Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name: Hifor® Linear Low Density Polyethylene

Synonyms: Ethene-butene polymer; Ethylene – butene copolymer; Linear low density polyethylene; LLDPE

Product Grades: DA74562, DB1022AD, DB1022DC, DB1022DD, LF1010DB, LF1020AC, LF1020AD, LF1020CC, LF1020DC, LF1020DD, LF1021CC, LF1021HW, LF1022BJ, LF1022HJ, LF1040BB, LF1040CC, LF1050CC, LF1050CM, LF1050DC

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

Relevant identified use(s): Plastic film, laminating, molding, coating.

1.3 Details of the supplier of the safety data sheet

Manufacturer: Westlake Polymers LLC
2801 Post Oak Blvd.
Houston, TX 77056
United States
www.westlake.com

Telephone (General): 713-960-9111

1.4 Emergency telephone number

800-424-9300 – CHEMTREC

Section 2: Hazards Identification

EU/EEC
According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

CLP: Not classified
DSD/DPD: Not classified

2.2 Label Elements

CLP: Hazard: No label element(s) required
DSD/DPD: Risk phrases: No label element(s) required

2.3 Other Hazards

CLP: May form combustible dust concentrations in air.
   According to Regulation (EC) No. 1272/2008 (CLP) this material is not considered hazardous.

DSD/DPD: May form combustible dust concentrations in air.
   According to European Directive 1999/45/EC this material is not considered dangerous.
United States (US)
According to OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture
OSHA HCS 2012 • Not classified

2.2 Label elements
OSHA HCS 2012 Hazard statements • No label element(s) required

2.3 Other hazards

Canada
According to WHMIS

2.1 Classification of the substance or mixture
WHMIS • Not classified

2.2 Label elements
WHMIS • No label element(s) required.

2.3 Other hazards
WHMIS • May form combustible dust concentrations in air.
In Canada, the product mentioned above is not considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

3.1 Substances
• Material does not meet the criteria of a substance in accordance with Regulation (EC) No 1272/2008.

3.2 Mixtures

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Identifiers (CAS)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poly(1-butene-co-ethylene)</td>
<td>25087-34-7</td>
<td>&gt;99 - 97</td>
</tr>
<tr>
<td>Functionalized polymer</td>
<td>Proprietary</td>
<td>&lt;1 - 0</td>
</tr>
<tr>
<td>Antioxidants</td>
<td>Proprietary</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>Slip reagent and/or processing aid</td>
<td>Proprietary</td>
<td>&lt;1 - 0</td>
</tr>
<tr>
<td>Acid neutralizer</td>
<td>Proprietary</td>
<td>&lt;0.12</td>
</tr>
<tr>
<td>Talc*</td>
<td>14807-96-6</td>
<td>&lt;1.5 - 0</td>
</tr>
</tbody>
</table>

* contains < 1% quartz or crystalline silica

Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation • IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.
Skin

- For thermal burns, flush or submerge affected area in cold water to dissipate heat. Cover with clean bandage material. Do not peel material from skin. Get medical attention. For contact at ambient temperatures, wash with soap and water.

Eye

- If dust or molten material contacts the eye, immediately flush with plenty of water for at least 15 minutes. If irritation persists, get medical attention immediately.

Ingestion

- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician

- Burns should be treated as thermal burns. The material will come off as healing occurs; therefore, immediate removal from the skin is not necessary.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media

- Water fog, dry chemical, foam, carbon dioxide.

Unsuitable Extinguishing Media

- None known.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards

- Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Hazardous Combustion Products

- Carbon dioxide, carbon monoxide, formaldehyde, acetaldehyde, irritating smoke.

5.3 Advice for firefighters

- Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters’ protective clothing will only provide limited protection.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions

- Do not walk through spilled material. Do not breathe dust. Avoid contact with skin and eyes. Wear appropriate personal protective equipment, avoid direct contact.

Emergency Procedures

- Contain spill and monitor for excessive dust accumulation. Avoid unnecessary personnel and equipment traffic in the spill area. Ventilate closed spaces before entering.

6.2 Environmental precautions

- No special environmental precautions necessary.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Avoid generating dust.

- Use clean nonsparking tools to collect material.

- Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling
Handling
- Avoid contact with molten material; do not breathe fumes, vapors, dust or sprays from molten or burning material. When processing at > 600°F (315°C), consider use of a respirator to avoid breathing decomposition products.
- Do not use in areas without adequate ventilation. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.
- Use appropriate Personal Protective Equipment (PPE) Avoid contact with skin and eyes. Do not breathe dust. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

7.2 Conditions for safe storage, including any incompatibilities
Storage
- Keep container closed and in ventilated area, away from ignition sources, heat, open flames, and direct sunlight. Do not store with incompatible materials.

