

Safety Data Sheet



Delrin 100AF

ISSUE DATE: 04/29/2015

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Delrin 100AF (Full Strength/Blend)
SYNONYMS: Not Applicable
PRODUCT COLORS: Brown

MANUFACTURER: Ensinger Inc.
DIVISION: Stock Shapes
ADDRESS: 365 Meadowlands Blvd., Washington, PA 15301

EMERGENCY PHONE: (724) 746-6050
OTHER CALLS: (856) 227-0500

CHEMICAL NAME: Polyoxymethylene (POM)
CHEMICAL FAMILY: Acetal
CHEMICAL FORMULA: basic formula (CH₂O)_n

PRODUCT USE: Stock Shape for Machining
PREPARED BY: Allyson M. Crouse, Technical Resource Manager

SECTION 1 NOTE: Revised April 29, 2015

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Mechanical injury only.

ROUTES OF ENTRY: Eyes

POTENTIAL HEALTH EFFECTS

EYES: Solid or dust causes irritation or corneal injury due to mechanical action.

SKIN: Essentially nonirritating to skin. Mechanical injury only. Molten material may burn skin.

INGESTION: Single dose oral LD50 has not been determined. Single dose oral toxicity is believed to be very low. Now hazards anticipated from ingestion incidental to industrial exposure.

INHALATION: Dust may cause irritation to upper respiratory tract. At room temperature, exposure to vapors are unlikely due to physical properties, normal processing temperatures may generate vapors, which may cause irritation if ventilation is inadequate.

ACUTE HEALTH HAZARDS: None Known

Safety Data Sheet



Delrin 100AF

ISSUE DATE: 04/29/2015

CHRONIC HEALTH HAZARDS: None Known

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None Known

CARCINOGENICITY

Formaldehyde, CAS 50-00-0

OSHA: Permissible Exposure Limit 0.75 ppm (TWA)

Permissible Exposure Limit 2 ppm (STEL)

ACGIH: Threshold Limit Value 0.3 ppm (TLV-C)

Particulates

OSHA: Particulates not otherwise regulated/OSHA (PEL) 15 mg/m³ (TWA, Total Dust)

Particulates not otherwise regulated/OSHA (PEL) 5 mg/m³ (TWA, Respirable Dust)

ACGIH: Particulates not otherwise regulated/ACGIH (TLV) 10 mg/m³ (TWA, Total Dust)

NOTES: Formaldehyde, which is a degradation product, is listed as a potential cancer hazard by OSHA, a known human carcinogen by The International Agency for Research on Cancer (IARC, Group 1), and is listed in the 12th Report on Carcinogens (RoC) released by The National Toxicology Program (NTP). Formaldehyde should not pose a risk if exposures are kept below the OSHA Permissible Exposure Limit.

3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS:

<u>CAS NO.</u>	<u>% WT</u>
Acetal Polymer	>70
Polytetrafluoroethylene (9002-84-0)	<25
Carbon Fiber	<3
Lubricants, stabilizers	<3
Formaldehyde (50-00-0)	<0.005

This product contains a proprietary blend of components encapsulated within a polymer matrix. These components are not regarded as hazardous under 2012 OSHA Hazard Communication Standard; 29CFR Part 1910.1200.

4. FIRST AID MEASURES

EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for at least 15 minutes. Mechanical effects only.

SKIN: Wash off in flowing water or shower.

INGESTION: No adverse effects anticipated by this route of exposure incidental to proper industrial handling. Call a poison control center/physician, if patient feels unwell.

Safety Data Sheet



Delrin 100AF

ISSUE DATE: 04/29/2015

INHALATION: Remove to fresh air, if effects occur. Consult a physician.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

5. FIRE FIGHTING MEASURES

FLAMMABLE LIMITS IN AIR, UPPER: Not Applicable
(% BY VOLUME) LOWER: Not Applicable

FLASH POINT:
F: Not Applicable
C: Not Applicable

EXTINGUISHING MEDIA: Water, Foam, Dry Chemical, Carbon Dioxide (CO₂)

SPECIAL FIRE FIGHTING CONDITIONS: May produce toxic fume of carbon monoxide, if burning.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Combustible. Burns with invisible flame. Large molten masses may ignite spontaneously in air. Water quenching is good practice. Minimize the generation and accumulation of dust. Failure or malfunction of temperature control systems on processing equipment may create explosion hazards. May produce toxic fume of carbon monoxide, if burning.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide, Carbon Dioxide, Formaldehyde gas and toxic combustion products.

SECTION 5 NOTES: Wear full protective suit. In case of combustion, use a suitable breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: Ventilate the area and prevent access to unauthorized people. Wear suitable personal protective equipment. Do not allow entry to drains, water courses or soil. Prevent spreading by use of suitable barriers. Take up with suitable equipment, fill up in air-tight containers and give further treatment as soon as possible.

7. HANDLING AND STORAGE

HANDLING AND STORAGE: Open container and packing only in well-ventilated area. Wash hands thoroughly after handling. Do not breathe dust. Do not breathe vapors or fumes. Minimize the generation and accumulation of dust. Provide appropriate exhaust ventilation at places where dust or

Safety Data Sheet



Delrin 100AF

ISSUE DATE: 04/29/2015

volatiles can be generated. Remove and wash contaminated clothing, before re-use. Wash thoroughly with soap and water after performing operations that involve fiber or dust handling. Prevent contamination of cigarettes or tobacco with dust from this material. Keep waste disposal equipment near work areas involving operations where there is potential for dust generation. Clean up fines, dusts, and/or fibers with high efficiency particulate air (HEPA) filtered vacuum equipment.

Residual monomer vapors can accumulate in the headspace of closed containers. Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination. Keep in an area equipped with sprinklers. Store in a well-ventilated area away from heat and sunlight.

OTHER PRECAUTIONS: Obtain special instructions, before use. Do not breathe dust. Wash hands thoroughly after handling. Do not eat, drink or smoke; when machining this product. Use personal protective equipment as required.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Standard ventilation required

VENTILATION: Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

RESPIRATORY PROTECTION: For most conditions a dust mask is sufficient; however, if handling at elevated temperatures without sufficient ventilation, use an approved air-purifying respirator.

EYE PROTECTION: Safety glasses with side shields should be sufficient for most operations; however, for dusty operations wear chemical goggles. If vapor exposure causes eye discomfort, use a full-face respirator

SKIN PROTECTION: No precautions other than clean body-covering clothing should be needed.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: None Known

Special Precautions to be taken in Handling and Storage: Store in sealed containers. Protect from atmospheric moisture. Molten material can produce thermal burns. Avoid skin contact. Fumes released during normal processing may cause irritation. Provide adequate ventilation. Heating the resin above normal processing temperatures may cause hazardous decomposition products. Do not overheat. Handling and fabrication of plastic resins can result in the generation of dust. Dust results from sawing, filing, and sanding of plastic parts in post-molding operations. Quantities of dust in air may be combustible and may cause respiratory irritation.

EXPOSURE GUIDELINES:

Formaldehyde, CAS 50-00-0

OSHA: Permissible Exposure Limit 0.75 ppm (TWA)

Permissible Exposure Limit 2 ppm (STEL)

ACGIH: Threshold Limit Value 0.3 ppm (TLV-C)

Safety Data Sheet



Delrin 100AF

ISSUE DATE: 04/29/2015

Particulates not otherwise regulated:

OSHA: Particulates not otherwise regulated/OSHA (PEL) 15 mg/m³ (TWA, Total Dust)

Particulates not otherwise regulated/OSHA (PEL) 5 mg/m³ (TWA, Respirable Dust)

ACGIH: Particulates not otherwise regulated/ACGIH (TLV) 10 mg/m³ (TWA, Total Dust)

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Brown stock shape
ODOR: slight, formaldehyde-like
PHYSICAL STATE: Solid
MELTING POINT:
 F: 347 - 361
 C: 175 - 183
SPECIFIC GRAVITY (H₂O = 1): >1
SOLUBILITY IN WATER: Not soluble

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions.

CONDITIONS TO AVOID (STABILITY): High temperatures

INCOMPATIBILITY (MATERIAL TO AVOID): Strong acids and bases

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Fluorinated compounds, fluoroplastic fume, hydrogen fluoride, fluorinated hydrocarbons, formaldehyde, carbon dioxide, carbonyl difluoride, carbon monoxide.

HAZARDOUS POLYMERIZATION: Not Applicable

CONDITIONS TO AVOID: 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 to occur. Workplace fume concentrations well above threshold levels are likely. Contact with incompatible materials can cause fire and explosion.

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION: No data – In solid state, this material is not considered as being harmful to human health.

Acetal Polymer

Oral LD50 : > 11,000 mg/kg , Rat

Safety Data Sheet



Delrin 100AF

ISSUE DATE: 04/29/2015

Inhalation 6 h LC50 : 22 mg/l , Rat
Inhalation : Rat, lung effects
Skin irritation : Guinea pig, non-irritant
Skin sensitization : Guinea pig
Animal test did not cause sensitization by skin contact.
human - Patch test on human volunteers did not demonstrate sensitization properties.
Repeated dose toxicity :
Inhalation Rat, lung effects
Oral Rat, No toxicologically significant effects were found.
Oral – feed Dog, No toxicologically significant effects were found.

Polytetrafluoroethylene

Oral LD50 : > 11,280 mg/kg , Rat
Inhalation : The thermal decomposition vapors of fluorinated plastics may cause polymer fume fever with flu-like symptoms in humans, especially when smoking contaminated tobacco.
Skin irritation : No skin irritation, Rabbit
No skin irritation, human
Skin sensitization : Does not cause skin sensitization., human
Patch test on human volunteers did not demonstrate sensitization properties.
Repeated dose toxicity :
Oral – feed Rat, No toxicologically significant effects were found.
Carcinogenicity : Not classifiable as a human carcinogen.
Reproductive toxicity : No toxicity to reproduction

Carbon fiber

Dermal : Due to its physical properties, there is no potential for adverse effects.
Oral : Due to its physical properties, there is no potential for adverse effects.
Inhalation : Due to its physical properties, there is no potential for adverse effects.
Skin irritation : Rabbit, non-irritant
Eye irritation : Rabbit, irritant
Repeated dose toxicity :
Inhalation Guinea pig, No toxicologically significant effects were found.
Inhalation Rat, No toxicologically significant effects were found.

Formaldehyde

Dermal LD50 : 270 mg/kg , Rabbit
Inhalation 4 h LC50 : 490 ppm , Rat
Target Organs:
Respiratory Tract - Respiratory tract irritation
Skin irritation : Corrosive, Rabbit
Eye irritation : Corrosive, Rat
Skin sensitization : Positive in human patch test., human
Causes skin sensitization., Mouse
There are rare or inconclusive reports of human respiratory sensitization.
Repeated dose toxicity :

Delrin 100AF

ISSUE DATE: 04/29/2015

Oral Rat, Gastrointestinal effects
Inhalation Rat, Nasal irritation, Eye irritation
Carcinogenicity : Suspected human carcinogens
Animal experiments showed a statistically significant number of tumors.
An increased risk of cancer in humans has been shown in workplace based studies.
Mutagenicity : Animal testing did not show any mutagenic effects.
Overall weight of evidence indicates that the substance is not mutagenic.
Genetic damage in animals was observed in some laboratory tests but not in others.
Genetic damage in cultured mammalian cells was observed in some laboratory tests but not in others.
Experiments showed mutagenic effects in cultured bacterial cells.
Reproductive toxicity : No toxicity to reproduction
Evidence suggests the substance is not a reproductive toxin in animals.
Teratogenicity : Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.

12. ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: No data – This material does not harm the environment, but is not biodegradable.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of contents/containers in accordance with local, regional, national and international regulations.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

Not regulated

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT): In compliance with TSCA Inventory requirements for commercial purposes.

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT): This product contains no known toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40CFR372.

Safety Data Sheet



Delrin 100AF

ISSUE DATE: 04/29/2015

California Prop. 65 : WARNING! This product contains a chemical or chemicals known to the State of California to cause cancer.

WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

PA Right to Know

Regulated Chemical(s): Substances on the Pennsylvania Hazardous Substances List present at a concentration of 1% or more (0.01% for Special Hazardous Substances): Polytetrafluoroethylene

NJ Right to Know

Regulated Chemical(s): 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.

16. OTHER INFORMATION

ADDITIONAL INFORMATION

MEDICAL USE: CAUTION – Do not use in medical applications involving permanent implantation in the human body.

This Safety Data Sheet and the information it contains is offered to you in good faith as accurate. We have reviewed any information contained in this data sheet which we received from sources outside our company. We believe this information to be correct but cannot guarantee its accuracy or completeness. Health and safety precaution in this data sheet may not be adequate for all individuals and/or situations. It is the user's responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in the data sheet shall be construed as a permission or recommendation for the use of any product in a manner that may infringe existing patents. No warranty is made, either expressed or implied.