The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

"ZYTEL" HTN HIGH PERFORMANCE POLYAMIDE RESINS ALL IN SYNONYM LIST
ZYT137
ZYT137 Revised 31-MAY-2001

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"ZYTEL" is a registered trademark of DuPont.

Tradenames and Synonyms

"ZYTEL" HTNFE5440 NC010,
"ZYTEL" HTNFE5444 NC010,
"ZYTEL" HTNFE5478 BNB456, HTNFE5478 GYB624,
"ZYTEL" HTNFE5478 NC010,
"ZYTEL" HTNFE5481 BK337, HTNFE5481 NC010,
"ZYTEL" HTNFE5482 BK337, HTNFE5482 NC010,
"ZYTEL" HTNFE5483 BK337, HTNFE5483 NC010,
"ZYTEL" HTNFE5484 BK337, HTNFE5484 NC010,
"ZYTEL" HTNFE5485 BK337,
"ZYTEL" HTNFE15502 BK337, HTNFE15502 GYB624,
"ZYTEL" HTNFE15502 NC010,
"ZYTEL" HTNFR52G15AL BK337, HTNFR52G15AL NC010,
"ZYTEL" HTNFR52G30AL BK337, HTNFR52G30AL GYB624,
"ZYTEL" HTNFR52G30AL NC010;
"ZYTEL" HTNFR52G30BL GYB632;
"ZYTEL" HTNFR52G30L BK337, HTNFR52G30L BNB456,
"ZYTEL" HTNFR52G30L GYB631, HTNFR52G30L GYB632,
"ZYTEL" HTNFR52G30L NC010, HTNFR52G30L NC010A,
"ZYTEL" HTNFR52G30LX BK337, HTNFR52G30LX NC010 #
"ZYTEL" HTNFR52G35AL BK337, HTNFR52G35AL NC010,
"ZYTEL" HTNFR52G35L BK337, HTNFR52G35L NC010

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington,DE 19898

PHONE NUMBERS
Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYAMIDE COPOLYMER		>35
BROMINATED AROMATIC COMPOUND		22-31
FIBERGLASS		15-35
LUBRICANTS, STABILIZERS, COLORANTS		<5
*ANTIMONY OXIDE	1309-64-4	<6
*ZINC SULFIDE	1314-98-3	0-1.5
CARBON BLACK	1333-86-4	0-1

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Components (Remarks)

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read "ZYTEL" Molding Guide before using this product.

No data are available. Based on similarity to other chemically related polymers, the products listed on this MSDS are predicted to have low toxicity by ingestion, skin contact or inhalation. Fumes generated by overheating or during processing may cause irritation of eyes, nose and throat, with redness, itching, and coughing.

FIBERGLASS

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

(HAZARDS IDENTIFICATION - Continued)

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

ANTIMONY OXIDE

Short-term overexposure by inhalation may cause irritation of nose, throat, and lungs with cough, difficulty breathing or shortness of breath. Repeated and/or prolonged exposure by inhalation may cause chronic respiratory irritation which may progress to abnormal tissue structure or scarring; impaired lung function and breathing difficulty may result.

Human experience or case reports on skin contact have identified the following effects from overexposure to Antimony Trioxide; skin irritation with itching, burning, redness, swelling or rash. Antimony Trioxide has been infrequently associated with skin sensitization in humans. Prolonged skin contact may cause pustular dermatitis.

Eye contact with Antimony Trioxide may cause irritation with tearing, pain or blurred vision.

Short-term overexposure to Antimony Trioxide by ingestion or by inhalation may cause non-specific effects such as headache, nausea and weakness, vomiting, joint or muscle pain, or dizziness.

Increased susceptibility to the effects of Antimony Trioxide may be observed in persons with pre-existing disease of the lungs.

CARBON BLACK

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

(HAZARDS IDENTIFICATION - Continued)

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
ANTIMONY OXIDE	2B			
CARBON BLACK	2B			

FIRST AID MEASURES

First Aid

INHALATION
No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT
The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION
No specific intervention is indicated as compound is not likely to be hazardous by ingestion. Consult a physician if necessary.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

(FIRE FIGHTING MEASURES - Continued)

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are ammonia, carbon monoxide, traces of hydrogen cyanide, and, aldehydes.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Personal Protective Equipment

EYE/FACE PROTECTION

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye and face contact due to splashing or spraying of molten material. A full face mask respirator provides protection from eye irritation.

RESPIRATORS

A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

PROTECTIVE CLOTHING

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Exposure Guidelines

Exposure Limits

"ZYTEL" HTN HIGH PERFORMANCE POLYAMIDE RESINS ALL IN SYNONYM LIST ZYT137

PEL	(OSHA)	: Particulates (Not Otherwise Regulated) 15 mg/m3, 8 Hr. TWA, total dust 5 mg/m3, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

FIBERGLASS

PEL	(OSHA)	: None Established
TLV	(ACGIH)	: 5 mg/m3, 8 Hr.TWA, inhalable particulate A4
AEL *	(DuPont)	: 5 mg/m3 total dust - 8 Hr. TWA, non-respirable fiber (> 3 microns in diameter) non-fibrous particulate.

ANTIMONY OXIDE

PEL	(OSHA)	: 0.5 mg/m3, as Sb, 8 Hr. TWA
TLV	(ACGIH)	: 0.5 mg/m3, handling and use as Sb Antimony Trioxide Production,A2 8 Hr TWA
AEL *	(DuPont)	: 0.2 mg/m3, 8 Hr. TWA, as Sb

CARBON BLACK

(Other Applicable Exposure Limits - Continued)

PEL	(OSHA)	: 3.5 mg/m3, 8 Hr. TWA
TLV	(ACGIH)	: 3.5 mg/m3, 8 Hr. TWA, A4
AEL *	(DuPont)	: 0.5 mg/m3, 8 & 12 Hr.TWA, (Polynuclear Aromatic Hydrocarbon Content <0.1%) Includes Channel, Lamp, and Thermal Black

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point	: 310 C (590 F)
Solubility in Water	: Insoluble
Odor	: None
Form	: Pellets
Specific Gravity	: Not Applicable

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 340 C (644 F) .

Incompatibility with Other Materials

Incompatible or can react with strong acids, oxidizing agents.

Decomposition

Hazardous gases or vapors can be released, including cyclopentanone, carbon monoxide, aldehydes, ammonia.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Fiber Glass

Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratrachael instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

Antimony Trioxide

Skin Absorption ALD, rat:	2,000 mg/kg
Oral LD50, rat:	> 34,600 mg/kg
Inhalation 4 hour, ALC, rat:	> 2.76 mg/L

Antimony Trioxide is a slight skin irritant, a moderate to severe eye irritant, but is not a skin sensitizer in animals.

Single exposure by ingestion to high doses caused vomiting, diarrhea, and liver effects. Repeated ingestion exposures caused gastrointestinal tract irritation, diarrhea, liver effects, and decreased body weight. Long-term exposure caused altered hematology and clinical chemistry, and reduced weight gain.

Single inhalation exposure to high concentrations caused histopathological changes of the lungs. Repeated exposures at lower concentrations caused inflammation of the lungs sometimes accompanied by tissue scarring, liver effects, altered hematology, and reduced weight gain. Long-term exposure caused inflammation of lungs, histopathological changes of the lungs, including tumors, and clouding of the eye (corneal opacity).

(TOXICOLOGICAL INFORMATION - Continued)

Data show an increased incidence of tumors after inhalation of dust by laboratory animals. No adequate animal data are available to define the developmental toxicity of Antimony Trioxide. No animal data are available to define reproductive toxicity. Tests have shown that Antimony Trioxide produces genetic damage in bacterial and mammalian cell cultures, and in animals. More recent tests suggests that Antimony Trioxide is not genotoxic. Antimony Trioxide has not been tested for its ability to cause permanent genetic damage in reproductive cells of mammals (not tested for heritable genetic damage).

CARBON BLACK

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents "lung overload" phenomenon, rather than a specific chemical effect of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:
No information is available. Toxicity is expected to be low based on insolubility in water.

Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

DOT: Not regulated
TDG: Not regulated

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- Antimony oxide, zinc sulfide, carbon black.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- None.

The State of California, under Proposition 65, regulates Carbon Black - airborne, unbound particles of respirable size as a carcinogen. In this product, carbon black is not supplied in the form regulated in California.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (O.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS)- Antimony oxide, zinc sulfide, carbon black.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : I. V. BEBENSEE
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
Wilmington, DE 19880-0713
Telephone : 302-999-4257

 # Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS