1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name	:	Lupolen 5461B Q471
Synonyms	:	Ethylene-1-hexene copolymer, Ethylene-Hexene Copolymer
Substance name	:	1-Hexene,polymer with ethene
Substance No.	:	25213-02-9
Chemical characterization	:	Polyethylene copolymer

1.2 Relevant identified uses of the substance or mixture and uses advised against

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

1.3 Details of the supplier of the safety data sheet

Company	Registration number	Telephone
Basell Sales & Marketing Company B.V. Delftseplein 27E 3013 AA Rotterdam Netherlands	NA	31 (0) 10 275 55 00

E-mail address : product.safety@lyb.com
Responsible/issuing person

1.4 Emergency telephone number

Basell Sales & Marketing Company B.V. +32 3 575 1235

Poison Center:
Gesundheid Österreich GMBH
AT: +43 1 406 43 43
24 hours all days

2. Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.

2.2 Label elements

Labeling (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.

2.3 Other hazards

May form combustible dust concentrations when suspended in air.
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB).

3. Composition/information on ingredients

3.1 Substances

Components

Chemical name	CAS-No. EINECS-No. / ELINCS No./EC-No.	Weight %	Component Type
1-Hexene,polymer with ethene	25213-02-9	> 99.5 %	

Contains: Stabilizers

4. First aid measures

4.1 Description of 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.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Inhalation of process fumes and vapors may cause soreness in the nose and throat and coughing.

Hazards : Dust contact with the eyes can lead to mechanical irritation.
Molten polymer may cause thermal burns.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

5. Fire-fighting measures

5.1 Extinguishing media

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.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting	:	Keep away from heat and sources of ignition. Dust particles from this product are combustible particulate solids that present a flash fire or explosion hazard when suspended in air. Polymer dust layer melts on the hot surface before ignition can occur In case of fire hazardous decomposition products may be produced such as: Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

5.3 Advice for firefighters

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

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Equip responders with proper protection.
Creates dangerous slipping hazard on any hard smooth surface.
Equip emergency responders with proper personal protective equipment (PPE)
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.

6.2 Environmental precautions

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

6.3 Methods and materials for containment and cleaning up

Methods for containment / Methods for 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

7.1 Precautions for safe handling

Advice on safe handling : Avoid dust accumulation in enclosed space.
Use dust collection systems designed in accordance with ATEX 95.
Avoid generating dust; fine dust suspended in air and in the presence of an ignition source is a potential dust explosion hazard.
Polymer dust layer melts on the hot surface before ignition can occur

Hot surface temperature shall be limited to less than 270°C to avoid direct ignition of a dust cloud.
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 ATEX 95 and ATEX 137 and related Harmonized European Standards: EN 1127-1 (Explosive atmospheres – Explosion prevention and protection).

Fire-fighting class : Polymer will burn but does not easily ignite.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : 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.
Degradation can occur because of exposure to temperature, light and oxidizing agent: trace amounts of light hydrocarbons, compounds of oxidation, aldehydes and acids can be generated.
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.

7.3 Specific end use(s)

: See Section 1.2.

8. Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Occupational Exposure Limits

Components	CAS-No.	Type	Limit Value	Basis Revision Date	Additional Information
Materials that can be formed when handling this product: Non-specified (inert or nuisance) dust		TWA	10 mg/m3 inhalable	US (ACGIH) 2005	
Materials that can be formed when handling this product: Non-specified (inert or nuisance) dust		TWA	3 mg/m3 respirable	US (ACGIH) 2005	

Consult local authorities for acceptable exposure limits.

8.2 Exposure controls

Engineering measures

In accordance with ATEX 137, follow the recommendations in EN 1127-1(Explosive atmospheres – Explosion Prevention and protection).

Follow the recommendations in international standard 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 ATEX 95 and related Harmonized European Standards.

