Material Safety Data Sheet

STYRENE

September 30, 1994

PHONE NUMBERS

PHILLIPS 66 COMPANY
A Division of Phillips Petroleum Company
Bartlesville, Oklahoma 74004

Emergency: (918) 661-8118
General MSDS Information: (918) 661-8327
For Additional MSDSs: (918) 661-5952

A. Product Identification

Synonyms: Phenylethylene; Vinylbenzene; Styrol; Inhibited Styrene
Chemical Name: Ethenylbenzene
Chemical Family: Aromatic Hydrocarbon
Chemical Formula: C8H8
CAS Reg. No.: 100-42-5
Product No.: 000311

Product and/or Components Entered on EPA's TSCA Inventory: Yes

This product is in U.S. commerce, and is listed in the Toxic Substances
Control Act (TSCA) Inventory of Chemicals; hence, it may be subject to
applicable TSCA provisions and restrictions.

B. Components

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS Number</th>
<th>% By Wt.</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Styrene</td>
<td>100-42-5</td>
<td>&gt; 99</td>
<td>50 ppm</td>
<td>50 ppm</td>
</tr>
</tbody>
</table>

C. Personal Protection Information

Ventilation: Use adequate ventilation to control concentration
below recommended exposure limits.

Respiratory Protection: For concentrations exceeding the recommended
exposure limit, use NIOSH/MSHA approved air
purifying respirator. In case of spill or leak
resulting in unknown concentration, use
NIOSH/MSHA approved supplied air respirator.

Eye Protection: For splash protection use chemical goggles and
face shield.

Skin Protection: Use gloves resistant to the material being used.
 ie. Nitrile, or Polyvinyl Alcohol (PVA)). Use
protective garments to prevent skin contact.

NOTE: Personal protection information shown in Section C is based upon general information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

D. Handling and Storage Precautions

Do not swallow. May be aspirated into lungs. Do not get in eyes, on skin, or on clothing. Do not breathe vapors, mist, fumes or dust. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. Wash thoroughly after handling. Launder contaminated clothing before reuse. Use only with adequate ventilation.

Store in tightly closed container. Store in well-ventilated area. Keep away from heat, sparks, and flames. Bond and ground during transfer.

E. Reactivity Data

Stability: Stable

Conditions to Avoid: Low inhibitor concentrations, low oxygen concentration, exposure to heat.

Incompatibility (Materials to Avoid): Oxygen or strong oxidizing materials, water, caustic, peroxides, aluminium chloride, copper, copper alloys and metal hallides.

Hazardous Polymerization: Will Not Occur

Conditions to Avoid: Exposure to heat, light or ignition sources. Loss of inhibitor or dissolved oxygen level.

Hazardous Decomposition Products: Carbon oxides formed when burned. May also produce irritating and/or toxic fumes.

F. Health Hazard Data

Recommended Exposure Limits:

See Section B.

Acute Effects of Overexposure:

Eye: The liquid or vapor will cause transient irritation.

Skin: Slight irritation. Prolonged or repeated contact with the liquid may cause defatting of the skin resulting in drying, redness, and possibly blistering.

Inhalation: May cause headache, nausea, dizziness, muscle weakness. Produces central nervous system depression. Irritates nose, throat and lungs.

Ingestion: May cause nausea, headache, dizziness, muscle weakness. Produces central nervous system depression, and diarrhea. If swallowed, may be aspirated resulting in inflammation and possible fluid accumulation in the lungs.
Subchronic and Chronic Effects of Overexposure:

Styrene has been judged by IARC (International Agency for Research on Cancer) as animal positive for the production of cancer but re-examination in inhalation and feeding studies has not confirmed this finding. Styrene exposures in laboratory animals have been reported to cause physiological changes to liver and kidneys with the absence of any observable histopathology.

Styrene has been found to cause chromosome changes plus changes to the genetic material in the nucleus of cells. Toxicity to the fetus has been reported in laboratory animal tests but this has not been confirmed in repeated testing. No reproduction abnormalities have been reported.

Other Health Effects:

No known applicable information.

Health Hazard Categories:

<table>
<thead>
<tr>
<th></th>
<th>Animal</th>
<th>Human</th>
<th>Animal</th>
<th>Human</th>
</tr>
</thead>
<tbody>
<tr>
<td>Known Carcinogen</td>
<td><em>X</em></td>
<td>___</td>
<td>Toxic</td>
<td>___</td>
</tr>
<tr>
<td>Suspect Carcinogen</td>
<td>___</td>
<td>___</td>
<td>Corrosive</td>
<td>___</td>
</tr>
<tr>
<td>Mutagen</td>
<td>___</td>
<td>___</td>
<td>Irritant</td>
<td>___</td>
</tr>
<tr>
<td>Teratogen</td>
<td>___</td>
<td>___</td>
<td>Target Organ Toxin</td>
<td><em>X</em></td>
</tr>
<tr>
<td>Allergic Sensitizer</td>
<td>___</td>
<td>___</td>
<td>Specify - Reproductive Toxin-Organ and Function; Liver &amp; Kidney Toxin; Lung-Aspiration Hazard</td>
<td>___</td>
</tr>
<tr>
<td>Highly Toxic</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
</tbody>
</table>

First Aid and Emergency Procedures:

Eye: Flush eyes with running water for at least fifteen minutes. If irritation or adverse symptoms develop, seek medical attention.

