SAFETY DATA SHEET

Lupolen 2427K

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1. PRODUCT AND COMPANY IDENTIFICATION

Trade name	:	Lupolen 2427K
CAS Number:	:	9002-88-4
Chemical characterization	:	Polyethylene Homopolymer
Chemical name	:	Polyethylene
Synonyms	:	Ethene, homopolymer, PE
Identified uses	:	Manufacture of plastic articles by injection molding, extrusion or other conversion process.
Prohibited uses	:	FDA Class III medical devices; European class III medical devices; Health Canada class IV Medical Devices; Applications involving permanent implantation into the body; Life-sustaining medical applications

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2. HAZARDS IDENTIFICATION

GHS Classification

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

Other hazards which do not result in classification

May form explosible dust-air mixture if small particles are generated during further processing, handling, or by other means.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture	:	Mixture
Chemical nature	:	Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Polyethylene	9002-88-4	> 99.5

4. FIRST AID MEASURES

General advice	:	Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid.
If inhaled	:	Remove person to fresh air. If signs/symptoms continue, get medical attention. In case of excessive inhalation of fumes that may be generated during heating of this material, move the person to fresh air. Obtain medical attention. Keep person warm, if necessary give Cardio-Pulmonary Resuscitation (CPR)
In case of skin contact	:	If molten material contacts the skin, immediately flush with large amounts of water to cool the affected tissue and polymer. Do not attempt to peel polymer from skin as this will remove the skin. Obtain immediate emergency medical attention if burn is deep or extensive.
In case of eye contact	:	Flush eyes thoroughly with water for several minutes and seek medical attention if discomfort persists. In case of eye contact with molten polymer: Continuously flush eye(s) with cool running water for at least 15 minutes. Beyond flushing, DO NOT attempt to remove the material adherent to the eye(s). Immediately seek medical attention.
If swallowed	:	Adverse health effects due to ingestion are not anticipated.
Most important symptoms and effects, both acute and delayed	:	Inhalation of process fumes and vapors may cause soreness in the nose and throat and coughing. Dust contact with the eyes can lead to mechanical irritation. Molten polymer may cause thermal burns.
Notes to physician	:	Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	SMALL FIRE: Use dry chemical, CO2, or water spray. LARGE FIRES: Use water spray hose nozzles from a safe location.
Unsuitable extinguishing media	:	None known.
Specific hazards during fire fighting	:	Keep away from heat and sources of ignition. In case of fire hazardous decomposition products may be produced such as: Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).
Specific extinguishing methods	:	Combustible particulate solid, will decompose under fire conditions.

Calorific Value: 8000 - 11000 kcal/kg
Fight fire from safe distance with hose lines or monitor nozzles.
Heat from fire may melt, decompose polymer, and generate flammable vapors.
Move containers from fire area if it can be done without risk.
Evacuate immediately in the event of opening of storage container pressure relief devices or discoloration of container.
Always stay away from tanks engulfed in fire.
Do not attempt to get on top of storage containers involved in fire.
Cool storage containers with large volumes of water even after fire is out.

Special protective equipment for fire-fighters : Wear approved positive pressure self-contained breathing apparatus and firefighter protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Equip responders with proper protection.
Creates dangerous slipping hazard on any hard smooth surface.
Equip emergency responders with proper personal protective equipment (PPE)
Avoid generating dust.
Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).
Potential combustible dust hazard.
Polymer particles create slipping hazard on hard smooth surfaces.

Environmental precautions : Do not flush into surface water or sanitary sewer system.

Methods and materials for containment and cleaning up : On land, sweep/shovel into suitable disposal containers or vacuum using equipment which avoids ignition risk.
On water, material is insoluble; collect and contain as any solid.
All recovered material should be packaged, labeled, transported and disposed of or reclaimed in conformance with applicable laws and regulations and in conformance with good engineering practices. Reclaim where possible.