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

Environmental exposure controls

General advice	:	See section 6.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	Powders or flakes.
Color	:	Translucent to white
Odor	:	Slight.
Flash point	:	No Data Available.
Lower explosion limit	:	The minimum explosive concentration (MEC) for polymer dust varies according to particle size distribution.
Upper explosion limit	:	Not applicable.
Flammability (solid, gas)	:	Polymer will burn but does not easily ignite.
Oxidizing properties	:	Not considered an oxidizing agent.
Autoignition temperature	:	> 300 °C
Decomposition temperature	:	not determined
Melting point/range	:	50 - 170 °C
Boiling point/boiling range	:	Not applicable.
Vapor pressure	:	Not applicable.
Density	:	< 1 g/cm3
Water solubility	:	Insoluble.
Partition coefficient: n-octanol/water	:	No Data Available.
Viscosity, dynamic	:	Not applicable.
Relative vapor density	:	Not applicable.
Evaporation rate	:	Not applicable.
Explosive properties	:	No Data Available.

9.2 Other information

Other information	:	No additional information available.

10. Stability and reactivity

10.1 Reactivity

No known reactivity hazards.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions	:	Will not occur.

10.4 Conditions to avoid

Conditions to avoid	:	Avoid contact with strong oxidizers, excessive heat, sparks or open flame.

10.5 Incompatible materials

Materials to avoid	:	Material may be softened by some hydrocarbons.

10.6 Hazardous decomposition products

Hazardous decomposition products	:	Not expected to decompose under normal conditions.
Thermal decomposition	:	Note: Carbon monoxide, olefinic and paraffinic compounds, trace amounts of organic acids, ketones, aldehydes and alcohols may be formed.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity	:	Not classified
Acute inhalation toxicity	:	Not classified
Acute dermal toxicity	:	Not classified

Skin corrosion/irritation : Not a skin irritant.

Serious eye damage/eye irritation : Not an eye irritant.
Mechanical irritation is possible.

Respiratory or skin sensitization : Not classified

Chronic toxicity

Carcinogenicity : Not classified

Germ cell mutagenicity : Not classified

Reproductive toxicity

Effects on fertility / : Not classified
Effects on or via lactation
Effects on Development : Not classified

Target Organ Systemic Toxicant - Single exposure

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

Target Organ Systemic Toxicant - Repeated exposure

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

Aspiration hazard : Not applicable.

12. Ecological information

12.1 Ecotoxicology Assessment

Short-term (acute) aquatic hazard	:	Not classified
Long-term (chronic) aquatic hazard	:	Not classified

12.2 Persistence and degradability

Biodegradability	:	Not expected to be biodegradable.

12.3 Bioaccumulative potential

Bioaccumulation	:	This material is not expected to bioaccumulate.

12.4 Mobility in soil

Mobility	:	no data available

12.5 Results of PBT and vPvB assessment

Result	:	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB).

12.6 Other adverse effects

Environmental fate and pathways	:	This material is not volatile and insoluble in water.

12.7 Other information

Additional ecological information	:	Ecotoxicity is expected to be minimal based on the low water solubility of polymers.

13. Disposal considerations

13.1 Waste treatment methods

Product : 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

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

REACh status

If the product has been purchased from any company of the LyondellBasell group of companies registered in the European Union, we confirm that the chemical substance in this product has been registered under REACh, in accordance with the deadlines set forth in REACh. (Regulation (EU) No. 1907/2006)

Other international regulations

Global Inventory Status

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

*Additional Explanatory Status Statements follow the table, as necessary.

Country/Region	Inventory	Status Description
Australia	AICS	Compliant
Canada	DSL	Compliant
China	IECSC	Compliant

Europe	REACH	See REACH Compliance Statement
Japan	ENCS	Compliant
Korea	KECI	Compliant
New Zealand	NZIoC	Compliant
Philippines	PICCS	Compliant
United States of America	TSCA	Compliant
Taiwan	TCSCA	Compliant

Contact product.safety@lyb.com for additional global inventory information.

15.2 Chemical safety assessment

No information available.

