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Material Safety Data Sheet

7/24/99

DEL036

"DELRAIN" ACETAL RESIN ALL IN SYNONYM LIST DEL036

Revised 3-JUN-1997

Printed 22-JUL-1997

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"DELRAIN" is a registered trademark of DuPont.

* Tradenames and Synonyms

"DELRAIN" 100P BK602, 100P BL1056, 100P BNA085,
"DELRAIN" 100P GN913, 100P GY1010, 100P GY6001,
"DELRAIN" 100P GY6002, 100P GYA129, 100P GYA203,
"DELRAIN" 100P GYA205, 100P GYA210, 100P GYB105,
"DELRAIN" 100P GYB206, 100P OR741, 100P NDB881, 100P VT670, #
"DELRAIN" 100P WT760, 100P WT814,
"DELRAIN" 500P BK632, 500P BK602, 500P BL983,
"DELRAIN" 500P BL1000, 500P BL1056,
"DELRAIN" 500P BL1066, 500P BL1076,
"DELRAIN" 500P BL6002, 500P BL6003, 500P BL662,
"DELRAIN" 500P BLA008,
"DELRAIN" 500P BLH028, 500P BLH029, 500P BLH1004,
"DELRAIN" 500P BLH707, 500P BLH6003,
"DELRAIN" 500P BW1081, 500P BW6003,
"DELRAIN" 500P BNA004, 500P BW1054, 500P BNA074,
"DELRAIN" 500P BNA084, 500P BNA086, 500P BWN789,
"DELRAIN" 500P B2632,
"DELRAIN" 500P CHA022, 500P GN6002, 500P GNB90,
"DELRAIN" 500P GN1057,
"DELRAIN" 500P GWN856, 500P GY1053, 500P GY1056,
"DELRAIN" 500P GY1057, 500P GY1084, 500P GY1098,
"DELRAIN" 500P GY1101, 500P GY1108, 500P GY6001,
"DELRAIN" 500P GY6002, 500P GY9022, 500P GYA100,
"DELRAIN" 500P GYA104, 500P GYA117, 500P GYA129,
"DELRAIN" 500P GYA202, 500P GYA210, 500P GYA214,
"DELRAIN" 500P GYA225, 500P GYB106, 500P GYB807,
"DELRAIN" 500P GYH217, 500P OR681, 500P OR7001,
"DELRAIN" 500P OR720, 500P OR741, 500P OR8625,
"DELRAIN" 500P RD6001, 500P RD836, 500P RD850,
"DELRAIN" 500P RD1066, 500P RD1067,
"DELRAIN" 500P RDB89, 500P RDB881, 500P RDB853,
"DELRAIN" 500P RDB693, 500P VT1054, 500P VT8621,
"DELRAIN" 500P WT670, 500P WT760, 500P WT777,
"DELRAIN" 500P WT830, 500P WT1002, 500P WT6002,
"DELRAIN" 500P YL6002, 500P YL6003, 500P YL7013,

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(CHEMICAL PRODUCT/COMPANY IDENTIFICATION - Continued)

"DELIN" 500P YL7013, 500P YLH1001,
"DELIN" 900P BK1001, 900P BK602, 900P BK634,
"DELIN" 900P BL6002, 900P BL6003, 900P BN1001,
"DELIN" 900P BN1002, 900P BN1003, 900P BN1004,
"DELIN" 900P BN1007, 900P BN1008, 900P BN1053,
"DELIN" 900P BN6003, 900P BNA074, 900P BNA085,
"DELIN" 900P GN913, 900P GYA1004, 900P GY6002,
"DELIN" 900P GYA100, 900P GYA129, 900P GYA156,
"DELIN" 900P GYA203, 900P GYA205, 900P RD1004,
"DELIN" 900P RD1065, 900P RD6001, 900P WT1002,
"DELIN" 900P WT1053, 900P WT1054, 900P WT1056,
"DELIN" 900P WT6002, 900P YL1051, 900P YL6003,
"DELIN" 1700P BK602, 1700P BKB602, 1700P BKB678,
"DELIN" 1700P RD776, 1700P WTB774

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	%
POLYCKYMETHYLENE HOMOPOLYMER	25231-38-3	>97
STABILIZER		<2
PIGMENT		<1
Formaldehyde	50-00-0	<0.005

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.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read "Handling Precautions" in Molding Guide H26577-2 for "Delrin" Acetal Resins before using "Delrin".

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(HAZARDS IDENTIFICATION - Continued)

"DELIRIN" POLYMER

HUMAN HEALTH EFFECTS:

There are no known adverse health effects from exposure to "Delrin" polymer. However, if overheated, formaldehyde may be released. Formaldehyde is a skin, eye and mucous membrane irritant and may cause allergic reactions, headache and/or nausea.

Inhalation of fines from ground pellets can irritate the nose and throat. Significant skin permeation and systemic toxicity after contact appears unlikely. There are inconclusive or unverified reports of human sensitization.

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

Animal Data:

Inhalation 6 hr LC50: >22,000 mg/m³, rats
(very low toxicity of polymer)

Oral LD50: >11,000 mg/kg, rats
(very low toxicity by ingestion of polymer)

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

Inhalation: Single or repeated exposure 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.

Ingestion: No toxic effects observed.

Some animal studies have shown an association between prolonged exposure to formaldehyde and nasal cancer.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens. A "P" indicates a proposed carcinogen.

Material
Formaldehyde

IARC	NTP	OSHA	ACGIH
X	X	X	X

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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 : 322 C (612 F) ASTM 1929-62

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

Not a fire or explosion hazard. Burns with invisible flame. Hazardous gases/vapors produced in fire are carbon monoxide, formaldehyde.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

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

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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.

Spilled material is a slipping hazard.

Spill Clean Up

Recover undamaged and minimally contaminated material for reuse and reclamation. Shovel or sweep up.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Open container only in well-ventilated area.

Storage

Store in a well ventilated area away from heat and sunlight.

Keep container closed to prevent contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use sufficient ventilation to keep employee exposure below recommended limits.

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.

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.

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(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

During grinding, sanding, or sawing 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.

Exposure Guidelines

Exposure Limits

"DELIRIN" ACETAL RESIN ALL IN SYNONYM LIST DEL036

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

POLYOXYMETHYLENE HOMOPOLYMER

PEL (OSHA) : None Established
TLV (ACGIH) : None Established
AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

Formaldehyde

PEL (OSHA) : 0.75 ppm, 0.92 mg/m³, 8 Hr. TWA
STEL 2 ppm, 2.5 mg/m³
TLV (ACGIH) : Ceiling 0.3 ppm, 0.37 mg/m³, A2
AEL * (DuPont) : 1 ppm, 8 & 12 Hr. TWA
2 ppm, 15 minute TWA

* 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 : 172-184 C (342-363 F)
Solubility in Water : Insoluble
Odor : Slight formaldehyde
Color : Pigmented.
Form : Granules or powder
Specific Gravity : 1.42

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STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Incompatible with strong acids and bases (decomposes forming formaldehyde) and strong oxidizing agents. At melt temperatures, incompatible with halogenated polymers such as PVC and PVDC.

Decomposition

Decomposition of this material depends on the length of time it is exposed to elevated temperature, as well as pressure.

At the recommended processing temperature of 215 degrees C (419 degrees F) decomposition should not be significant until after 30 minutes. Decomposition may be accelerated by contaminants and/or pigments.

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.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

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

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. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

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TRANSPORTATION INFORMATION

Shipping Information

DOT

Proper Shipping Name : NA

Hazard Class : 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) - 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

NFPA, NPCA-HMIS

NFPA Rating

Health

: 1

Flammability

: 1

Reactivity

: 0

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. M-50102.

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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 : J. P. BOLLMEIER
Address : DUPONT ENGINEERING POLYMERS
CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

End of MSDS