by Chevron Phillips Chemical Company LP. Additives can include antioxidants, corrosion inhibitors, antistatic agents, and processing aids, to modify its physical properties.

CAS Number Product Name

9002-88-4 (polyethylene homopolymer)

25213-02-9 (polyethylene-hexene copolymer)

Product Uses:

Polyethylene is a versatile thermoplastic resin which may be converted to a variety of fabricated articles used in containers, pipe, film, geomembrane sheet as well as durable applications in the automotive, appliance, and electronics industries. Film and molded articles may be used in items found in home, retail or industrial settings. Examples include: packaging for laundry, bakery, grocery, frozen foods, and dry and powdered foods. Additional applications can include truck bed-liners, pond-liners, drums, crates, pails, conduit, drainage pipe and gas and water pipe.

Physical/chemical properties:

Polyethylene is a solid thermoplastic polymer at room temperature. At temperatures in excess of 240 °F, it can be melted and extruded into film, sheet, and pipe, or as a coating onto various substrates. It can also be used in injection molding, compression molding, blow molding and rotational molding. Polyethylene has very low flammability. Fine polyethylene dust dispersed in air in sufficient concentrations may form combustible dust and create a potential combustible dust hazard. While this product may not be a combustible dust as sold in pellet form, further processing or handling may form combustible dust concentration in air. Polyethylene is generally unreactive except to strong oxidizing agents. Polyethylene is insoluble in water, making it suitable for packaging food, household cleansers, and aqueous solutions of many types.

Health Information:

Polyethylene is not expected to be acutely toxic by inhalation, oral or dermal routes of exposure. Polyethylene is expected to be essentially non-irritating to the skin and eyes. However, mechanical irritation to the eyes, nose, throat and upper respiratory tract during handling may occur due to polyethylene dust. Fumes generated during thermal processing may cause irritation of the upper respiratory tract. The primary potential health effect is from breathing high concentrations of emissions from polyethylene combustion or thermal processing. Polyethylene is not expected to be toxic to the reproductive system, cause harm to an unborn child, or be genotoxic. There is no evidence that polyethylene can cause cancer in humans or experimental animals.

Environmental Information:

There are no specific environmental hazards associated with polyethylene. Polyethylene does not bioaccumulate. Polyethylene is insoluble and floats on water. Polyethylene is not expected to be readily biodegradable. Fish and birds may eat polyethylene pellets which may obstruct their digestive tracts, and aquatic wildlife may be harmed by ingesting or becoming entangled with discarded plastic products. Exposure of the environment to polyethylene is not expected to cause any other adverse effects.

Exposure Potential:

Workplace use: Workers handling polyethylene resins or products made from these resins may be exposed to polyethylene dusts. Polyethylene dust in the workplace is considered nuisance dust and is regulated as such. Workers involved in the manufacture of products from polyethylene resins using fabrication techniques, which involve elevated temperatures, may be exposed to irritating or toxic thermal degradation products (fumes).

Consumer use: Non-occupational exposure to polyethylene dust is not expected. Potential exposure to the polymer would be primarily from skin contact with products made of polyethylene or ingestion of small pieces of product made from these resins. The negligible solubility and relative inertness of polyethylene, however, result in very low systemic exposure to humans and organisms in the environment. Dermal absorption of polyethylene is expected to be essentially non-existent due to the high molecular weight of the polymer. Dermal absorption of residual ethylene is expected to be extremely low as unreacted monomer in the resins is negligible.

Risk Management:

Chevron Phillips Chemical Company LP is committed to product stewardship and doing business responsibly. We endeavor to provide sufficient information for the safe use and handling of all our products.

With regard to polyethylene, good industrial hygiene practices should always be followed. Avoid dust accumulation on surfaces, and avoid dispersal of dust in the

air (i.e., clearing dust surfaces with compressed air). Fine polyethylene dust dispersed in air in sufficient concentrations may form combustible dust and create a potential combustible dust hazard. While this product may not be a combustible dust as sold in pellet form, further processing or handling may form combustible dust concentration in air. Avoid prolonged contact of polyethylene dust with eyes and skin. Use of safety glasses with side shields for solids handling is good industrial practice. Avoid prolonged exposure to dusts to protect against mechanical respiratory irritation. Dust masks are recommended when the dust concentration is excessive. Another good safety practice is to avoid spills of polyethylene pellets or remove them from the floors to prevent a potential slipping hazard.

When handling this material, an electrostatic charge may accumulate to create hazardous conditions. To minimize such hazards, proper electrically grounding of material handling and processing equipment may be necessary.

It is important to safeguard against excessive and prolonged exposures to vapors and mists which result from thermal decomposition of polyethylene at very high processing temperatures. High levels of thermal decomposition vapor concentrations may become an irritant. Therefore, adequate local or general exhaust ventilation should be used to prevent the accumulation of high vapor concentrations. If adequate and reliable exhaust ventilation is not available and in the absence of reliable detection and warning devices, National Institute for Occupational Safety and Health (NIOSH) certified organic vapor respirators or supplied air breathing apparatus should be used.

Finally, when handling polyethylene products or products fabricated which contain polyethylene, make sure to consult the relevant product Safety Data Sheet and review applicable regulatory guidelines and requirements, including but not limited to OSHA guidelines.

Regulatory Information:

Regulations exist that govern the manufacture, sale, transportation, use and/or disposal of products of the polyethylene category. These regulations may vary by city, state, country or geographic region. Additional helpful information may be found by consulting the relevant product Safety Data Sheet.

Sources of Additional Information:

- Chevron Phillips Chemical Material Safety Data Sheet Information <http://www.cpchem.com/en-us/pages/msdssearch.aspx>
- Chevron Phillips Chemical Environmental Health & Safety Information <http://www.cpchem.com/en-us/ehs/Pages/environmenthealthsafety.aspx>
- Chevron Phillips Chemical Polyethylene products website <http://www.cpchem.com/bl/polyethylene/en-us/Pages/default.aspx>
- U.S. Environmental Protection Agency (USEPA) Hazardous Substances Data Bank (HSDB) <http://toxnet.nlm.nih.gov/>

- European Chemical Substances Information System (ESIS)
<http://esis.jrc.ec.europa.eu/>

Conclusion:

Polyethylene is widely used in the production of items found in home, retail or industrial settings. As sold by Chevron Phillips Chemical Company, (in solid pellet form), polyethylene is chemically stable. However, be sure to consult the Safety Data Sheet and other appropriate guidelines (such as Processing Technical Information) prior to use of these polymers.

Contact Information:

<http://www.cpchem.com/>

Date: June 18, 2020