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

DuPont                        Page   1
Material Safety Data Sheet

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"DELRIN" ACETAL RESIN ON SYNONYM LIST DEL036
DEL036                    Revised 14-JUN-2005
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CHEMICAL PRODUCT/HOME COMPANY IDENTIFICATION
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Material Identification

"DELRIN" is a registered trademark of DuPont.

# Tradenames and Synonyms

"DELRIN" 100P BL1056,
"DELRIN" 100P BN1107, 100P BN1112,
"DELRIN" 100P BN1114,
"DELRIN" 100P BNA085, 100P GN913,
"DELRIN" 100P GN1074,
"DELRIN" 100P GN1084, 100P GN1085,
"DELRIN" 100P GY1010, 100P GY1128,
"DELRIN" 100P GY6001,
"DELRIN" 100P GY6002, 100P GYA205,
"DELRIN" 100P GYA210, 100P GYB105,
"DELRIN" 100P OR741,
"DELRIN" 100P OR1056, 100P OR1058,
"DELRIN" 100P OR1060,
"DELRIN" 100P PK640, 100P RD1078,
"DELRIN" 100P VT670, 100P VT1059,
"DELRIN" 100P VT1060,
"DELRIN" 100P YL1075, 100P WT760,
"DELRIN" 100P YL6003,
"DELRIN" 500P BL662, 500P BL902,
"DELRIN" 500P BL983,
"DELRIN" 500P BL1000, 500P BL1056,
"DELRIN" 500P BL1066,
"DELRIN" 500P BL1076, 500P BL1082,
"DELRIN" 500P BL1097,
"DELRIN" 500P BL6002, 500P BL6003,
"DELRIN" 500P BLH028, 500P BLH707,
"DELRIN" 500P BLH1004,
"DELRIN" 500P BN1081, 500P BN6003,
"DELRIN" 500P BNA004, 500P BNA054,
"DELRIN" 500P BNA074,
"DELRIN" 500P BNA084, 500P BNH789,
"DELRIN" 500P BZ632,
"DELRIN" 500P GN890, 500P GN1057, 500P GN6002,
"DELRIN" 500P GNH856,
"DELRIN" 500P GY1053, 500P GY1056, 500P GY1057,
"DELRIN" 500P GY1084, 500P GY1086, 500P GY1098,
"DELRIN" 500P GY1101, 500P GY1108, 500P GY1118,
"DELRIN" 500P GY1125, 500P GY1126, 500P GY1178
"DELRIN" 500P GY6001, 500P GY6002, 500P GY9022,
"DELRIN" 500P GYA100, 500P GYA104, 500P GYA117,
"DELRIN" 500P GYA210, 500P GYA214, 500P GYA225,
"DELRIN" 500P GYH217,
"DELRIN" 500P OR741, 500P OR1056,
"DELRIN" 500P OR7001,
"DELRIN" 500P ORH625,
"DELRIN" 500P RD836, 500P RD1066,
"DELRIN" 500P RD1067,
"DELRIN" 500P RD1078, 500P RD6001,
"DELRIN" 500P RDH653, 500P RDH693,
"DELRIN" 500P VTE70, 500P VT1054,
"DELRIN" 500P VTH621,
"DELRIN" 500P WT670, 500P WT760,
"DELRIN" 500P WT777,
"DELRIN" 500P WT1002, 500P WT6002,
"DELRIN" 500P YL314,
"DELRIN" 500P YL1052, 500P YL1077,
"DELRIN" 500P YL6002,
"DELRIN" 500P YL6003, 500P YL7013,
"DELRIN" 500P YLH1001,
"DELRIN" 900P BL1079,
"DELRIN" 900P BN1001, 900P BN1004,
"DELRIN" 900P BN1007,
"DELRIN" 900P BN1008, 900P BN1092,
"DELRIN" 900P BN6003.
"DELRIN" 900P GYA100,
"DELRIN" 900P RD1004, 900P RD1065,
"DELRIN" 900P RD1076,
"DELRIN" 900P RD6001, 900P WT1053,
"DELRIN" 900P WT1054,
"DELRIN" 900P WT1056, 900P WT1063,
"DELRIN" 900P WT6002,
"DELRIN" 1700P BN1091, 1700P BN1093,
"DELRIN" 1700P GY1057, 1700P GY1124,
"DELRIN" 1700P GY6002,
"DELRIN" 1700P RD776,
"DELRIN" 1700P YL1059

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
Material Safety Data Sheet

(CHEMICAL PRODUCT/COMPANY IDENTIFICATION - Continued)

Medical Emergency    : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

<table>
<thead>
<tr>
<th>Material</th>
<th>CAS Number</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>ACETAL POLYMER</td>
<td>&gt;97</td>
<td></td>
</tr>
<tr>
<td>STABILIZER</td>
<td>&lt;2</td>
<td></td>
</tr>
<tr>
<td>PIGMENT</td>
<td>&lt;1</td>
<td></td>
</tr>
<tr>
<td>FORMALDEHYDE</td>
<td>50-00-0</td>
<td>&lt;0.005</td>
</tr>
</tbody>
</table>

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

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 the specific datasheet for product to be used before using this resin, as well as the Delrin Molding Guide.

ACETAL POLYMER

There are no known effects from exposure to the Delrin polymer itself. If overheated, the polymer releases formaldehyde which may cause skin, eye, and respiratory irritation and allergic reactions.

Significant skin permeation and systemic toxicity after contact appears unlikely. There are inconclusive or unverified reports of human sensitization.

Carcinogenicity Information

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

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

"Delrin" dust cloud ignition temperature is 440 degrees C (824 degrees F).

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

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition. Burns with invisible flame. Hazardous gases/vapors produced in fire are carbon monoxide, formaldehyde.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.
Fire Fighting Instructions

Evacuate personnel to a safe area. Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment.

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

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

# Handling (Physical Aspects)

Open container only in well-ventilated area.

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Store in a well ventilated area away from heat and sunlight.

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.
Personal Protective Equipment

Eye/Face Protection

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

Respirators

When temperatures exceed 230 degrees C and ventilation is inadequate to maintain concentrations below exposure limits, use a positive-pressure air-supplied respirator. Air- purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

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

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits

"DELRIN" ACETAL RESIN ON SYNONYM LIST DEL036

<table>
<thead>
<tr>
<th>PEL (OSHA)</th>
<th>Particulates (Not Otherwise Regulated)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15 mg/m³, 8 Hr. TWA, total dust</td>
</tr>
<tr>
<td></td>
<td>5 mg/m³, 8 Hr. TWA, respirable dust</td>
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</tbody>
</table>

Other Applicable Exposure Limits

<table>
<thead>
<tr>
<th>FORMALDEHYDE</th>
<th>PEL (OSHA)</th>
<th>0.75 ppm, 0.92 mg/m³, 8 Hr. TWA</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>STEL 2 ppm, 2.5 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FORMALDEHYDE</th>
<th>TLV (ACGIH)</th>
<th>Ceiling 0.3 ppm, A2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sensitizer</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FORMALDEHYDE</th>
<th>AEL *(DuPont)</th>
<th>0.5 ppm, 8 &amp; 12 Hr. TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 ppm, 15 minute TWA</td>
</tr>
</tbody>
</table>

* 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: 175-183°C (347-361°F)
- Solubility in Water: Insoluble
- Odor: Slight formaldehyde
- Form: Pellets
- Specific Gravity: >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Maintain polymer melt temperatures below 230°C (446°F). Avoid prolonged exposure at or above the recommended processing temperatures.

Incompatibility with Other Materials

Incompatible with strong acids and bases (decomposes forming formaldehyde) and strong oxidizing agents. At melt temperatures, acetal resins are incompatible with halogenated polymers such as PVC and PVDC and any elastomers containing halogenated polymers. Even small amounts of such contaminants can cause sudden and spontaneous formaldehyde gas formation. Workplace fume concentrations well above threshold levels are a likely result. Unsafe pressurization of equipment, e.g., extruders, molds, can also result.

Do not contaminate either virgin resin or rework. Do not mix this resin with pigments or additives other than those designated by DuPont. Do not mix this grade with other grades of Delrin, nor with any other resins, without first consulting DuPont. Doing any of the above may change the thermal stability of this resin and potentially cause decomposition.

Decomposition

Decomposition of this material depends on the length of time it is exposed to elevated temperatures. At the recommended processing temperature of 210-220°C (410-428°F), decomposition should not be significant until after 30 minutes. Decomposition may be accelerated by contaminants, pigments, and/or other additives.

Autoclaving with pressurized steam may lead to a rapid decomposition and should be done for only minimum amounts of time. COOL COMPLETELY BEFORE OPENING the autoclave.

Hazardous gas/vapor produced is formaldehyde.
Polymerization

Polymerization will not occur.

TOXICOCLOGICAL INFORMATION

Animal Data

Delrin
Inhalation 6 hour LC50:  > 22,000 mg/m3 in rats
Oral LD50:             > 11,000 mg/kg in rats

Delrin is not a skin irritant, and is not a skin sensitizer in animals.

Single or repeated inhalation exposures to high concentrations of Delrin dust resulted in collapse of some areas of the lungs, other areas were over-inflated. This effect was seen as late as 11-19 days post-exposure.

No toxic effect were observed in animals ingesting Delrin.

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

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.

REGULATORY INFORMATION

U.S. Federal Regulations

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

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) - None known.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM - Formaldehyde.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS) - None known.

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 : REGULATORY AFFAIRS
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