

Material Safety Data Sheet

Revised 9/00
Reviewed 1/04

Manufacturer's Name
Coatings For Industry, Inc.
319 Township Line Road
Souderton, PA 18964

Emergency Response #
1-800-535-5053

Non-Emergency #
215-723-0919

Formula
Proprietary

Trade Name
Aleseal 590-Part A (Teflon)
Aleseal 591-Part A (Teflon)

Two Component Coating

Upon mixing two components-hazards of each component apply to blended mixture

Composition/Information on Ingredients

Material	CAS No.	%
Polytetrafluoroethylene	9002-84-0	58-62
Surfactant is one of the following:		
Octyl Phenoxypolyethoxyethanol	9036-19-5	0-5
Nonyl Phenoxypolyethoxyethanol	9016-45-9	0-5
Water	7732-18-5	33-42
Ammonium Perfluorooctanoate	3825-26-1	<0.5

Heated above 400° C. (750 deg. F) can evolve as degradation products:

Hydrogen Fluoride	7664-39-3	<1
Carbonyl Fluoride	353-50-4	<1

Component (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

Before using, read the Fluoropolymers Safe Handling Guide published by The Society of the Plastics Industry and "Dispersion Properties and Processing Techniques," Bulletin X-50G (E-55514-2).

Skin and eye irritation from contact with the liquid is the primary hazard from fluoropolymer dispersions as shipped. Inhalation of fumes from overheating or burning the resin may cause "polymer fume fever" (see Human Health Effects below).

High temperatures such as sintering operations may release ammonium perfluorooctanoate vapors. These vapors may condense as a solid or as a liquid solution in the oven, exhaust duct or stack, or on other cool surfaces. Do not breathe off-gases and avoid skin contact with condensate when cleaning the oven, stack, etc.

Polytetrafluoroethylene (PTFE):

The compound is not a skin irritant. Effects in animals from single exposure by inhalation to high concentration of the dust include irritation of the lungs. Repeated oral doses resulted in no observable toxic effects except for alteration in the number of circulating white blood cells after long-term dosing (25% of diet for 90 days). Tests demonstrate no developmental toxicity in animals, and no genetic damage in animals or in bacterial cell cultures.

Human Effects of Overexposure to PTFE:

Inhalation of fumes from overheating PTFE may cause polymer fume fever, a temporary flu-like illness with fever, chills, and sometimes cough, of approximately 24 hours duration. There are some reports in the literature of persistent pulmonary effects in individuals, especially smokers, who have had repeated episodes of polymer fume fever. Because of complicating factors, such as mixed exposures and smoking history, these findings are uncertain. Protection against acute exposure should also provide protection against any potential chronic effects. Smokers should avoid contamination of any tobacco products, and should wash their hands before smoking. Significant skin permeation after contact appears unlikely. There are no reports of human sensitization. Small amounts of carbonyl fluoride may also be evolved when PTFE is overheated or burned.

Inhalation of low concentrations of HYDROGEN FLUORIDE can initially include symptoms of choking, coughing, and severe eye, nose and throat irritation. Possibly followed after a symptomless period of 1 to 2 days by fever, chills, difficulty in breathing, cyanosis, and pulmonary edema. Acute or chronic overexposure to HF can injure the liver and kidneys.

Inhalation, ingestion, or skin or eye contact with CARBONYL FLUORIDE may initially include: skin irritation with discomfort or rash; eye corrosion with corneal or conjunctival ulceration; irritation of the upper respiratory passages; or temporary lung irritation effects with cough, discomfort, difficulty breathing, or shortness of breath. By analogy with phosgene, symptoms may be delayed.

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

Surfactant

Inhalation 1 hour LC50:	1700 mg/m ³ in hamsters
Skin absorption LD50:	>3 ml/kg in rabbits
Oral LD50:	1900 mg/kg in rats

Surfactant cont'd

The compound is a mild skin irritant, is a moderate eye irritant (effects were not reversible within 21 days post exposure). It is not a skin sensitizer in animals. Toxic effects described in animals from short exposures by inhalation, ingestion, or skin contact include nonspecific effects such as weight loss and irritation. One report indicates that prolonged exposure increases the incidence of ovarian cysts in mice. Animal testing indicates that this compound does not have carcinogenic, developmental, or reproductive effects.

Human Health Effects of Overexposure

Skin contact may cause skin irritation with discomfort or rash. Eye contact may cause eye irritation with discomfort, tearing, or blurring of vision. Permanent eye damage may occur from prolonged exposure. Inhalation may cause upper respiratory tract irritation with coughing and discomfort. Ingestion may cause gastrointestinal irritation with upper abdominal pain, "heart burn," nausea, vomiting and diarrhea; however, there may be no symptoms at all.

Ammonium Perfluorooctanoate**Animal Data**

Inhalation 4 hour LC50:	980 mg/m ³ in rats
Skin absorption LD50:	4278 mg/kg in rabbits
Oral LD50:	470 mg/kg in rats

The compound is a skin, eye, nose and throat irritant. Ingestion caused weight loss, gastrointestinal irritation and enlarged liver. Repeated exposures produced liver, kidney, pancreas and testes changes, anemia and cyanosis. Tests in male rats demonstrated weak tumorigenic activity based on an increased incidence of benign testicular, pancreatic, and liver tumors. Tests in animals demonstrate no developmental toxicity. This compound does not produce genetic damage in bacterial cell cultures.

Human Health Effects of Overexposure to Ammonium Perfluorooctanoate:

Skin contact may cause skin irritation with discomfort or rash. Evidence suggests that skin permeation can occur in amounts capable of producing the effects of systemic toxicity. Eye contact may cause eye irritation with discomfort, tearing, or blurring of vision. Inhalation may cause irritation of the upper respiratory passages, with coughing and discomfort. Ingestion may cause gastrointestinal tract irritation; abnormal liver function as detected by laboratory tests; or abnormal blood forming system function with anemia. Individuals with preexisting diseases of the liver or bone marrow may have increased susceptibility to the toxicity of excessive exposures.

This compound is absorbed by the body and may be detected in the blood stream following ingestion, inhalation, or skin contact. Animal and human experience indicate that this compound has a long half-life in the blood, and may be detected years after exposure.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

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: Flush skin with water after contact. Wash contaminated clothing before reuse. If molten material gets on skin, cool rapidly with cold water. Do not attempt to remove material 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: If swallowed, immediately give 2 glasses of water and induce vomiting. Never give anything by mouth to an unconscious person. Call a physician.

Fire Fighting Measures**Flammable Properties**

Flash Ignition Temperature	:	530-550C (986-1022F)
Method	:	ASTM D1929
Self Ignition Temperature	:	520-560C (986-1040F)
Method	:	ASTM D1929
UL-94 Flammability Rating	:	V-0
Limiting Oxygen Index	:	>95
Method	:	ASTM D2863

Difficult to ignite, and flame goes out when initiating source is removed (UL-94). Limited flame spread and low smoke generation (NFPA 262-1990, UL-910). Complies with NFPA definition of "limited combustible" material. High self-ignition and auto-ignition temperatures (ASTM D1929).

Hazardous gases/vapors produced in fire are hydrogen fluoride (HF), carbon monoxide, potentially toxic fluorinated compounds.

Extinguishing Media: Water, foam, dry chemical, CO₂.

Fire Fighting Instructions: Wear self-contained breathing apparatus. Wear full protective equipment. Hydrogen fluoride fumes emitted during a fire can react with water to form hydrofluoric acid. Wear neoprene gloves when handling refuse from fire.

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

Soak up with sawdust, sand, oil dry or other absorbent material. Shovel or sweep up.

Handling and Storage

Handling (Personnel): Avoid contamination of cigarettes or tobacco with dust from this material.

Handling (Physical Aspects): Do not use a torch to clean this material from equipment without local exhaust ventilation and respirator.

Storage: Keep container closed to prevent contamination. Store between 50-80° F. (10-27° C). Freezing at 32° F. (0° C.) will damage product.

Exposure Controls/Personal Protection

Engineering Controls

Ventilation: Use local exhaust to completely remove vapors and fumes liberated during hot processing from the work area.

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 material. A full face mask respirator provides protection from eye irritation.

Respirators: A respirator is not required if local exhaust ventilation is adequate. At processing temperatures less than 400° C. (750° F) a NIOSH/MSHA approved air purifying respirator with high efficiency dust/mist cartridge or canister may provide protection from airborne particulates which cause polymer fume fever. For processing temperatures above 400° C. (750° F.), if ventilation is inadequate to maintain hydrogen fluoride and carbonyl fluoride concentrations below exposure limits, use a positive pressure air supplied respirator. Air purifying respirators may not provide adequate protection.

When cleaning condensate from oven or exhaust system, a NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge and a high efficiency dust/mist filter is recommended.

Protective Clothing: Wear impervious clothing, such as gloves, apron, boots or whole bodysuit made from Neoprene, as appropriate to avoid skin contact with liquid dispersion and with condensate in oven or exhaust system. If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Exposure Guidelines:

Applicable Exposure Limits

Polytetrafluoroethylene

PEL (OSHA)

Particles (Not Otherwise Regulated)

15 mg/m³ 8 Hr. TWA, Total dust.

5 mg/m³, 8 Hr. TWA, respirable dust

Exposure Guidelines (continued)

TLV (ACGIH)	None Established
AEL * (Du Pont)	10 mg/m ³ , 8 Hr. TWA, total dust 5 mg/m ³ , 8 Hr. TWA, respirable dust
Ammonium Perfluorooctanote	
PEL (OSHA)	None Established
TLV (ACGIH)	0.01 mg/m ³ , 8 hour TWA, Skin, A3
AEL * (Du Pont)	0.01 mg/m ³ , 8 Hr. TWA, Skin
Hydrogen Fluoride	
PEL (OSHA)	3 ppm, 8 Hr. TWA, as F
TLV (ACGIH)	3 ppm, 2.6 mg/m ³ , Ceiling as F
AEL * (Du Pont)	3 ppm, 15 minute TWA
Carbonyl Fluoride	
PEL (OSHA)	None Established
TLV (ACGIH)	2 ppm, 5.4 mg/m ³ , 8 Hr. TWA STEL 15 ppm, 13 mg/m ³
AEL * (Du Pont)	None Established

* AEL is Du Pont'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	327-342 C (621-648 F)
% Volatiles	33-42 (water)
Solubility in Water	Solids insoluble; dispersion may be diluted
pH	10
Odor	Slight Ammonia
Form	Liquid
Color	Milky
Specific Gravity	1.4-1.5

Stability and Reactivity

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Incompatible or can react with finely divided metal powders (e.g., aluminum and magnesium) and potent oxidizers like fluorine (F₂) and related compounds (e.g., chlorine trifluoride, ClF₃). Contact with incompatibles can cause fire, an explosion.

Decomposition

Heating above 300 deg. C. (572 deg. F., may cause evolution of particulate matter, which can cause polymer fume fever (see Human Health Effects). Trace amounts of hydrogen fluoride and carbonyl fluoride may be evolved at about 400 deg. C. (750 deg. F.) with larger amounts at higher temperatures.

Ecological Information

Ecotoxicological Information

Aquatic Toxicity:

Polytetrafluoroethylene is not toxic. Surfactant 96-Hr. LC50 for bluegill sunfish is 9 mg/L. Ammonium perfluorooctanoate 96-Hr LC50 is 766 mg/L for fathead minnows and 569 mg/L for bluegill sunfish. Do not discharge to lakes, streams or waterways; will produce milky appearance.

Disposal Considerations

Waste Disposal

Preferred options for disposal are: (1) Separate solids from liquid by precipitation and decanting or filtering. Dispose of dry solids in a landfill that is permitted, licensed or registered by a state to manage industrial solid waste. Discharge liquid filtrate to a wastewater treatment system. (2) Incinerate only if incinerator is capable of scrubbing out hydrogen fluoride and other acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

Transportation Information

Shipping Information

DOT

Proper Shipping Name Not regulated

Regulatory Information

U.S. Federal Regulations

TSCA Inventory Status Listed

State Regulations (U.S.)

State Right-To-Know

No substance 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): Polytetrafluorethylene is listed but we believe it was listed in error and have petitioned to have it delisted.

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

Dioxane (<3 ppm), ethylene oxide (<0.5 ppm).

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

NDPA, NPCA-HMIS

NFPA Rating

Health 2

Flammability 1

Reactivity 0

NPCA-HMIS Rating

Health 1

Flammability 0

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. H-50102.

NOTICE: This information is presented in good faith and believed to be accurate. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. Coatings For Industry, Inc. assumes no responsibility for personal injury or property damage to vendees, users, or third parties caused by the material, such vendees or users assume all risks associated with the use of the material. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The preceding specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.