Skin: Wash skin with soap and water for at least fifteen minutes. If irritation or adverse symptoms develop, seek medical attention.

Inhalation: Remove from exposure. If breathing becomes difficult or irritation develops, seek medical attention.

Ingestion: Do not induce vomiting. Seek immediate medical attention.

Note to Physician: Gastric lavage using a cuffed endotracheal tube may be performed at your discretion.

G. Physical Data

Appearance: Colorless Liquid
Odor: Sweet, pungent odor
Boiling Point: 293°F (145°C)
Vapor Pressure: 4.5 mm Hg at 68°F (20°C)
Vapor Density (Air = 1): 3.6
Solubility in Water: Negligible
Specific Gravity (H2O = 1): < 1
Percent Volatile by Volume: 90-92
Evaporation Rate (Butyl Acetate = 1): < 1
Viscosity: Not Established
H. Fire and Explosion Data

Flash Point (Method Used): 88F (31C) (ASTM D56, TCC)
Flammable Limits (% by Volume in Air): LEL - 1.1
UEL - 6.1

Fire Extinguishing Media: Dry chemical, foam, water fog, carbon dioxide (CO2)

Special Fire Fighting Procedures: Evacuate area of all unnecessary personnel. Wear appropriate safety equipment for fire conditions including NIOSH/MSHA self-contained breathing apparatus (SCBA) and other protective equipment and/or garments described in Section C if exposure conditions warrant. Shut off source. Use water fog or spray to cool exposed equipment and containers and to disperse flammable vapors. Do not spray water directly on fire - product will float and could be reignited on surface of water.

Fire and Explosion Hazards: Vapors which are heavier than air may accumulate in low areas and/or spread along the ground. Flashback along vapor trail may occur. Carbon oxides may be released when burned along with other irritating and/or toxic fumes.

I. Spill, Leak and Disposal Procedures

Precautions Required if Material is Released or Spilled:
Evacuate area of all unnecessary personnel. Wear protective equipment and/or garments as described in Section C if exposure conditions warrant. Shut off source, and contain spill. Protect from ignition. Keep out of water sources and sewers. Absorb in dry, inert material. Transfer using non-sparking equipment to disposal containers.

Waste Disposal (Insure Conformity with all Applicable Disposal Regulations):
Incinerate or otherwise manage in a RCRA permitted waste management facility.

J. DOT Transportation

Shipping Name: Styrene monomer, inhibited
Hazard Class: 3 (Flammable liquid)
ID Number: UN 2055
Packing Group: III
Marking: Styrene monomer, inhibited, UN 2055, RQ*, Marine Pollutant**
Label: Flammable liquid
Placard: Flammable/2055

Hazardous Substance/RQ: Styrene/#1000
Shipping Description: Styrene monomer, inhibited, 3 (Flammable liquid), UN 2055, PG III, RQ*, Marine Pollutant**
Packaging References: 49 CFR 173.150, 173.203, 173.242

* Enter the letters "RQ" as shown only if the hazardous substance is present in a quantity, in one package, which equals or exceeds the reportable quantity (RQ) shown for the hazardous substance.
** Marine pollutant mark and shipping paper notation required for all bulk domestic shipments and for non-bulk shipments by water.

K. **RCRA Classification – Unadulterated Product as a Waste**

Ignitable-(D001)

Prior to disposal, consult your environmental contact to determine if TCLP (Toxicity Characteristic Leaching Procedure, EPA Test Method 1311) is required. Reference 40 CFR Part 261.

L. **Protection Required for Work on Contaminated Equipment**

Contact immediate supervisor for specific instructions before work is initiated. Wear protective equipment and/or garments described in Section C if exposure conditions warrant.

M. **Hazard Classification**

_X_ This product meets the following hazard definition(s) as defined by the Occupational Safety and Health Hazard Communication Standard (29 CFR Section 1910.1200):

___ Combustible Liquid ___ Flammable Aerosol ___ Oxidizer
___ Compressed Gas ___ Explosive ___ Pyrophoric
___ Flammable Gas _X_ Health Hazard (Section F) ___ Unstable
_X_ Flammable Liquid ___ Organic Peroxide ___ Water Reactive
___ Flammable Solid\n
___ Based on information presently available, this product does not meet any of the hazard definitions of 29 CFR Section 1910.1200.

N. **Additional Comments**

SARA 313

This product contains the following chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. (See Section B).

Styrene

Phillips Petroleum Company (references to Phillips Petroleum Company or Phillips includes its divisions, affiliates and subsidiaries) believes that the information contained herein (including data and statements) is accurate as of the date hereof. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE AS CONCERNS THE INFORMATION HEREIN PROVIDED. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use of the product and information referred to herein are beyond the control of Phillips, Phillips expressly disclaims any and all liability as to any results obtained or arising from any use of the product or such information. No statement made herein shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents.