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-hexene-butene terpolymer; LLDPE; Poly(1-butene-co-ethylene-co-1-hexene)

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>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Name</td>
</tr>
<tr>
<td>Identifiers (CAS)</td>
</tr>
<tr>
<td>%</td>
</tr>
<tr>
<td>Poly(1-butene-co-ethylene-co-1-hexene)</td>
</tr>
<tr>
<td>Antioxidants</td>
</tr>
<tr>
<td>Slip reagent and/or processing aid</td>
</tr>
<tr>
<td>Acid neutralizer</td>
</tr>
<tr>
<td>Talc*</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 effected 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."

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### Section 8 - Exposure Controls/Personal Protection

#### 8.1 Control parameters

<table>
<thead>
<tr>
<th>Result</th>
<th>Exposure Limits/Guidelines</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz (14808-60-7) TWAs</td>
<td>0.025 mg/m³ TWA (respirable fraction)</td>
<td>0.05 mg/m³ TWA (respirable dust)</td>
<td>Not established</td>
<td></td>
</tr>
<tr>
<td>Acid neutralizer (Proprietary) TWAs</td>
<td>Not established</td>
<td>10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable dust)</td>
<td>Not established</td>
<td></td>
</tr>
<tr>
<td>Acid neutralizer (Proprietary) TWAs</td>
<td>2 mg/m³ TWA (respirable fraction)</td>
<td>5 mg/m³ TWA (dust and fume)</td>
<td>5 mg/m³ TWA (fume); 15 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)</td>
<td></td>
</tr>
<tr>
<td>Acid neutralizer (Proprietary) STELs</td>
<td>10 mg/m³ STEL (respirable fraction)</td>
<td>10 mg/m³ STEL (fume)</td>
<td>Not established</td>
<td></td>
</tr>
<tr>
<td>Ceilings</td>
<td>Not established</td>
<td>15 mg/m³ Ceiling (dust)</td>
<td>Not established</td>
<td></td>
</tr>
<tr>
<td>Talc (14807-96-6) TWAs</td>
<td>2 mg/m³ TWA (particulate matter containing no asbestos and &lt;1% crystalline silica, respirable fraction)</td>
<td>2 mg/m³ TWA (containing no Asbestos and &lt;1% Quartz, respirable dust)</td>
<td>Not established</td>
<td></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.
Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form</td>
</tr>
<tr>
<td>Appearance/Description</td>
</tr>
<tr>
<td>Color</td>
</tr>
<tr>
<td>Odor</td>
</tr>
<tr>
<td>Odor Threshold</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling Point</td>
</tr>
<tr>
<td>Melting Point</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
</tr>
<tr>
<td>pH</td>
</tr>
<tr>
<td>Specific Gravity/Relative Density</td>
</tr>
<tr>
<td>Water Solubility</td>
</tr>
<tr>
<td>Viscosity</td>
</tr>
<tr>
<td>Explosive Properties</td>
</tr>
<tr>
<td>Oxidizing Properties</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volatility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapor Pressure</td>
</tr>
<tr>
<td>Evaporation Rate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flammability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash Point</td>
</tr>
<tr>
<td>UEL</td>
</tr>
<tr>
<td>LEL</td>
</tr>
<tr>
<td>Autoignition</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Octanol/Water Partition coefficient</td>
</tr>
</tbody>
</table>

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>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antioxidants (&lt; 0.5%)</td>
<td>Proprietary</td>
<td><strong>Acute Toxicity:</strong> Ingestion/Oral-Rat LD50 • &gt;5000 mg/kg; Skin-Rabbit LD50 • &gt;3160 mg/kg</td>
</tr>
<tr>
<td>Antioxidants (&lt; 0.5%)</td>
<td>Proprietary</td>
<td><strong>Acute Toxicity:</strong> Ingestion/Oral-Rat LD50 • &gt;10000 mg/kg; Inhalation-Rat LC50 • &gt;1800 mg/m³ 4 Hour(s); Skin-Rabbit LD50 • &gt;2000 mg/kg; <strong>Reproductive:</strong> Ingestion/Oral-Rat TDLo • 1750 mg/kg (multigeneration); <strong>Reproductive Effects:</strong> Effects on Newborn; Other neonatal measures or effects.</td>
</tr>
<tr>
<td>Antioxidants (&lt; 0.5%)</td>
<td>Proprietary</td>
<td><strong>Acute Toxicity:</strong> Ingestion/Oral-Rat LD50 • &gt;6000 mg/kg; Skin-Rat LD50 • &gt;2000 mg/kg; <strong>Reproductive:</strong> Ingestion/Oral-Rat TDLo • 63000 mg/kg (multigeneration); <strong>Reproductive Effects:</strong> Paternal Effects; Other effects on male; <strong>Reproductive Effects:</strong> Maternal Effects; Other effects.</td>
</tr>
<tr>
<td>Slip reagent and/or processing aid (&lt; 1%)</td>
<td>Proprietary</td>
<td><strong>Acute Toxicity:</strong> Ingestion/Oral-Rat LD50 • 600 mg/kg; Skin-Rabbit LD50 • &gt;20 g/kg; <strong>Irritation:</strong> Eye-Rabbit • 100 µL • Mild irritation; Skin-Rabbit • 500 mg Open • Mild irritation</td>
</tr>
<tr>
<td>Acid neutralizer (&lt; 0.12%)</td>
<td>Proprietary</td>
<td><strong>Acute Toxicity:</strong> Ingestion/Oral-Mouse LD50 • 7950 mg/kg; <strong>Irritation:</strong> Eye-Rabbit • 500 mg 24 Hour(s) • Mild irritation; Skin-Rabbit • 500 mg 24 Hour(s) • Mild irritation; <strong>Reproductive:</strong> Ingestion/Oral-Rat TDLo • 6846 mg/kg (1-22D preg); <strong>Reproductive Effects:</strong> Specific Developmental Abnormalities; Homeostasis; <strong>Reproductive Effects:</strong> Effects on Newborn; Stillbirth; <strong>Reproductive Effects:</strong> Effects on Newborn; Growth statistics (e.g., reduced weight gain)</td>
</tr>
</tbody>
</table>

GHS Properties

<table>
<thead>
<tr>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
</tr>
<tr>
<td>OSHA HCS 2012•NDA</td>
</tr>
<tr>
<td>Aspiration Hazard</td>
</tr>
<tr>
<td>OSHA HCS 2012•NDA</td>
</tr>
<tr>
<td>Carcinogenicity</td>
</tr>
<tr>
<td>OSHA HCS 2012•NDA</td>
</tr>
<tr>
<td>Germ Cell Mutagenicity</td>
</tr>
<tr>
<td>OSHA HCS 2012•NDA</td>
</tr>
<tr>
<td>Skin corrosion/Irritation</td>
</tr>
<tr>
<td>OSHA HCS 2012•NDA</td>
</tr>
<tr>
<td>Skin sensitization</td>
</tr>
<tr>
<td>OSHA HCS 2012•NDA</td>
</tr>
<tr>
<td>STOT-RE</td>
</tr>
<tr>
<td>OSHA HCS 2012•NDA</td>
</tr>
<tr>
<td>STOT-SE</td>
</tr>
<tr>
<td>OSHA HCS 2012•NDA</td>
</tr>
<tr>
<td>Toxicity for Reproduction</td>
</tr>
<tr>
<td>OSHA HCS 2012•NDA</td>
</tr>
<tr>
<td>Respiratory sensitization</td>
</tr>
<tr>
<td>OSHA HCS 2012•NDA</td>
</tr>
<tr>
<td>Serious eye damage/Irritation</td>
</tr>
<tr>
<td>OSHA HCS 2012•NDA</td>
</tr>
</tbody>
</table>

Route(s) of entry/exposure

- Inhalation, Skin, Eye, Ingestion
- Disorders of the lungs.

Medical Conditions Aggravated by Exposure

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>Carcinogen</th>
<th>CAS</th>
<th>IARC</th>
<th>NTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz</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
Product waste • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.
## 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

- None

**SARA Hazard Classifications**

- These products comply with the following inventories:
  - Australia AICS
  - Canada DSL/NDSL
  - China EU EINECS/ELNICS
  - Japan ENCS
  - Korea KECI
  - 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

**Last Revision Date** 31/March/2016

**Preparation Date** 05/September/2014

**For Other Information** Contact Westlake Polymers LLC Customer Service 1-800-545-9577 (Monday-Friday, 7:30am-5:00pm - central standard time)

**Disclaimer/Statement of Liability**

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.

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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.

Key to abbreviations
NDA = No data available