7. HANDLING AND STORAGE

Advice on safe handling : Material is in a pellet form.
If converted to small particles during further processing, handling, or by other means, may form combustible dust concentrations in air.
Avoid dust accumulation in enclosed space.
Use dust collection systems designed per NFPA 654 to avoid dust accumulation.
Avoid generating dust; fine dust suspended in air and in the

presence of an ignition source is a potential dust explosion hazard.
Static discharge (spark), or other ignition sources, in high dust environments may ignite the dust and result in a dust explosion
Electrostatic charge may build during conveying or handling. Equipment handling polymer should be conductive and grounded (earthed) and bonded.
Metal containers involved in the transfer of this material should be grounded and bonded.
All electrical equipment should conform to applicable electric codes and regulatory requirements for areas handling combustible dusts.
After handling, always wash hands thoroughly with soap and water.
When bringing the material to processing temperatures vapors may develop may condense in the exhaust ventilation. See section 10.
Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

Conditions for safe storage : Store in a dry location.
Use good housekeeping practices during storage, transferring and handling. Process enclosures and adequate ventilation should be used to avoid excessive dust accumulation.
Store away from excessive heat and away from strong oxidizing agents.
Keep container closed to prevent contamination.
Take measures to prevent the build up of electrostatic charge.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Non-specified (inert or nuisance) dust	Not Assigned	TWA	10 mg/m3 (inhalable)	US (ACGIH)
		TWA	3 mg/m3 (respirable)	US (ACGIH)

Engineering measures : Follow the recommendations in NFPA 654 (as amended and adopted) for equipment used to handle this product.

Engineering controls, i.e. enclosed systems, should be used whenever feasible to maintain exposures below acceptable criteria. When such controls are not feasible, or sufficient to achieve full conformance, other engineering controls such as local exhaust ventilation should be used.
Equipment and vessels handling combustible dust from this material should be designed to either prevent dust explosions (inerting) or safely vent dust explosions per NFPA 654

Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).

Personal protective equipment

Respiratory protection : Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Use appropriate respiratory protection where atmosphere exceeds recommended limits.
Where workers could be exposed to dust concentrations above the exposure limit they must use appropriate certified respirators.

Hand protection

Remarks : Wear gloves that provide thermal protection where there is a potential for contact with heated material.

Eye protection : Dust service goggles should be worn to prevent mechanical injury or other irritation to eyes due to airborne particles which may result from handling this product.

Skin and body protection : Wear suitable protective clothing.

Hygiene measures : Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use.
Use good personal hygiene practices.
Wash hands before eating, drinking, smoking, or using toilet facilities.
Take off contaminated clothing and wash before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	pellets
Color	:	Translucent to white
Odor	:	Slight.
Odor Threshold	:	No value available.
pH	:	Not applicable.
Melting point/range	:	50 - 170 °C
Boiling point/boiling range	:	Not applicable.
Flash point	:	No Data Available.

Evaporation rate	:	Not applicable.
Flammability (solid, gas)	:	May form combustible dust concentrations in air. Polymer will burn but does not easily ignite.
Self-ignition	:	> 300 °C
Upper explosion limit / Upper flammability limit	:	Not applicable.
Lower explosion limit / Lower flammability limit	:	The minimum explosive concentration (MEC) for polymer dust varies according to particle size distribution.
Vapor pressure	:	Not applicable.
Relative vapor density	:	Not applicable.
Density	:	< 1 g/cm3
Solubility(ies)		
Water solubility	:	Insoluble.
Partition coefficient: n-octanol/water	:	No Data Available.
Decomposition temperature	:	Carbon monoxide, olefinic and paraffinic compounds, trace amounts of organic acids, ketones, aldehydes and alcohols may be formed.
Viscosity		
Viscosity, dynamic	:	Not applicable.
Explosive properties	:	No Data Available.
Oxidizing properties	:	Not considered an oxidizing agent.

