

SAFETY DATA SHEET

Product: Linear Low Density Polyethylene – Green - copolymer ethylene with 1-hexene

Revision: 00

Date: 04.07.2011

Page: 1 /8

1- IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND COMPANY/ UNDERTAKING

Product name: **SLH118, SLH218, SLH0820/30AF**

Company: BRASKEM

Address: **Centro Prod. PE5 Triunfo**
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Telephone number: 55(51) 37218600

Company: BRASKEM

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Telephone number: 55(11) 3576-9000

Emergency telephone number: 55(51) 3721-8600

55(51) 3457-5500

Home Page: www.braskem.com.br

2- HAZARDS IDENTIFICATION

Most important hazards: Not classified as hazardous.

Product effects

Adverse effects to the human health: In case of dust, Braskem suggests it to be treated as annoying dust or particulate, by international recommendations. Dust may cause respiratory irritation if inhaled.

Environmental effects: Product doesn't present environmental hazard. Since it's a polymer, may cause long-term effects on aquatic environment.

Physical and chemical hazards: Not classified as physical hazards.

Classification of the substance or mixture: Not classified as hazardous.

Label elements according to Regulation 1272:2008 (GHS)

Symbol: Not applicable.

Signal word: Not applicable.

SAFETY DATA SHEET

Product: Linear Low Density Polyethylene – Green - copolymer ethylene with 1-hexene

Revision: 00

Date: 04.07.2011

Page: 2 / 8

Hazard Statement: Not applicable.

Precaution Statement: Not applicable.

Label elements according to Directive 67/548/EEC

Symbol: Not applicable.

Risk Phrases: Not classified.

Safety Phrases: Not applicable.

3- COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Chemical name(followed by CAS number): **Polyethylene copolymers:
1) PE copolymer of ethylene and hexene-1 (CAS: 25213-02-9)**

Synonyms: Linear Low Density Polyethylene (LLDPE)

Ingredients or impurities that contribute to the hazard (followed by CAS number): Calcium stearate* (CAS: 1592-23-0)
Synthetic amorphous silica* (CAS: 112926-00-8)

* Substance's concentration doesn't contribute to the product's hazard classification.

4- FIRST-AID MEASURES

Inhalation: No risks concerning inhalation at room temperature. Remove the victim to fresh air. Monitor respiratory function. If there is breathing difficulty, provide oxygen. If necessary, give artificial respiration. Seek medical attention. Take this SDS.

Ingestion: Rinse the victim's mouth with water. Provide plenty of water for the victim to drink if it is conscious. Seek medical attention. Take this SDS.

Skin contact: No health risks concerning inhalation at room temperature. Remove contaminated clothing and shoes. Wash affected area with plenty of water for at least 15 minutes. Wash contaminated clothing and shoes before reuse. Seek medical attention. Take this SDS.

Eye contact: Wash immediately with running water for at least 15 minutes, keeping the eyelids open. Remove contact lenses if present and easily removable. Seek medical attention. Take this SDS.

Most important symptoms and effects, both acute and delayed: In case of dust inhalation, may cause cough and sneezing.

Indication of any immediate medical attention and special: Avoid contact with this product while helping the victim; keep the victim warm. Symptomatic treatment should include, above all, measured of support as

SAFETY DATA SHEET

Product: Linear Low Density Polyethylene – Green - copolymer ethylene with 1-hexene

Revision: 00

Date: 04.07.2011

Page: 3 /8

treatment needed:	correction of hydro electrolytic and metabolic disturbances and respiratory failure.
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5- FIREFIGHTING MEASURES

Fire Extinguishing Media:	CO2, dry chemical, foam or water fog. Avoid using water with full jet and throwing water directly on flames.
Special hazards arising from the substance or mixture:	When in a fire, may produce irritating and toxic gases like carbon monoxide and dioxide.
Advice for firefighters:	Self-contained breathing apparatus (SCBA) operated in positive pressure mode and complete protective clothing.
Special hazards from the combustion of the chemical:	Form in combustion gases and toxic irritants such as carbon monoxide and carbon dioxide. Releases gases when heated and / or fumes respiratory sensitizers.

6- ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Control of dust:	Apply ventilation or exhaust system. Moisten area to prevent dusting.
Removal of ignition sources:	Product isn't flammable. Eliminate preventively all the ignition sources around the area. Do not smoke in the area.
Provision of sufficient ventilation:	Use in a well ventilated area or with exhaustion system adequate to eliminate mists and vapors.
Prevention of inhalation and skin, mucous membranes and eyes contact:	Do not touch damage containers or spilled material unless wearing appropriate protective clothing. Avoid inhalation, eye and skin contact. Use appropriate personal protective equipment as indicated in Section 8.
Environmental precautions:	Do not let this chemical enter the environment (soil, waterways and groundwater).
Methods and material for containment and cleaning up:	Use a vacuum cleaner to collect residue or another method that does not generate dust. Place the material into appropriate containers and remove to a safe place. Clean the area. Dispose according to local residue regulation.

7- HANDLING AND STORAGE

Precautions for safe handling:	Avoid contact with skin, eyes and clothing. Avoid breathing the product. Remove ignition sources and heat. Use proper personal protective equipment as indicated in Section 8.
Hygiene advice:	Do not eat, drink or smoke when using this product. Wash hands before eating, drinking, smoking or going to the toilet. Take off all contaminated

SAFETY DATA SHEET

Product: Linear Low Density Polyethylene – Green - copolymer ethylene with 1-hexene

Revision: 00

Date: 04.07.2011

Page: 4 /8

Conditions for safe storage, including any incompatibilities:	clothing and wash before reuse. Storage should be in a cool, dry, well ventilated area away from heat and ignition. The containers must be properly identified and must remain closed. Avoid stacking. Inspect them regularly for damage.
Packaging materials:	The polyethylene resin, being an inert material, can be packaged in polyethylene sacking.

8- EXPOSURE CONTROLS/PERSONAL PROTECTION

Specific control parameters

Occupational exposure limits:

Chemical or common name	TLV – TWA (ACGIH, 2010)	PEL – TWA (OSHA, 1997)	REL – TWA (NIOSH, 2007)
	(mg/m ³)	(mg/m ³)	(mg/m ³)
Stearates (not included stearates of toxic metals) *	10	15	10
Silicon dioxide* (silica)	-	15	6

* These substances aren't at enough concentration to contribute to the product's hazard classification.

Appropriate engineering controls:	Provide mechanical ventilation or direct exhaustion to the external media. It is recommended safety shower and eye bath available near working area. The engineering controls measures are the most effective to reduce exposure to the product.
Individual protection measures, such as personal protective equipment	
Eye/face protection:	Protection goggles against dust.
Skin and hand protection:	Natural rubber protective gloves. Suitable protective suit.
Respiratory protection:	Respiratory protective equipment with filter for dust.
Thermal hazard:	Complete air-ventilated suit, with air supply, or any thermo-resistant clothing available.
Environmental exposure controls:	Do not dump directly into the environment or into the sewer system. The dilution water from fire fighting can cause pollution.

9- PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Translucent/white solid

SAFETY DATA SHEET

Product: Linear Low Density Polyethylene – Green - copolymer ethylene with 1-hexene

Revision: 00

Date: 04.07.2011

Page: 5 /8

Odor:	Not available.
Odor threshold:	Not available.
pH:	Not available.
Melting point/freezing point:	Not available.
Initial boiling point and boiling range	Not available.
Flashpoint:	Not applicable.
Evaporation Rate	Not applicable.
Flammability:	Non flammable.
Upper/lower flammability or explosive limits:	Not applicable.
Vapour density (Air=1):	Not applicable.
Vapour Pressure (mm Hg):	Not applicable.
Relative density:	0.913g/cm ³
Solubility:	Insoluble in water. Soluble in xylene.
Partition coefficient: n-octanol/water:	Not available.
Auto-ignition temperature:	350 °C
Decomposition temperature:	Not available.
Viscosity:	Not available.
Explosive properties:	Not available.
Oxidizing properties:	Not available.
Other information:	Polyethylene's maximum time of storage is 15 months after production, except of IDEALIS resins, which maximum time of storage is 30 months.

10- STABILITY AND REACTIVITY

Chemical stability:	Stable under normal conditions of handling and storage. Does not undergo polymerization.
Possibility of hazardous reactions:	Reacts violently with fluorine.
Incompatible materials:	Strong acids, strong oxidizers, chlorated solvents and aromatic compounds and fluorine.
Conditions to avoid:	Sources of heat (direct sunlight, sparks, open flames, static loads), incompatible materials.

SAFETY DATA SHEET

Product: Linear Low Density Polyethylene – Green - copolymer ethylene with 1-hexene

Revision: 00

Date: 04.07.2011

Page: 6 /8

Hazardous decomposition products:	Monoxide and carbon dioxide and other irritant chemical substances.
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11- TOXICOLOGICAL INFORMATION

Acute toxicity:	LD ₅₀ (oral, rats) > 8000mg/Kg
Skin corrosion/irritation:	Not irritating.
Serious eye damage/irritation:	Not irritating.
Respiratory or skin sensitization:	There aren't known sensitization effects.
Germ cell mutagenicity:	There aren't known germ cell mutagenicity effects.
Carcinogenicity:	There aren't known carcinogenicity effects.
Reproductive toxicity:	There aren't known reproductive toxicity effects.
STOT – single exposure:	At powder or dust form, may cause respiratory irritation with cough and sneezing.
STOT – repeated exposure:	There aren't known repeated exposure effects.
Aspiration hazard.	There aren't known aspiration effects.

12- ECOLOGICAL INFORMATION

Toxicity:	There aren't known ecological toxicity values.
Persistence and degradability:	It's expected high persistence and slow degradability. - <u>Polyethylene homopolymer:</u> Biodegradation rate <70% in 28 days.
Bioaccumulative potential:	It is expected to have moderate to high bioaccumulation potential. - <u>Polyethylene Homopolymer:</u> logKow: 14.04 (estimated)
Mobility in soil:	Not available.
Results of PBT and vPvB assessment:	Not available.

13- DISPOSAL CONSIDERATION

Product:	The treatment and disposal should be evaluated specifically for each product. Can be deposited in landfills, sent to an appropriate incineration or other means of disposal provided they meet the requirements of local law.
Product waste:	Keep the product remains in their original containers and properly sealed. Disposal should be performed as established for the product.

SAFETY DATA SHEET

Product: Linear Low Density Polyethylene – Green - copolymer ethylene with 1-hexene

Revision: 00

Date: 04.07.2011

Page: 7 /8

Contaminated packaging: Polyethylene package must be submitted to re-utilization in the working environment. Package may be reused or recycled by specialized companies. Big bag packages are returnable and must be returned to Braskem.

14- TRANSPORT INFORMATION

National and international regulations

Land (Road/rail):	UN – “United Nations” Recommendations on the TRANSPORT OF DANGEROUS GOODS. Model Regulations, 16th Edition, 2009.
Waterways (sea/inland):	IMO - “International Maritime Organization” International Maritime Dangerous Goods Code (IMDG Code) - Incorporating Amendment 34-08; 2008 Edition.
Air:	IATA - “International Air Transport Association” Dangerous Goods Regulation (DGR) - 51th Edition, 2010.
UN number:	Not classified as hazardous for transport.
Environmental hazards:	Not hazardous.
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:	Not listed.

15- REGULATORY INFORMATION

Commission Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

Regulation 1272:2008: GHS, United Nations, 3th Revised Edition, 2009

ECB: Directives 67/548 e 1999/45

UN Recommendations on the TRANSPORT OF DANGEROUS GOODS. Model Regulations, 16th Edition, 2009

Restrictions: No use restrictions were found.

16- OTHER INFORMATION

SAFETY DATA SHEET

Product: Linear Low Density Polyethylene – Green - copolymer ethylene with 1-hexene

Revision: 00

Date: 04.07.2011

Page: 8 /8

BRASKEM warns that the handling of any chemical substance requires the previous knowledge of its hazards for the user. It is responsibility of the product user enterprise to promote the training of its employees and contractors about the possible risks arising from the product.

SDS reviewed by InterTox: February, 2011 – <http://www.intertox.com.br>

Abbreviations:

ACGIH – American Conference of Industrial Hygienists

CAS – Chemical Abstracts Service

IARC – International Agency for Research on Cancer

LD₅₀ – Lethal Dose 50%

NIOSH – National Institute of Occupational Safety and Health

OSHA – Occupational Safety and Health Administration

PEL – Permissible Exposure Limit

REL – Recommended Exposure Limit

TLV – Threshold Limit Value

TWA – Time Weighted Average

UN – United Nations

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