7.3 Specific end use(s)
- Refer to Section 1.2 - Relevant identified uses

7.4 Other Information
- For prevention of fire and explosion, keep from contact with incompatible materials. Minimize dust generation and accumulation. Because product may accumulate a static charge, use proper bonding and/or grounding procedures prior to transfer. In the United States of America, refer to NFPA® Pamphlet No. 654, "Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, 2006 edition."

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

<table>
<thead>
<tr>
<th></th>
<th>Exposure Limits/Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Result</td>
</tr>
<tr>
<td>Talc (14807-96-6)</td>
<td>TWAs</td>
</tr>
<tr>
<td>Quartz (14808-60-7)</td>
<td>TWAs</td>
</tr>
<tr>
<td>Slip reagent and/or processing aid (Proprietary)</td>
<td>TWAs</td>
</tr>
<tr>
<td>Acid Neutralizer (Proprietary)</td>
<td>TWAs</td>
</tr>
<tr>
<td></td>
<td>STELs</td>
</tr>
<tr>
<td></td>
<td>Ceilings</td>
</tr>
</tbody>
</table>

8.2 Exposure controls
Engineering Measures/Controls
- Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, or respiratory and eye protection may be needed in special circumstances; such as poorly ventilated spaces, very hot processing, evaporation of liquids from large surfaces, spraying of mists, mechanical generation of dusts, drying of solids, etc.
Personal Protective Equipment

Respiratory
- For limited exposure use an N95 dust mask. For prolonged exposure use an air-purifying respirator with high efficiency particulate air (HEPA) filters. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face
- Wear safety goggles.

Hands
- Wear thermally resistant gloves and long sleeves when handling molten product.

Skin/Body
- Wear long sleeves and/or protective coveralls.

Environmental Exposure Controls
- Follow best practice for site management and disposal of waste.

Key to abbreviations
ACGIH = American Conference of Governmental Industrial Hygiene
NIOSH = National Institute of Occupational Safety and Health
OSHA = Occupational Safety and Health Administration

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Physical Form</th>
<th>Appearance/Description</th>
<th>General Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Solid</td>
<td>A translucent to whitish solid with an odorless to mild odor.</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Translucent to whitish.</td>
<td>Odor</td>
<td>Odorless to mild.</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>NDA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Boiling Point         | NDA           | Melting Point          | 105 to 128 C(221 to 262.4 F) |
| Decomposition Temperature | >300 C (573 F) (estimated) | pH | NDA |
| Specific Gravity/Relative Density | 0.915 to 0.930 Water=1 | Water Solubility | Negligible. |
| Viscosity             | NDA           | Explosive Properties   | Not Explosive. |
| Oxidizing Properties  | Not an oxidizer. |                        |                    |

| Volatility            | Vapor Pressure | Vapor Density | NDA |
| Evaporation Rate      | NDA           |               |     |

| Flammability          | Flash Point   | UEL           | NDA |
|                       | 343 C(649.4 F) (estimated) |     |     |
| LEL                   | NDA           | Autoignition  | NDA |
| Flammability (solid, gas) | Not Flammable. |        |     |

| Environmental         | Octanol/Water Partition coefficient | NDA |

9.2 Other Information
- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity
- No dangerous reaction known under conditions of normal use.
10.2 Chemical stability
- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions
- Hazardous polymerization not indicated.

10.4 Conditions to avoid
- Heat, sparks, open flame.

10.5 Incompatible materials
- Strong oxidizing agents, fluorine.

10.6 Hazardous decomposition products
- No data available

Section 11 - Toxicological Information

11.1 Information on toxicological effects

<table>
<thead>
<tr>
<th>Component Name</th>
<th>CAS</th>
<th>Acute Toxicity: Ingestion/Oral-Rat LD50: 4 g/kg; Sense Organs and Special Senses: Eye: Miosis (pupillary constriction); Sense Organs and Special Senses: Eye: Lacrimation; Gastrointestinal: Changes in structure or function of salivary glands</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Butene, polymer with ethene (&gt; 97%)</td>
<td>25087-34-7</td>
<td></td>
</tr>
<tr>
<td>Antioxidants (0% TO 0.5%)</td>
<td>Proprietary</td>
<td>Acute Toxicity: Ingestion/Oral-Rat LD50: &gt;5000 mg/kg; Skin-Rabbit LD50: &gt;3160 mg/kg</td>
</tr>
<tr>
<td>Antioxidants (0% TO 0.5%)</td>
<td>Proprietary</td>
<td>Acute Toxicity: Ingestion/Oral-Rat LD50: &gt;5000 mg/kg; Lungs, Thorax, or Respiration: Dyspnea; Inhalation-Rat LC50: &gt;1800 mg/m³ 4 Hour(s); Skin-Rat LD50: &gt;2000 mg/kg</td>
</tr>
<tr>
<td>Antioxidants (0% TO 0.5%)</td>
<td>Proprietary</td>
<td>Acute Toxicity: Ingestion/Oral-Rat LD50: &gt;6000 mg/kg; Irritation: Skin-Rat LD50: &gt;2000 mg/kg; Reproductive: Ingestion/Oral-Rat TDL0: 63000 mg/kg (multigeneration); Reproductive Effects: Paternal Effects: Other effects on male; Reproductive Effects: Maternal Effects: Other effects</td>
</tr>
<tr>
<td>Acid Neutralizer (&lt; 0.12%)</td>
<td>Proprietary</td>
<td>Acute Toxicity: Ingestion/Oral-Mouse LD50: 7950 mg/kg; Irritation: Eye-Rabbit: 500 mg 24 Hour(s): Mild irritation; Skin-Rabbit: 500 mg 24 Hour(s): Mild irritation; Reproductive: Ingestion/Oral-Rat TDL0: 6846 mg/kg (1-22D preg); Reproductive Effects: Specific Developmental Abnormalities: Homeostasis; Reproductive Effects: Effects on Newborn: Stillbirth; Reproductive Effects: Effects on Newborn: Growth statistics (e.g., reduced weight gain)</td>
</tr>
<tr>
<td>Talc (0% TO 1.5%)</td>
<td>14807-96-6</td>
<td>Irritation: Skin-Human: 300 µg 3 Day(s)-Intermittent: Mild irritation; Tumorigen / Carcinogen: Inhalation-Rat TCL0: 18 mg/m³ 6 Hour(s) 2 Year(s)-Intermittent; Tumorigenic: Carcinogenic by RTECS criteria: Lungs, Thorax, or Respiration: Bronchiogenic carcinoma; Endocrine: Tumors</td>
</tr>
</tbody>
</table>

GHS Properties

<table>
<thead>
<tr>
<th>Classification</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>EU/CLP NDA</td>
</tr>
<tr>
<td>Aspiration Hazard</td>
<td>EU/CLP NDA</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>EU/CLP NDA</td>
</tr>
<tr>
<td>Germ Cell Mutagenicity</td>
<td>EU/CLP NDA</td>
</tr>
<tr>
<td>Skin corrosion/Irritation</td>
<td>EU/CLP NDA</td>
</tr>
<tr>
<td>Skin sensitization</td>
<td>EU/CLP NDA</td>
</tr>
<tr>
<td>STOT-RE</td>
<td>EU/CLP NDA</td>
</tr>
</tbody>
</table>
Potential Health Effects

Inhalation

Acute (Immediate) • Exposure to dust may cause irritation. Processes such as cutting, grinding, crushing, or impact may result in generation of excessive amounts of airborne dusts in the workplace. Nuisance dust may affect the lungs but reactions are typically reversible.

Chronic (Delayed) • Prolonged exposure to the dust may cause wheezing, chest tightness, productive cough nasal irritation and symptoms of chronic respiratory disease.

Skin

Acute (Immediate) • Exposure to dust may cause mechanical irritation.

Chronic (Delayed) • No data available.

Eye

Acute (Immediate) • Exposure to dust may cause mechanical irritation. Excessive concentrations of nuisance dust in the workplace may reduce visibility and may cause unpleasant deposits in eyes.

Chronic (Delayed) • No data available.

Ingestion

Acute (Immediate) • Excessive concentrations of nuisance dust in the workplace may cause mechanical irritation to mucous membranes.

Chronic (Delayed) • No data available.

Carcinogenic Effects

<table>
<thead>
<tr>
<th>Carcinogenic Effects</th>
<th>CAS</th>
<th>IARC</th>
<th>NTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz (from talc)</td>
<td>14808-60-7</td>
<td>Group 1-Carcinogenic</td>
<td>Known Human Carcinogen</td>
</tr>
</tbody>
</table>

Key to abbreviations

LD = Lethal Dose
MLD = Mild

Section 12 - Ecological Information

12.1 Toxicity

• NDA

12.2 Persistence and degradability

• NDA

12.3 Bioaccumulative potential

• NDA

12.4 Mobility in Soil

• NDA
12.5 Results of PBT and vPvB assessment
- PBT and vPvB assessment has not been carried out.

