MATERIAL SAFETY DATA SHEET

Section 1: Product and Company Identification

Product Name: STABAXOL P 66D
Article Number: 407880
Product Code: 220000, 220001
Chemical Family: Aromatic Polycarbodiimide

Section 2: Composition/Information on Ingredients

HAZARDOUS INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>CAS Number</th>
<th>Exposure Limits</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon Dioxide (Amorphous)</td>
<td>7631-86-9</td>
<td>OSHA (PEL):</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.00 mg/m³ TWA</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH (TLV):</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10.00 mg/m³ TWA</td>
<td></td>
</tr>
</tbody>
</table>

OTHER INGREDIENTS

The following potentially hazardous chemical(s) are contained at levels below OSHA reporting requirements, but may be released during processing.

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>CAS Number</th>
<th>Exposure Limits</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crystalline Silica (Quartz)</td>
<td>14808-60-7</td>
<td>OSHA (PEL):</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30.00 mg/m³ TWA</td>
<td>0.0001%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Dust</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10.00 mg/m³ TWA</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respirable Dust</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH (TLV):</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.10 mg/m³ TWA</td>
<td></td>
</tr>
</tbody>
</table>
Section 3: Hazards Identification

EMERGENCY OVERVIEW

WARNING! No Physical Hazards  Color: Yellow to Brown  Odor: Slight Odor
May cause mechanical irritation to the eyes, skin and respiratory tract. May cause
allergic respiratory reaction. May cause allergic skin reaction. Toxic gases/fumes are
given off during burning or thermal decomposition and may cause allergic skin and
respiratory reaction. Melted product is flammable and produces intense heat and dense
smoke during burning.

POTENTIAL HEALTH EFFECTS

Route(s) of Entry: Inhalation, Skin Contact, Eye Contact

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

Inhalation Hazards
Acute Inhalation Hazards: Isocyanate vapors or mist can irritate (burning sensation) the mucous
membranes in the respiratory tract (nose, throat, lungs) causing
runny nose, sore throat, coughing, chest discomfort, shortness of
breath and reduced lung function (breathing obstruction). Persons
with a preexisting, nonspecific bronchial hyperreactivity can respond
to concentrations below the exposure limit with similar symptoms as
well as asthma attack. Exposure to high vapor concentrations may
lead to bronchitis, bronchial spasm and pulmonary edema (fluid in
lungs). These effects are usually reversible. Chemical or
hypersensitive pneumonitis, with flu-like symptoms (e.g., fever,
chills) has also been reported. These symptoms can be delayed up to
several hours after exposure.

Chronic Inhalation Hazards: As a result of previous repeated overexposures or a single large dose,
certain individuals may develop isocyanate sensitization (chemical
asthma) which will cause them to react to a later exposure to
isocyanate at levels well below the suggested exposure limit. These
symptoms, which can include chest tightness, wheezing, cough,
shortness of breath or asthma attack, could be immediate or delayed
(up to several hours after exposure). Similar to many non-specific
asthmatic responses, there are reports that once sensitized an
individual can experience these symptoms upon exposure to dust,
cold air or other irritants. This increased lung sensitivity can persist
for weeks and in severe cases for several years. Overexposure to
isocyanates has also been reported to cause lung damage (including
decrease in lung function) which may be permanent. Sensitization
can either be temporary or permanent.

Skin Hazards
Acute Skin Hazards: Isocyanates react with skin protein and moisture and can cause
irritation which may include the following symptoms: reddening,
swelling, rash, scaling, or blistering.

Chronic Skin Hazards: Prolonged contact can cause reddening, swelling, rash, scaling,
blistering, and in some cases, skin sensitization. Individuals who
have skin sensitization can develop these symptoms from contact with liquid or vapors.

**Eye Hazards**

**Acute Eye Hazards:** Isocyanate vapors are irritating and can cause tearing, reddening and swelling. If left untreated, corneal damage can occur and injury is slow to heal. However, damage is usually reversible.

**Chronic Eye Hazards:** None reported for the product.

**Ingestion Hazards**

**Acute Ingestion Hazards:** Ingestion of isocyanates can result in irritation of the mouth, stomach tissue and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea.

**Chronic Ingestion Hazards:** None reported

**Carcinogenic Components:**

- **NTP:** None
- **IARC:** None
- **OSHA:** None

**Medical Conditions Aggravated by Exposure:** May aggravate existing eye, skin or respiratory conditions.

**Human Health Effects Postnote:** PRODUCT AS A WHOLE: Mechanical irritation can be produced if this product is introduced into the eye. Small quantities of isocyanates, DIPPI and TRIDI, may be released when drums are opened for the first time. Air sampling on similar products has shown these levels to be below the suggested exposure limit. In addition, if this material is heated above 350 F (177 C) (i.e. during thermal processing), DIPPI and TRIDI vapors may be generated. Results from air-sampling on similar products show that DIPPI and TRIDI concentrations which exceed the suggested exposure limit may be present during thermal processing. The following effects reflect the potential health hazards associated with overexposure to isocyanates in general.

### Section 4: First Aid Measures

**First Aid for Eye:** In case of contact, flush eyes with large quantities of water for at least 15 minutes. Get medical attention if irritation develops or persists.

**First Aid for Skin:** Immediately remove contaminated clothing and shoes. In case of skin contact, wash affected areas with soap and water. Get medical attention if irritation develops or persists. Wash clothing and clean shoes before reuse. If molten material gets on skin, cool rapidly with cold water. Never pull off molten material from the wound. Get medical attention.

**First Aid for Inhalation:** If inhaled, remove to fresh air. If breathing is difficult, give oxygen.
If not breathing, give artificial respiration. Get medical attention.

**First Aid for Ingestion:**

If material is ingested, do not induce vomiting unless directed to do so by medical personnel. Give victim one or two glasses of water or milk. Never give anything by mouth to an unconscious person. Should vomiting occur, keep patients head below hip level to prevent aspiration of fluid into the lungs. Call a physician.

**Note to Physician:**

Treat symptomatically. The following courses of action are suggested if overexposure to isocyanates is suspected. EYES: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic steroid preparation frequently. Workplace vapors have produced reversible corneal epithelial edema impairing vision. If burned, treat as thermal burn. RESPIRATORY: DIPPI and TRIDI may be pulmonary sensitizers. An individual having a skin or pulmonary sensitization reaction to this material should be removed from exposure to any isocyanate. SKIN: DIPPI and TRIDI may be a skin sensitizer. If a blue discoloration of the skin occurs, treat patient for cyanosis and the onset of methemoglobinemia. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the product.

### Section 5: Fire Fighting Measures

**Flash Point:** 590 °F (310 °C) ISO 2592

**Flammable Limits:**

- **Upper Explosion Limit (UEL %):** Not Established
- **Lower Explosion Limit (LEL %):** Not Established

**Auto-ignition Temperature:** 851 °F (455 °C) DIN 51794

**Extinguishing Media:**

- **Suitable:** Water, Dry Chemical, Foam, Carbon Dioxide, Water spray for large fires.

**Special Fire Fighting Procedures:**

Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters. During a fire, irritating and toxic gases may be generated by thermal decomposition or combustion. Use cold water spray to cool fire exposed containers.

**Unusual Fire/Explosion Hazards:**

Dusts at sufficient concentrations can form explosive mixtures with air.

### Section 6: Accidental Release Measures

**Spill or Leak Procedures:**

Extinguish all ignition sources. Keep unnecessary personnel out of spill area. If molten material is spilled, allow it to solidify. Remove mechanically by method which minimizes generation of airborne dust, and place in appropriately marked containers for disposal.
Place in properly marked containers for disposal. Remove containers to a safe place. Wash down spill area with decontamination solutions listed in decontamination section.

**Neutralization Chemicals:**

1: Mixture of water (80%) with non-ionic surfactant Tergitol TMN-10 (supplier is OSI) (20%)  
2: Water (90%), concentrated ammonia (3-8%) and detergent (2%). Let cleaning solution stand for at least 15 minutes. Place in appropriately marked drums for disposal.

**Other Accidental Release Notes:**

Rhein Chemie requires that CHEMTREC be immediately notified (800-424-9300) when this product is unintentionally released from its container during its course of distribution, regardless of the amount released. Distribution includes transportation, storage incidental to transportation, loading and unloading. Such notification must be immediate and made by the person having knowledge of the release.

### Section 7: Handling and Storage

**Storage Temperature:** Not Established - Ambient Recommended  
**Shelf Life:** Not Determined  
**Special Sensitivity:** Heat. Moisture.  
**Handling/Storage Precautions:** Vent storage bins, conveyors, dust collectors, ground handling equipment, etc. All handling equipment should be properly grounded to prevent the build-up of electrostatic charges. Keep open flames, sparks and heat away from dusty areas. Handle in accordance with good industrial hygiene and safety practices. Keep container tightly closed when not in use. Do not reseal container if contamination is suspected. Avoid contact with eyes and skin. Avoid contact with skin or clothing.

### Section 8: Exposure Controls/Personal Protection

**Personal Protection Equipment**

**Eye Protection Requirements:** Chemical safety goggles, full-face shield.  
**Skin Protection Requirements:** Chemically resistant gloves recommended (neoprene), Cover as much of the exposed skin area as possible with appropriate clothing, coveralls, apron and boots., If skin creams are used, keep the area covered by the cream to a minimum.  
**Ventilation Requirements:** Provide natural or mechanical exhaust ventilation to control gases and fumes given off during processing, cutting, regrinding, heat-welding, soldering, purging, or any other operation involving heat sufficient to result in fumes, vapors or product breakdown. 2,4,6-Triisopropyl-m-phenylene Diisocyanate and Diisopropylphenyl Isocyanate (DIPPI) could be liberated in small amounts (trace). Diisopropylphenyl Isocyanate (DIPPI) and 2,4,6-Triisopropyl-
phenylene diisocyanate (TRIDI) could be liberated in small amounts. Standard reference sources regarding industrial ventilation (i.e., ACGIH Industrial Ventilation) should be consulted for guidance about adequate ventilation.

**Respirator Requirements:** An approved, positive pressure air-supplied respirator is required whenever isocyanate concentrations are not known or exceed the suggested exposure limits listed in Section 2. A supplied air respirator (either positive pressure or continuous flow type) is required. Isocyanates have poor warning properties, since the odor at which they can be smelled is substantially higher than 0.005 ppm. Observe OSHA regulations for respirator use (29 CFR 1910.134.)

**Monitoring Requirements:** Isocyanate exposure levels must be monitored by accepted monitoring techniques to ensure that the suggested exposure limit is not exceeded. See Volume 1 (Chapter 17) and Volume 3 (Chapter 3) in Patty's Industrial Hygiene and Toxicology for sampling strategy.

**Medical Surveillance:** Medical supervision of all employees who handle or come in contact with isocyanates is recommended. This should include preemployment and periodic medical examinations with respiratory function tests (FEV, FVC as a minimum). Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with isocyanates. Once a person is diagnosed as sensitized to isocyanates, no further exposure can be permitted.

**Additional Protective Measures:** The greatest potential for injury occurs when working with molten polymeric resins, such as during a purge of a molding machine, extruder and the like. During this type of operation it is essential that all workers in the immediate area wear eye protection and skin protection (sleeves, gloves, etc.) as protection from thermal burns. Purgings should be collected as small flat thin shapes or thin strands to allow for rapid cooling. Precautions should be taken against auto-ignition of hot, thick masses of the plastic. Quench with water. Grinder dust is an exposure hazard. Safety showers and eyewash stations should be accessible to the work area. Educate and train employees on the safe use and handling of this product. Follow all label instructions.

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### Section 9: Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>Yellow to Brown</td>
</tr>
<tr>
<td>Odor:</td>
<td>Slight Odor</td>
</tr>
<tr>
<td>Odor Threshold:</td>
<td>Not Established</td>
</tr>
<tr>
<td>pH:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Melting/Freezing Point:</td>
<td>140 - 194 °F (60 - 90 °C)</td>
</tr>
<tr>
<td>Viscosity:</td>
<td>Not Applicable</td>
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<tr>
<td>Solubility in Water:</td>
<td>Insoluble</td>
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<tr>
<td>Specific Gravity:</td>
<td>Approximately 1.05 @ 68 °F (20 °C)</td>
</tr>
<tr>
<td>Bulk Density:</td>
<td>Not Established</td>
</tr>
<tr>
<td>Vapor Pressure:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Vapor Density:</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>
Section 10: Stability and Reactivity

Stability: Stable

Hazardous Polymerization: Will not occur

Substances to Avoid: Amines, strong bases, alcohols.

Conditions to Avoid: Ground materials are capable of dust explosion., Depending on the polymer processed, decomposition begins at processing temperatures of approximately 120 C and above., Slight decomposition may occur at or above the melting point.

Decomposition Temperature: Approximately 248 °F (120 °C)

Decomposition Products: By fire or thermal decomposition: Carbon monoxide (CO), carbon dioxide (CO2), oxides of nitrogen (NOx), traces of hydrogen cyanide (HCN), 2,6-diisopropylphenyl isocyanate (DIPPI), 2,4,6-Triisopropyl-m-phenylene diisocyanate (TRIDI), aniline derivatives, and carbamates may be produced., At temperatures above 350 F (180 C) the aromatic urea formed from the carbodiimide-water reaction thermally degrades to the corresponding isocyanate and amine.

Section 11: Toxicological Information

Toxicity Data for STABAXOL P 66D

Acute oral toxicity: LD50 = > 5,000 mg/kg (Rat)  Source: Tests performed on a similar product

Eye Irritation: Slightly irritating (Rabbit)  Source: Tests performed on a similar product

Skin Irritation: Non-irritating (Rabbit)  Source: Tests performed on a similar product

Mutagenicity: Negative test results (Ames Salmonella Test)

Toxicity Data for Silicon Dioxide (Amorphous)

Acute oral toxicity: LD50 = > 22,500 mg/kg (Rat)

LD50 = > 15,000 mg/kg (Mouse)

Carcinogenicity: Although pulmonary fibrosis has been reported from workers exposed to amorphous silica, the crystalline form is the established cause of fibrotic response in the lung. However, the amorphous form has been reported fibrogenic to a lesser extent.
Section 12: Ecological Information

Ecological Data for STABAXOL P 66D
Fish Toxicity: > 10,000 mg/L, 6 hrs. Zebra fish (Brachydanio rerio)

Inhibition Bacteria: EC50: > 10,000 mg/L,

Ecological Note: Water Pollution Class WGK 0 - not generally hazardous to water (German Water Resources Act)

Ecological Data for Silicon Dioxide (Amorphous)
Fish Toxicity: > 10,000 mg/L, 72 hrs. Carp (Cyprinus Carpio)

> 10,000 ppm, 4 Days. Rainbow trout (Salmo gairdneri)

Invertebrate Toxicity: > 1,000 ppm, 24 hrs. Water flea (Daphnia magna)

Section 13: Disposal Considerations

Waste Disposal Method: Disposal must be in compliance with federal, state and local environmental control regulations. If incinerated, toxic and corrosive combustion gases must be properly handled.

Empty Container Precautions: Empty container retains product residue and can be hazardous. Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat, flame, sparks, static electricity, or other sources of ignition. Recondition or dispose of empty container in accordance with government regulations.

Section 14: Transportation Information

Technical shipping name: Aromatic Polycarbodiimide

Freight Class
Bulk: Plastic Materials
Package: Plastic Materials, O/T Exp. (Granules)

Product Label: Product Label Established

Domestic Surface Transportation (DOT)
Hazard Class or Division: Non-Regulated

Marine Transportation (IMO / IMDG)
Hazard Class Division Non-Regulated
Number:

Air Transportation (ICAO / IATA)
Hazard Class Division Non-Regulated
United States Federal Regulations

OSHA Hazcom Standard: Hazardous

TSCA Inventory List: On TSCA Inventory

CERCLA Hazardous Substance:

<table>
<thead>
<tr>
<th>Component(s)</th>
<th>Reportable Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
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</tbody>
</table>

SARA Title III

SARA Section 302 Extremely Hazardous Substances:

<table>
<thead>
<tr>
<th>Component(s)/CAS Number</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Min.</td>
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</table>

SARA Section 311/312 Hazard Categories:

Immediate Health Hazard, Delayed Health Hazard

SARA Section 313 Toxic Chemicals:

<table>
<thead>
<tr>
<th>Component(s)/CAS Number</th>
<th>Reporting Threshold</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Min.</td>
<td>Max.</td>
</tr>
</tbody>
</table>

RCRA Status:

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

State Right-to-Know Information

<table>
<thead>
<tr>
<th>Component(s)/CAS Number</th>
<th>State Code</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aromatic Polycarbodiimide</td>
<td>PA-N, NJ-N</td>
<td>60%</td>
<td>100%</td>
</tr>
<tr>
<td>NJTSRN:000005296</td>
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<tr>
<td>Silicon Dioxide (Amorphous)</td>
<td>PA-H, NJ-H, MA-H</td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td>7631-86-9</td>
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</tr>
</tbody>
</table>

The following component(s) are listed under Massachusetts Extra-ordinary Hazards:

Crystalline Silica (Quartz) MA-X 0.1%
14808-60-7

The following component(s) are listed under California Proposition 65:
Crystalline Silica (Quartz)  CA-C  0.1%
14808-60-7

State Code Translation Table
PA-N = Pennsylvania Non-hazardous
PA-H = Pennsylvania Hazardous Substance List
NJ-N = New Jersey Other - includes predominant ingredients
NJ-H = New Jersey Hazardous Substance List
MA-H = Massachusetts Hazardous Substance List
MA-X = Massachusetts Extra-ordinary Hazardous Substance List
CA-C = Warning! This chemical is known to the State of California to cause cancer.

Section 16: Other Information

HMIS Rating

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Health</td>
<td>*1</td>
</tr>
<tr>
<td>Flammability</td>
<td>1</td>
</tr>
<tr>
<td>Reactivity</td>
<td>1</td>
</tr>
</tbody>
</table>

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe
*=Chronic Health Hazard

RHEIN CHEMIE CORPORATION’s method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. HMIS and NFPA ratings are provided by RHEIN CHEMIE CORPORATION as a customer service.

Contact:  HES Dept.
Phone:  (440) 285-3547
MSDS Number: R36203
Version Date: 10/12/2006
MSDS Version: 1.31

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Indicates Relevant Change Made.