



MATERIAL SAFETY DATA SHEET

Revision Date: 7/7/2009

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Linear Low Density Polyethylene

Product Grade Designations*: LF1020AA, LF1040AA, LF1041AA, LF1050AA

*This MSDS is also valid for Developmental grade designations beginning with a D, having the same numerals and ending with an A.

Manufacturer/Supplier:

Westlake Polymers LLC
2801 Post Oak Blvd.
Houston, TX 77056
US

MSDS Prepared by Product Regulatory Compliance / Health Safety & Environmental

Chemical Name Ethene-butene polymer

Synonym(s) LLDPE, Ethylene – Butene Copolymer

Product Use plastic film, laminating, molding, coating

OSHA Status non-hazardous

For emergency information, telephone CHEMTREC at 800-424-9300.

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Weight %</u>	<u>Component</u>	<u>CAS Registry No.</u>
99+ - 85	linear low density polyethylene	25087-34-7
15 - 0	polymers	proprietary
<0.5	antioxidants	proprietary
<0.5 - 0	slip reagent and/or processing aid	proprietary
<0.12	acid neutralizer	proprietary

3. HAZARDS IDENTIFICATION

HMIS® Hazard Ratings: Health - 0, Flammability -1, Chemical Reactivity - 0

HMIS® rating involves data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

Exposure Limit: as Nuisance dust, 15.0 mg/m³, OSHA; Dust accumulation may acquire a static charge which could ignite the combustible particles. See section 7.

Inhalation: Not a hazard at ambient temperatures; vapors, fumes, or sprays which can form at elevated temperatures are irritants to the eyes and respiratory tract. Fine dust may cause respiratory tract irritation.

Eyes: Fine dust may scratch eye surface; vapors, fumes, or sprays which form at elevated temperatures can be irritants.

Skin: Contact with molten material will cause thermal burns; Negligible hazard for ambient exposure.

Ingestion: Not a normal exposure route; adverse reaction is not expected.

4. FIRST-AID MEASURES

Inhalation: If overcome by dust or vapors, move to fresh air. Get medical attention if symptoms persist.

Eyes: 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.

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.

Ingestion: Material is not expected to be absorbed from the gastrointestinal tract so that induction of vomiting should not be necessary.

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

5. FIRE FIGHTING MEASURES

Extinguishing Media: water fog, dry chemical, foam, carbon dioxide

Special Fire-Fighting Procedures: Water spray to cool fire exposed surfaces. Wear self-contained breathing apparatus and protective clothing to enter area.

Hazardous Combustion Products: carbon dioxide, carbon monoxide, formaldehyde, acetaldehyde, irritating smoke.

General Fire and Explosion Hazards: Solid product will burn at or above the flash point. Oxygen lean conditions may produce toxic gases, acrid fumes, irritating smoke. Product may accumulate a static charge which could result in an electrical discharge that could ignite polymer dust.

6. ACCIDENTAL RELEASE MEASURES

Sweep or shovel up, place in a container for salvage or disposal. Product is non-hazardous in its delivered form.

7. HANDLING AND STORAGE

Personal Precautionary Measures: 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.

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."

Storage: Keep container closed and in ventilated area, away from ignition sources, heat, open flames, and direct sunlight. Do not store with incompatible materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure: Nuisance dust TLV: 10 mg/m³ (ACGIH)

Ventilation: 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.

Respiratory Protection: If engineering controls do not maintain airborne concentrations to an acceptable level, an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 29 CFR 1910.134. Respirator type: dust, organic vapor

Eye Protection: Wear goggles or a face shield when working with molten material or when dust is generated.

Skin Protection: Wear thermally resistant gloves and long sleeves when handling molten product.

Recommended Decontamination Facilities: eye bath, washing facilities

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form: solid

Color: translucent to whitish

Odor: odorless to mild

Odor Threshold: not applicable

Specific Gravity: 0.915 – 0.928

Melting point: 105°C (221°F) – 128°C (262°F)

Solubility in Water: negligible

Flash Point: 343°C min (650°F) estimated ASTM E136; combustible solid

Thermal Decomposition Temperature: Thermal stability not tested for each grade, degradation in air may begin at > 300°C (573°F). Low stability hazard expected at normal operating temperatures.

10. STABILITY AND REACTIVITY

Stability: Product as delivered is stable.

Incompatibility: Product reacts with strong oxidizing agents, fluorine.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicity data is not available. There has been no evidence of acute toxicity, skin sensitization, or sub-acute subchronic toxicity as a result of repeated exposure.

12. ECOLOGICAL INFORMATION

These products have not been tested for environmental effects. These products are not expected to present any environmental problems.

13. DISPOSAL CONSIDERATIONS

Discharge, treatment, or disposal may be subject to national, state, or local laws. Incinerate or landfill in accordance with local regulations.

Emptied containers may retain product residue, follow label warnings even after container is emptied.

14. TRANSPORT INFORMATION

***Important Note:** Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.*

DOT (USA): Class not regulated

Sea - IMDG (International Maritime Dangerous Goods): Class not regulated

Air - ICAO (International Civil Aviation Organization): Class not regulated

15. REGULATORY INFORMATION

Note: Information listed in this Section is not meant to be comprehensive, but represents frequently requested information.

TSCA (US Toxic Substances Control Act), Sec 8(b): These products are listed on the TSCA inventory.

TSCA, Sec 12(b): These products do not contain substances subject to reporting

WHMIS (Canada) Status: non-controlled

SARA Title III: In accordance with the provisions of Title III, Sections 311 & 312 of the **Superfund Amendments and Reauthorization Act**, these products are not hazardous. These products do not contain Section 313 Reportable Ingredients.

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**.

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

California Prop 65: In compliance, no reportable substances

CONEG: These products are in compliance with the heavy metals requirements of the **Coalition of Northeastern Governors**.

Ozone Depleting Substances: none reportable, in compliance with 40 CFR 82.

Carcinogenicity Classification (components present at 0.1% or more): none, unless listed below:

IARC (International Agency for Research on Cancer) none

NTP (National Toxicology Program) none

European Hazardous Chemicals: none reportable, in compliance with 67/548/EEC, 76/769/EEC, 1999/45/EC, 2002/95/EC (RoHS), 2002/96/EC (WEEE)

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act):

These products are listed on the DSL. All additives used in the formulation of these products are DSL listed.

EINECS (European Inventory of Existing Commercial Chemical Substances): These products comply with EINECS requirements. The polymers are exempt from listing; the monomers are EINECS listed. All additives used in the formulation of these products are EINECS listed.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): These products are listed on AICS or otherwise comply with NICNAS.

ENCS, ISHL (Japan Chemical Substance Inventories): These products are listed in the Handbook or have been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): These products are listed on the Korean inventory or otherwise comply with the Korean Toxic Substances Control Act.

16. OTHER INFORMATION

For other information, contact Westlake Polymers LLC Customer Service 1-800-545-9577 (Monday-Friday, 7:30am-5:00pm - central standard time)

It is your responsibility to determine that our product is safe, lawful, and technically suitable for your intended uses. This material 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 material 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 RESINS. 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 fact sheet is valid for cited regulations published as of the date this document was prepared, as shown on page 1. 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.