10. STABILITY AND REACTIVITY

Reactivity	:	No known reactivity hazards.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	None known.
Conditions to avoid	:	Avoid contact with strong oxidizers, excessive heat, sparks or open flame.
Incompatible materials	:	Material may be softened by some hydrocarbons.
Hazardous decomposition products	:	Not expected to decompose under normal conditions.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Components:

Polyethylene:

Acute oral toxicity	:	Assessment: The substance or mixture has no acute oral toxicity
Acute inhalation toxicity	:	Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity	:	Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation

Components:

Polyethylene:

Result	:	No skin irritation

Serious eye damage/eye irritation

Components:

Polyethylene:

Remarks	:	Mechanical irritation is possible.

Respiratory or skin sensitization

Components:

Polyethylene:

Result	:	Does not cause skin sensitization.
	:	Does not cause respiratory sensitization.

Germ cell mutagenicity

Components:

Polyethylene:

Germ cell mutagenicity - Assessment	:	Based on available data, the classification criteria are not met.

Carcinogenicity

Components:

Polyethylene:

Carcinogenicity - Assessment : No evidence of carcinogenicity in animal studies.

Reproductive toxicity

Components:

Polyethylene:

Reproductive toxicity - Assessment : Based on available data, the classification criteria are not met.

STOT - single exposure

Components:

Polyethylene:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

Components:

Polyethylene:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration toxicity

Components:

Polyethylene:

No aspiration toxicity classification

12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Polyethylene:

Toxicity to fish : Remarks: Aquatic toxicity is unlikely due to low solubility.

Toxicity to daphnia and other aquatic invertebrates : Remarks: No toxicity at the limit of solubility.

Toxicity to algae/aquatic : Remarks: No toxicity at the limit of solubility.

plants

Toxicity to fish (Chronic toxicity)	:	Remarks: No toxicity at the limit of solubility.
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	Remarks: No toxicity at the limit of solubility.
Toxicity to microorganisms	:	Remarks: No toxicity at the limit of solubility.

Persistence and degradability

Components:

Polyethylene:

Biodegradability	:	Remarks: The polymer is too large to be bioavailable.

Bioaccumulative potential

Components:

Polyethylene:

Bioaccumulation	:	Remarks: This material is not expected to bioaccumulate.

Mobility in soil

Components:

Polyethylene:

Mobility	:	Remarks: no data available

Other adverse effects

Product:

Results of PBT and vPvB assessment	:	Not applicable
Additional ecological information	:	No data available on this product. However, birds, fish and other wildlife may eat pellets which may obstruct their intestinal tracts.

Components:

Polyethylene:

Environmental fate and pathways	:	This material is not volatile and insoluble in water.
Additional ecological information	:	Ecotoxicity is expected to be minimal based on the low water solubility of polymers.

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : All recovered material should be packaged, labeled, transported and disposed of or reclaimed in conformance with applicable laws and regulations and in conformance with good engineering practices. Reclaim where possible.
Recycle if possible.

14. TRANSPORT INFORMATION

Not regulated for transport

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

Global Inventory Status
The ingredients of this product are compliant with the following chemical inventory requirements or exemptions.

Country/Region	Inventory	Status Description
Australia	AICS	Listed
Canada	DSL	Listed
China	IECSC	Listed
Europe	REACH	See Compliance Statement*
Japan	ENCS	Listed
Korea	K REACH	Pre-registration period *
New Zealand	NZIoC	Listed
Philippines	PICCS	Listed
United Kingdom	UK REACH	See Compliance Statement*
United States of America	TSCA	Listed
Taiwan	TCSCA	Listed
Turkey	KKDIK	Pre-registration period *

* If the product has been purchased domestically from the notifying/registering legal entity of the LyondellBasell group of companies. We confirm that all substances (in this preparation) have been registered in accordance with the deadlines set forth in the applicable regulation. During the “Pre-registration period”, we confirm that all substances in this preparation have been pre-registered or, where required under the regulation, registered, and that we have the intention to proceed with their registration in accordance with the deadlines set forth in the regulation. For more information, please contact reach@lyondellbasell.com.

† For more information on the status of this material, please contact chemical control at global.chemical.control@lyondellbasell.com.

16. OTHER INFORMATION

Full text of other abbreviations

US (ACGIH) : US (ACGIH)

US (ACGIH) / TWA : Time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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