12.6 Other adverse effects
- NDA

Section 13 - Disposal Considerations

13.1 Waste treatment methods

<table>
<thead>
<tr>
<th>Waste</th>
<th>Treatment Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product waste</td>
<td>Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.</td>
</tr>
<tr>
<td>Packaging waste</td>
<td>Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.</td>
</tr>
</tbody>
</table>

Section 14 - Transport Information

<table>
<thead>
<tr>
<th>14.1 UN number</th>
<th>14.2 UN proper shipping name</th>
<th>14.3 Transport hazard class(es)</th>
<th>14.4 Packing group</th>
<th>14.5 Environmental hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT</td>
<td>NDA</td>
<td>Not regulated</td>
<td>NDA</td>
<td>NDA</td>
</tr>
<tr>
<td>TDG</td>
<td>NDA</td>
<td>Not regulated</td>
<td>NDA</td>
<td>NDA</td>
</tr>
<tr>
<td>IMO/IMDG</td>
<td>NDA</td>
<td>Not regulated</td>
<td>NDA</td>
<td>NDA</td>
</tr>
<tr>
<td>IATA/ICAO</td>
<td>NDA</td>
<td>Not regulated</td>
<td>NDA</td>
<td>NDA</td>
</tr>
</tbody>
</table>

14.6 Special precautions for user
- None known.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
- Not relevant.

Section 15 - Regulatory Information

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

SARA Hazard Classifications
- None

Inventories
- These products comply with the following inventories:
  - Australia AICS
  - Canada DSL/NDSL
  - China EU EINECS/ELNICS
  - Japan ENCS
  - Korea KECL
  - New Zealand
  - Philippines PICCS
  - USA TSCA

California Prop 65
- In compliance, no reportable substances

CERCLA
- In the event of a spill, the end user should verify whether reporting is required under local, state, and/or federal regulations.

CONEG
- These products are in compliance with the heavy metals requirements of the Coalition of Northeastern Governors and California Toxics in Packaging Prevention Act (AB2021).

Ozone Depleting Substances
- In compliance with 40 CFR 82, no reportable substances.

RCRA
- In the form delivered by Westlake, these products are not considered as hazardous waste, and are not subject to reporting under the Resource Conservation and Recovery Act.

15.2 Chemical Safety Assessment
- No Chemical Safety Assessment has been carried out.
## Section 16 - Other Information

<table>
<thead>
<tr>
<th>Last Revision Date</th>
<th>25/June/2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation Date</td>
<td>24/June/2014</td>
</tr>
<tr>
<td>For Other Information</td>
<td>Contact Westlake Polymers LLC Customer Service 1-800-545-9577 (Monday-Friday, 7:30am-5:00pm - central standard time)</td>
</tr>
<tr>
<td>Disclaimer/Statement of Liability</td>
<td>It is your responsibility to determine that our product is safe, lawful, and technically suitable for your intended uses. This safety data sheet cannot cover all possible situations which the user may experience during processing. Each aspect of the user’s operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained in this safety data sheet should be provided to employees and/or customers. Westlake Polymers LLC must rely on the user to use this information to develop appropriate work practice guidelines and employee instructional programs specific to the user’s operation. As the conditions and methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of these products. Information contained herein is believed to be true and accurate, but all statements or suggestions are made without warranty, expressed, or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable international, federal, state, and local laws and regulations regarding the use, storage, sale, transport or disposal of this material is the responsibility of the user. Westlake Polymers LLC does not endorse or claim suitability of its product for any particular use. WESTLAKE MAKES NO WARRANTY OF MERCHANTABILITY AS TO ITS LLDPE RESIN PRODUCTS. WESTLAKE MAKES NO WARRANTIES, EXPRESS OR IMPLIED, CONCERNING THE SUITABILITY OR FITNESS OF ANY WESTLAKE PRODUCT FOR ANY PARTICULAR USE. Westlake’s liability and your exclusive remedy for any claim arising out of the sales of its products are expressly limited at Westlake’s option to replacement of non-performing goods or payment not to exceed the purchase price plus transportation charges thereon in respect to any material which damage is proven and claimed. The information in this sheet is valid for cited regulations published as of the date this document was prepared, as shown herein. Updates may be prepared as the regulations are amended or pending revised information about the resin. It is the customer’s responsibility to seek updated regulatory information on any specific resin.</td>
</tr>
</tbody>
</table>

**Key to abbreviations**

NDA = No data available