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## MATERIAL SAFETY DATA SHEET

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### Polyisobutylene –TPC 1160

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ISSUE DATE: July 5, 2006

Emergency Phone Number: (713) 475-7771

LAST REVISION: June 27, 2006

CHEMTREC (800) 424-9300

#### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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Product Name: Polyisobutylene – TPC 1160

Chemical Name: Butene, homopolymer

Manufacturer: Texas Petrochemicals LP  
8600 Park Place Blvd.  
Houston, Texas 77017

Synonyms: PIB-TPC1160, Isobutene polymer, Isobutylene polymer, Isobutylene resin, Polybutene, Polymerized 2-Methylpropene, and 2-Methyl-1-propene homopolymer.

#### 2. COMPOSITION/INFORMATION ON INGREDIENTS

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<u>Component</u>	<u>CAS Registration No.:</u>	<u>Liquid Volume %:</u>
Butene, homopolymer	9003-29-6	100

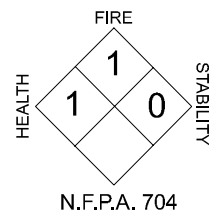
*Compositions given are typical values, not specifications.*

#### 3. HAZARD IDENTIFICATION

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##### EMERGENCY OVERVIEW

- Clear, viscous liquid with faint, characteristic odor.
- **CAUTION!** May irritate eyes, skin, and mucous membranes.
- Will be stored, transported, and probably used hot (>212°F). Heated material can cause thermal burns.
- May be harmful if heated material is inhaled at high concentrations.
- Spills may create slipping hazards



HMIS Ratings: Health: 1; Flammability: 1; Instability: 0.

Eye Contact: Heated material can cause thermal burns. Liquid contact may cause irritation.

Skin Contact: Heated material can cause thermal burns. Repeated liquid contact may cause irritation.

Inhalation: Inhalation of mists or droplets may cause irritation of the mucous membranes of the nose, throat, and lungs. Exposure to aerosols or particulates from heated material may cause adverse lung effects if inhaled at high concentrations.

Ingestion: Liquid ingestion may cause gastrointestinal irritation and/or diarrhea.

Chronic Effects: Repeated or prolonged exposure may cause skin disorders.

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**4. FIRST AID MEASURES**

Eye Contact: Hot material: Immediately flush eyes with plenty of water for at least 15 minutes. Seek medical assistance for mechanical removal of this material from the eye.  
Cold material: Flush eyes with plenty of water. Seek medical attention if irritation persists. Use of flush fluid, other than water, is not recommended.

Skin Contact: Hot material: Immediately flush skin with cool water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention.  
Cold material: Clean exposed skin with waterless hand cleaner. Thoroughly cleanse the entire contaminated area of the body with soap and water. Wash clothing thoroughly before reuse.

Inhalation: If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion: DO NOT INDUCE VOMITING! Never give anything by mouth to an unconscious person. If conscious and alert, have the victim rinse his mouth and drink 2 to 4 cupfuls of milk or water. If large quantities of this material are swallowed, call a physician immediately.

Notes to Physician: Medical personnel may leave this material in place to minimize physical damage to the skin or cover the material with a burn gel to prevent adhesion of the dressing to the material. Treat symptomatically and supportively.

**5. FIRE FIGHTING MEASURES**

<u>Flash Point:</u>			<u>Flammability Limits</u>	
			(Vol. % in Air)	
COC (ASTM D92)	>121°C	>250°F	Lower: ~1.0	Upper: ~7.0
PMCC (ASTM D93)	>90°C	>194°F		

Auto-Ignition Temperature: Not determined.

Extinguishing Media

For small fires, use dry chemical, carbon dioxide, water fog, foam, or alcohol-resistant foam. Use the most appropriate agent for the particular fire. Water may be ineffective. The fire could easily be spread by the use of water in an area where the water cannot be contained.

For large fires, use water spray, water fog, or aqueous film-forming foam (AFFF). Do NOT use straight water streams.

Fire Fighting Procedures

During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. As with any fire, firefighting personnel should wear full protective gear and a MSHA/NIOSH (approved or equivalent) self-contained breathing apparatus (SCBA) in pressure-demand mode. Cool adjacent structures and containers with water spray to protect and prevent ignition. This product is lighter than water and a fire may be spread by its use. Contaminated water run-off can cause environmental damage and might burn if involved in a fire. Dike and collect water used to fight the fire.

## 6. ACCIDENTAL RELEASE MEASURES

### General Information:

Shut off all ignition sources; no flares, smoking, or flames in the hazard area. Avoid exposures and use proper personal protective equipment identified in Section 8. Stop the leak if it can be done without risk.

Small Spill: Evacuate all non-essential personnel from immediate area and establish a “regulated zone” with site control and security. Do not touch or walk through spilled material. Stop the leak if it can be done without risk. Remove spillage immediately from hard, smooth walking areas. Prevent its entry into waterways, sewers, basements, or confined areas. Absorb spilled material with vermiculite, absorbent pads, etc. or cover with dry earth, sand, or other non-combustible material. Use clean, non-sparking tools to collect absorbed material. Transfer to appropriate sealed waste containers for later disposal.

Large Spill: Secure the area and control access. Dike far ahead of a liquid spill to ensure complete collection. Keep run-off from entering sewers and/or ditches that lead to waterways. Verify that responders are properly HAZWOPER-trained and wearing appropriate respiratory equipment and fire-resistant protective clothing during cleanup operations. In an urban area, cleanup spill as soon as possible; in natural environments, cleanup on advice from specialists. Pick up free liquid for recycle and/or disposal if it can be accomplished safely with explosion-proof equipment. Collect any excess material with absorbent pads, sand, or other inert non-combustible absorbent materials. Place into appropriate waste containers for later disposal. Comply with all laws and regulations and consult the appropriate regulatory agencies for reporting and disposal requirements.

## 7. HANDLING AND STORAGE

Handling: Keep away from ignition sources (e.g., heat, sparks, or open flames). Use in a well ventilated area. Avoid eye and skin contact, and inhalation of vapors. See Section 8 for personal protective equipment recommendations. Have safety showers/eye wash available in areas where splash hazards exist. Avoid breathing vapors or spray mists. Adequate ventilation should be provided if there is risk of aerosol formation. Ground all equipment containing material. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose containers to heat or sources of ignition. To avoid fire or explosion, dissipate static electrically during transfer by grounding and bonding containers and equipment before transferring material. Wash thoroughly after handling.

Empty containers may contain harmful, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld, reuse or dispose of containers unless adequate precautions are taken against those hazards.

Storage: Store in cool, dry, and well ventilated areas and away from incompatible materials. Where insulation of tankage and equipment is required, it is recommended that closed-cell foam insulation be used to minimize a potential auto-ignition hazard. Store in a segregated area. Potentially flammable atmospheres may be generated if material is held hot for prolonged periods. For prolonged storage at temperatures of 60°C and above, keep in rust-free tanks and exclude oxygen by use of a nitrogen blanket. Heating systems which generate localized hot spots should never be used. Suitable storage materials are: Mild steel/carbon steel. Store and use away from heat, sparks, open flame, or any other ignition source. Keep container tightly closed in a cool, well-ventilated place.

**8. EXPOSURE CONTROL/PERSONAL PROTECTION**

**Exposure Limits**

There are no established occupational exposure limits for this material.

**Exposure Control:**

Process enclosures, closed systems, and local exhaust ventilation should be used to control exposures. For spills or fires involving this product, always approach from upwind/uphill. Safety showers and eye wash stations should be located near areas with splash hazards.

**Personal Protection**

**Eye Protection:**

Wear chemical goggles if material is handled hot. In addition to safety glasses, full face shields and/or chemical splash goggles should be worn depending on the task.

**Skin Protection:**

Wear heat resistant protected gloves and clothing to withstand the temperature of molten product. Gloves, aprons, and chemical resistant garments should be selected with regard to the task to be performed and the hazard potential for skin contact. In general, garments and gloves made from rubber that have substantial thickness should be suitable for incidental splash protection. End users are strongly urged to consult glove/garment manufactures for specific guidance. Clothing contaminated with this product should be removed and laundered at an appropriate industrial laundry facility.

**Respiratory Protection:**

Air purifying respirators with organic vapor cartridges may be used if air-borne concentrations of the mixture's components are known. Refer to NIOSH's Respirator Decision Logic or the respirator manufacturer for specific guidance on the specific type of respirator to use. For fires, spills, or situations where the airborne concentration of the chemical is unknown, use a NIOSH approved, positive pressure, self-contained breathing apparatus (SCBA). Whenever workplace conditions warrant a respirator's use, comply with respiratory protection requirements that meet OSHA 29 CFR 1910.134, ANSI Z88.2, or European Standard EN 149.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<u>Physical Form:</u>	Clear, viscous liquid.	<u>Odor:</u>	Faint, characteristic.
<u>Initial Boiling Point:</u>	>400°F. (>204°C.)	<u>Melting Point:</u>	15° to 41°F. (-9° to -5°C.)
<u>Ph:</u>	Not soluble in water.	<u>Solubility in Water:</u>	Immiscible.
<u>Specific Gravity:</u>	0.89 to 0.91 (H <sub>2</sub> O = 1.0)	<u>% Volatile by Weight:</u>	0
<u>Vapor Pressure:</u>	Negligible at ambient conditions.	<u>Vapor Density:</u>	Not applicable.
<u>Evaporation Rate:</u>	Data not available.	<u>Average Molecular Weight:</u>	1,400 to 1,800

**10. STABILITY AND REACTIVITY**

**Stability:** Stable under normal temperatures and pressures.

**Conditions and Materials to Avoid:** None identified.

**Reactivity:** Incompatible with strong oxidizers (oxygen and peroxides) and bases.

Hazardous Decomposition:

This material begins to decompose in air at around 250°C (482°F). During a fire, rapid depolymerization produces flammable vapors. Incomplete burning can produce carbon monoxide and/or carbon dioxide and other harmful products.

Hazardous Polymerization: Will not occur.

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**11. TOXICOLOGICAL INFORMATION**

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This specific product has not been tested. However, the following information concerns similar polyisobutylene (polybutene) products.

Acute Toxicity Data:

Eye Irritation:	8/110 (rabbit).
Skin Irritation:	0.5/8.0 (rabbit).
Dermal LD50:	>10,250 mg/kg (rabbit).
Oral LD50:	>34,600 mg/kg (rat).
Inhalation LC50:	>17,300 mg/m <sup>3</sup> (rat).

Other Toxicity Data:

A polyisobutylene with an unidentified molecular weight produced an eye irritation score of 8 out of a possible total of 110 (rabbits) with complete disappearance of effects in 72 hours following exposure, indicating slight eye irritation potential. When applied to the skin of rabbits, it caused no deaths at 10,250 mg/kg and it scored 0.5 out of a possible total of 8.0, indicating negligible skin irritation potential. It was also non-irritating in 4-day repeated patch tests in humans.

Inhalation of this material for 4 hours at 865 mg/m<sup>3</sup> caused no deaths or untoward behavioral reactions in rats. When fed to rats at a 34,600 mg/kg dose, no deaths occurred in rats. A similar material showed no adverse health effects when fed to rats and dogs for a period of two years, or to rats in a three-generation reproductive study, at dietary concentrations as high as 2 percent.

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See the Registry of Toxic Effects of Chemical Substances (RTECS) for further information (UD1010000). Polyisobutylene is not a hazardous material according to European Community Directive 67/548/EC.

Chronic exposure:

Workers exposed to ethylene and isobutylene during the production of polyisobutylene have reported irritability, insomnia, headache, fatigue, bronchitis, skin disorders, and nasal mucous changes.

No component of this product at levels greater than 0.1% is identified as a carcinogen by ACGIH, IARC, NTP, or OSHA.

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## 12. ECOLOGICAL INFORMATION

Ecotoxicity Test Data: Texas Petrochemicals has not tested the ecotoxicity of this product. The following information was obtained from studies on similar polyisobutylenes (polybutenes).

Ecological Effects Risk Assessment: USEPA does not anticipate any undue risks to wild mammals or aquatic animals from use of polybutene. Due to polybutene's nature and consistency, mammals are unlikely to consume this material. Because polybutene is insoluble, contamination of water bodies is not expected to occur. In the future, when EPA implements the Endangered Species Protection Program, use of polybutene may be limited to protect endangered and threatened species. However, these limitations have not yet been defined.

Polybutenes have very low solubility in water. Aquatic studies of materials with very low water solubility often refer to the amount of chemical added to the test system, not the amount dissolved in water. Most acute aquatic toxicity studies of these have used the water-accommodated fraction (WAF) obtained by mixing the test chemical in water for 20 to 24 hours, then siphoning the water for use in the test. The water-soluble fraction (WSF) is a similar approach. Using the calculation method presented in the German Water Classification procedure, one can assign a WGK classification of zero to polybutenes. This classification indicates that polybutenes are not water endangering.

Tests of polybutene found no toxicity to the rainbow trout (*Oncorhynchus mykiss*) or fathead minnow (*Pimephales promelas*), two representative freshwater fish. The 96-hour LC50 for rainbow trout is at least 10,000 mg/L. The 96-hour LC50 for fathead minnows is greater than 1,000 mg/L, expressed as the nominal amount of test substance used to prepare the water-accommodated fraction.