16. OTHER INFORMATION

Material safety datasheet sections which have been updated:

Revised Section(s): 15
Abbreviations and Acronyms

ACGIH - American Conference of Governmental Industrial Hygienists
ACGIH_BEIs - American Conference of Governmental Industrial Hygienists_Biological Exposure Indices
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
AICS - Australian Inventory of Chemical Substances
ASTM - American Society for Testing and Materials
BEL - Biological Exposure Limits
BTEX - Benzene, Toluene, Ethylbenzene, Xylenes
CAS - Chemical Abstracts Service
CEFIC - European Chemical Industry Council
CLP - Classification Packaging and Labelling
COC - Cleveland Open-Cup
CS - Consumer Scenario
DIN - Deutsches Institut für Normung
DN(M)EL - Derived No (Minimal) Effect Level
DSL - Canada Domestic Substance List
EC - European Commission
EC50 - Median Effective Concentration
ECETOC - European Center on Ecotoxicology and Toxicology of Chemicals
ECHA - European Chemicals Agency
EL50 - Effective Loading fifty

ELINCS - EHR-Lab Interoperability and Connectivity Specification
ENCS - Japanese Existing and New Chemical Substances Inventory
ERC - Environmental Release Category
EUSES - European Union System for the Evaluation of Substances
EWC - European Waste Code
GHS - Globally Harmonized System of Classification and Labelling of Ch
IARC - International Agency for Research on Cancer
IATA - International Air Transport Association
IC50 - Inhibitory Concentration fifty IL50 = Inhibitory Level fifty
IMDG - International Maritime Dangerous Goods
IECSC - Chinese Chemicals Inventory
IOELV - Indicative Occupational Exposure Limit Values
IP346 - Institute of Petroleum test method N° 346 for the determination of polycyclic aromatics DMSO-extractables
KECI - Korea Existing Chemicals Inventory
Koc - Organic Carbon/Water Partition Coefficient
LC50 - Lethal Concentration fifty
LD50 - Lethal Dose fifty per cent.
LL/EL/IL - Lethal Loading/Effective Loading/Inhibitory Loading
LL50 - Lethal Loading fifty
MAK Commission - Permanent Senate Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area
MARPOL - International Convention for the Prevention of Pollution from Ships
No. - Number
NOEC/NOEL - No Observed Effect Concentration / No Observed Effect Level
NZIoC - New Zealand Inventory of Chemicals
OE_HPV - Occupational Exposure - High Production Volume
OECD - Organization for Economic Co-operation and Development
OEL - Occupational Exposure Limit
PBT - Persistent, Bio accumulative and Toxic
PICCS - Philippine Inventory of Chemicals and Chemical Substances
PNEC - Predicted No Effect Concentration
PPE - Personal Protective Equipment
PROC - Process Category
QSAR - Quantitative Structure–Activity Relationship
REACh - Registration Evaluation and Authorization of Chemicals
RID - Regulations Relating to International Carriage of Dangerous Goods by Rail
SDS - Safety Data Sheet
SKIN_DES - Skin Designation
STEL - Short term exposure limit
STP - Standard Temperature and Pressure
TCSCA - Taiwan inventory of chemicals
TGD - Technical Guidance Document
TRA - Targeted Risk Assessment
TSCA - US Toxic Substances Control Act
TWA - Time-Weighted Average

UN - United Nations
vPvB - very Persistent and very Bioaccumulative
WGK - German Water Endangerment Class

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Numerical Data Presentation
The presentation of numerical data, such as that used for physical and chemical properties and toxicological values, is expressed using a comma (,) to separate digits into groups of three and a period (.) as the decimal marker. For example, 1,234.56 mg/kg = 1 234,56 mg/kg.

Language Translations
The information presented in this document has been translated from English by a vendor LyondellBasell believes to be reliable. LyondellBasell and its vendor have made a good-faith effort to verify the accuracy of the translation, but assume no liability or other responsibility for any errors that may have occurred. Please refer to our web site (www.lyondellbasell.com) for the original document written in English.

End of Material Safety Data Sheet