NOVA Chemicals®

PRODUCT RISK PROFILE

SURPASS® Polyethylene - Not Coloured (All Grades)

This Product Risk Profile is intended to provide the general public with an overview of product safety information. This document is not intended to replace Safety Data Sheets (SDS). It is not intended to provide emergency response; medical or treatment information or provide discussion of all safety and health information.

Sustainability

Plastics have transformed modern life, are lightweight, durable and cost-effective. As global citizens, we work to keep plastics out of the natural environment and move to a circular economy. Our resins and structure designs help enable plastics circularity at the design phase, where lifecycle path is established. As part of our commitment to keeping plastics out of the natural environment, we have pledged to take measures to prevent resin pellet, flake and powder loss from our resin handling facilities under the Operation Clean Sweep® program (OCS) and OCS Blue. By being part of these international programs, NOVA Chemicals has committed to having the procedures and programs in place to strive towards achieving zero pellet, flake and powder loss.

Product Summary

SURPASS Polyethylene is a white/colourless/translucent solid, plastic resin made by reacting molecules of ethylene gas into long polymer chains in carefully controlled manufacturing processes. Polyethylene is not known to occur naturally. British researchers first synthesized polyethylene in 1933. NOVA Chemicals' polyethylene products are considered to be safe for humans and the environment in known and intended end uses. SURPASS Polyethylene is manufactured in Canada at the Joffre, Alberta site. These resins are shipped nationally and internationally in bags, bulk boxes, hopper trucks, rail hopper cars and marine containers for use as starting materials in the manufacture of a wide variety of industrial and consumer plastic products.

Product Use Information

SURPASS Polyethylene resins are used in many product end-use markets, the largest of which is packaging. They are sold as white/colourless/translucent solid pellets or as a granular powder. SURPASS polyethylene products are produced in a wide range of densities and can be classified into a broad range of categories including linear low, medium and high-density resins. SURPASS resins are manufactured using Single Site Catalyst (SSC) and these grades are often denoted using the letter "s" in front of the general category (i.e. sLLDPE). Linear low-density polyethylene (sLLDPE) and medium-density polyethylene (sMDPE) resins are used in the production of flexible food packaging, shrink-wrap, stretch film, overwrap films, artificial turf, and small rotational molded tanks. High-density polyethylene (sHDPE) resins are used in the production of food packaging, barrier films, large rotational molded tanks, children's toys, and molded caps and closures. Examples of typical end-use applications listed are not intended to be fully comprehensive. The U.S. Food and Drug Administration (FDA), Health Canada and other regulatory agencies have determined that plastics and the additives commonly used in plastics are suitable for such applications. NOVA Chemicals encourages proper recycling, recovery or disposal of plastic products made with SURPASS Polyethylene after their use, and discourages littering these products in the environment.

Human Exposure

Due to its use in a variety of consumer products such as packaging, there is exposure of the general public to polyethylene as well as to workers processing the raw pellets into products. Polyethylene has been extensively reviewed by regulatory authorities and determined to be non-hazardous by normal routes of exposure including skin contact, inhalation and ingestion. Workers producing or processing polyethylene can be exposed to resin dusts when grinding plastics, and to irritating gases while heat processing plastic resins. Workplace air quality measurements made by NOVA Chemicals in typical polyethylene handling and use operations indicate that good equipment design, adequate ventilation, proper handling and personal hygiene procedures minimize these workplace exposures. The public is exposed to solid polyethylene from everyday use of consumer products made from polyethylene resins. Swallowing small polyethylene plastic items can cause choking. Plastic film products can be an asphyxiation hazard if misused to cover the face.

Health Information

Thorough evaluation of human toxicological data of polyethylene demonstrates that this product poses a low risk under intended use conditions. In workplace processing of polyethylene, contact with fine dusts and heated fumes may cause eye, skin and respiratory system irritation. Contact with hot molten material may cause severe thermal burns, possible permanent injury or blindness. Inhalation of smoke under fire conditions is considered hazardous.

Environmental Exposure

SURPASS Polyethylene resins are expected to be inert in the environment. These resins will float on water and can be widely distributed and persistent in land and water systems. Polyethylene will not biodegrade readily in the environment

unless it has first been chemically modified by heat or chemical action to reduce the molecular size. This product will slowly change in the presence of sunlight, but will not fully breakdown. Most polyethylene products can be collected and recycled, and NOVA Chemicals encourages recycling of all polyethylene products where facilities exist. Unrecyclable products including polyethylene can also be converted by recovery processes into heat, electricity, chemicals, and new plastics. Discarded polyethylene products can be safely disposed of in public landfills, as they do not break down into hazardous gases or other toxic compounds.

Ecological Information

SURPASS polyethylene is considered non-toxic in land and water systems. Polyethylene is not readily digestible; pellets released to water may accumulate in the digestive systems of some sea birds and aquatic life causing injury and possible death by starvation. Plastic product pollution in the environment can harm biota by entanglement or through ingestion, and pollution should be avoided through proper recycling, recovery and disposal of plastic items. The resins are not expected to bioconcentrate (accumulate in the food chain) due to their high molecular weight. Pellets do not degrade in soil or in landfill and should be fully recovered from land spills.

Physical Hazards

SURPASS polyethylene resins are non-hazardous as shipped, however, *if small particles are generated during further processing, handling or by other means,* polyethylene may form combustible dust concentrations in air. Polyethylene is an inert and chemically neutral material and is not regulated for transportation. The product will burn at high temperatures and can emit irritating smoke similar to that produced by burning wood but is not considered flammable. Buildup of fine dust may create an explosive mixture with air. In view of this, precautions should be taken to prevent buildup of static electricity in industrial processing. Spilled product may create a dangerous slipping hazard. Do not walk on deep piles of pellets in storage vessels or in a contained area to avoid risk of falling and possible suffocation.

Risk Management at NOVA Chemicals

NOVA Chemicals continues to carefully review all relevant information on the safety and suitability of our polyethylene resins for their known and intended end-uses. In addition, our polyethylene resins are constantly being improved and tailored to meet the ever-changing needs of our customers.

NOVA Chemicals is committed to sharing information on the safe handling and end-use of our products with customers and other interested parties. Safety Data Sheets (SDSs) are provided to our customers and can be accessed by interested members of the public electronically at the NOVA Chemicals' website at www.novachemicals.com. Technical information on processing polyethylene resins is also posted on this website.

NOVA Chemicals is a member of the Plastics Industry Association (PLASTICS), the Canadian Plastics Industry Association (CPIA), the Chemistry Industry Association of Canada (CIAC), and the American Chemistry Council's (ACC's) Plastics Division. Through these and other industry associations, we actively monitor and participate in public regulatory processes impacting polyethylene products. We also seek to better understand and support sustainable solutions to plastic recycling and other health and environmental challenges. We actively support industry-sponsored product testing initiatives and other industry initiatives supporting responsible actions, sound science and lifecycle stewardship of our products.

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For detailed information on this product, please review the product Safety Data Sheet (SDS). In the case of an emergency involving this product, please call our 24-hour hotline at 1-800-561-6682 or 1-403-314-8767.

For more information on this product risk profile, please contact us at 1-412-490-4063 or email us at stewardp@novachem.com.

For more information on any NOVA Chemicals' product, please contact us at the nearest location below during business hours or visit our website at www.novachemicals.com:

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