Tests of the freshwater invertebrate *Daphnia magna* suggest that polybutenes are not toxic, although globules of undissolved test material may trap individuals. In a test of the water-accommodated fraction, the 48-hour EC50 exceeded 1,000 mg/L, the highest concentration tested. In a separate test of water-accommodated fraction of another similar material, the 48-hour EC50 exceeded 10,000 mg/L, the highest concentration tested.

Polybutenes are not expected to adversely affect microbial activity. Following a modified OECD Method 209, bacterial inhibition using activated sludge microbes was tested with several grades of polybutenes. The tests showed no bacterial inhibition at polybutene loadings of up to 25 mg/L, measured through oxygen consumption (respiration). In a separate test, the biological oxygen demand (BOD) of microorganisms was measured. In these tests, there was no evidence of bacterial toxicity, even at loadings of polybutenes of about 200,000 mg/L. In addition, an epoxidized polybutene was found to be non-mutagenic and non-toxic to the microorganism used in the Ames mutagenicity assay, *Salmonella typhimurium*.

Biodegradation Potential: In the BOD tests described above, only very slight biodegradation was measured. The oxygen demand is used in this test to measure how much polybutene is degraded by microorganisms. For all grades of polybutene, BOD was small and it decreased with increasing polybutene chain length. The reduced capacity of the microorganisms to decompose higher molecular weight polybutenes is probably due to the increased size of the polybutene molecules. Polybutenes are not expected to be readily biodegradable, although tests have not been conducted using the current OECD or USEPA test method.

Bioconcentration Potential: Testing not conducted. See Other Ecological Information below.

Other Ecological Information: Polybutenes are not expected to be bioconcentrated or bioaccumulated by organisms because they are poorly soluble in water and many organic solvents, and because their molecular size minimizes bioavailability. The weight of evidence from toxicity tests, comparisons with structurally similar chemicals, and professional judgment indicates that polybutenes are non-hazardous in the environment.

**13. DISPOSAL CONSIDERATIONS**

Disposal must be in accordance with all applicable regulations and the user of this product is urged to consult local, state, and federal regulatory agency guidelines regarding proper disposal. Determine waste classification at time of disposal. Conditions of use may render the spent product a hazardous waste. Enclosed-controlled incineration is recommended unless directed otherwise by applicable ordinances. Since emptied containers retain product residue, follow product warnings even after container is emptied.

**14. TRANSPORTATION INFORMATION**

*When polyisobutylene is shipped at temperatures less than 100°C (212°F), it is not regulated by the U.S. Department of Transportation. The following applies only if polyisobutylene is shipped at temperatures exceeding 100°C (212°F).*

<u>D.O.T. Shipping Name:</u>	Elevated temperature liquid, n.o.s.
<u>D.O.T. Hazard Class:</u>	9
<u>U.N. Number</u>	UN 3257
<u>Packing Group:</u>	III
<u>Emergency Response Guide Number:</u>	128
<u>Reportable Quantity:</u>	A Reportable Quantity (RQ) has not been established for this product.
<u>International Information:</u>	Sea (IMO/IMDG) Shipping Name: Elevated temperature liquid, n.o.s. Air (ICAO/IATA) Shipping Name: Not regulated for non-bulk shipments only. Bulk shipment is prohibited. European Road/Rail (ADR/RID) Shipping Name: Not regulated. Canadian Transportation of Dangerous Goods Shipping Name: Elevated temperature liquid, n.o.s.

**15. REGULATORY INFORMATION**

**OSHA:** This product has been evaluated and does not require any hazard warning on the label under OSHA criteria.

**EPA:**

SARA Title III: This product is not on the Extremely Hazardous Substance List, Section 302/304.

This product is subject to provisions of Section 311 and 312. This product does not contain any chemicals subject to the reporting requirement of section 313 and 40 CFR 372.

SARA Section 312 Hazard Classes: Acute (Immediate) Health and possibly Chronic (Delayed) Health.

TSCA: The component shown in Section 2 (CAS# 9003-29-6) is listed on the TSCA Inventory.

CERCLA: This product is not reportable per 40 CFR Part 302.4.

Clean Air Act: This material does not contain any Class 1 or Class 2 Ozone Depletors. However, this substance is designated as a Section 111 Volatile Organic Compound per CFR.40 Part 60 (1995). VOCs are subject to compliance with the emission standards set forth in subparts of 40 CFR Part 60.

Clean Water Act: This product does not contain any chemicals that are listed as Hazardous Substances, Priority Pollutants, or Toxic Pollutants associated with the CWA.

Pesticide Reregistration: All polybutene end-use products must comply with EPA's current pesticide product labeling requirements, and with the following:

**Environmental Hazards** - All polybutene products must bear the following statement in the Environmental Hazards section of the label:

“Small birds may become fatally entrapped by this tacky repellent. To reduce hazards to legally protected species, and to avoid noncompliance with the Federal Migratory Bird Treaty Act, follow all instructions in the Direction for Use.”

**Worker Protection** – All currently registered products containing polybutene are outside the scope of the Worker Protection Standard for Agricultural Pesticides (WPS). The personnel protective equipment required for products that contain polybutene will be determined by the toxicity of the end-use product.

EPA is requiring the following statement on the label of the liquid formulation product:

“Do not apply liquid products in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.”

**FDA Food Contact Status:**

Polyisobutylenes (Polybutenes) are approved for use under the following sections of 21 CFR:

**Part 175.105** as a component of adhesives in food packaging when used in accordance with the specifications of this subpart.

**Part 175.300** as a component of resinous and polymeric coatings for food contact surfaces when used in accordance with the specifications of this subpart.

**Part 176.170** as a component of paper and paperboard in contact with aqueous and fatty foods when used in accordance with the specifications of this subpart.

**Part 176.180** as a component of paper and paperboard in contact with dry food when used in accordance with the specifications of this subpart.

**Part 177.1430** as a component of articles intended for use in contact with food when used in accordance with the specifications of this subpart.

**Part 178.3570** as a lubricant for use on machinery with incidental food contact when used in accordance with the specifications of this subpart.

**Part 178.3910** as a surface lubricant used in the manufacture of metallic articles that contact food, subject to the provisions of this subpart.

**Part 177.2800** as a component of textiles and textile fibers used in the manufacture of articles subject to the provisions of this subpart.

**Part 177.1520** as a plasticizer in polyethylene used in the manufacture of articles subject to the provisions of this subpart.

**Part 177.1640** as a plasticizer in polystyrene used in the manufacture of articles subject to the provisions of this subpart.

**Part 178.3740** as a plasticizer in polymeric substances used in the manufacture of articles or components of articles intended for use with food when used in accordance with the specifications listed in this subpart.

**Part 175.125** as a component of pressure-sensitive adhesives used as the food contact surface of labels and/or tapes applied to food in accordance with the prescribed conditions of this subpart.

**Part 176.210** as a component of defoaming agents used in the manufacture of paper and paperboard intended for use with food in accordance with the prescribed conditions of this subpart.

**Part 177.2260(d)(2)** as a component of resin-bonded filters used in producing, manufacturing, processing, and preparing food subject to the provisions of this subpart.

The California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) requires warning be given for ingredients known to the State of California to cause cancer, birth defects, or other reproductive toxicity. To the best of our knowledge, this product does NOT contain any known chemical substances subject to this statute.

### **International Regulations:**

#### Risk/Safety Statements for Labeling in Accordance with European Union Directive 2001/59/EC:

Risk Phrases:

R34: Causes burns.

R36/R37/R38: Irritating to eyes, respiratory system, and skin.

R66: Repeated exposure may cause skin dryness or cracking.

Safety Phrases:

S16: Keep away from sources of ignition. – No smoking.

S24/S25: Avoid contact with skin and eyes.

S27/S28: After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water.

S29/S35: Do not empty into drains; dispose of material and its container in a safe way.

S36/S37/S39: Wear suitable protective clothing, gloves, and eye/face protection.

S62: If swallowed, do not induce vomiting; seek medical advice immediately and show this container or label.

#### Canada – Designated Substance List (DSL)/Non- Designated Substance List (NDSL):

CAS# 9003-29-6 is listed on Canada's DSL List.

#### Canada – World Hazardous Materials Identification System (WHMIS):

This product is not a Controlled Product under WHMIS classification.

CAS# 9003-29-6 is listed on the European Community Inventory (EINECS/ELINCS), Japanese Inventory (MITI), Australian Inventory (AICS), China Inventory (IECS), Korean Inventory (ECL), and the Philippine Inventory (PICCS).

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**16. OTHER INFORMATION**

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This Texas Petrochemicals LP polyisobutylene product has been Certified by NSF International (formerly the National Sanitation Foundation) for safe use in products that transport potable water or as a component of or incidentally comes into contact with potable water systems. It may bear the “NSF Mark” shown below.



The information presented herein is to the best of the company’s knowledge true and reliable. This information is supplied for informational purposes only, and without any guarantee or warranty, expressed or implied, regarding its accuracy, correctness, or completeness. Since the actual use of the product by others is beyond our control, Texas Petrochemicals LP assumes no responsibility or liability for loss, damage, or expense arising out of any use by others of the product(s) referred to herein.

*Section(s) revised in this edition: 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 16.*

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