SECTION I - PRODUCT IDENTIFICATION

Trade Name: A4000R and A4000R Bondable
Product Class: Supplier: Airtech International, Inc.
5700 Skylab Road
Huntington Beach, CA 92647
Telephone: 714-899-8100
Fax: 714-899-8179
Emergency Telephone: 800-424-9300
NFPA Ratings: Health= 2 Flammability= 1 Reactivity= 0

SECTION II - HAZARDOUS INGREDIENTS

Exposure Limits for Particulates (Not otherwise regulated):
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust.

**Tetrafluoroethylene-Hexafluoropropylene Copolymer**
CAS #: 25067-11-2 Percentage: >99
OSHA PEL: None established
ACGIH TLV: None established

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

**Hydrogen Fluoride as a degradation product**
CAS #: 7664-39-3 Percentage: <1
OSHA PEL: 3 ppm, 8 Hr. TWA, as F
ACGIH TLV: 3 ppm, 2.6 mg/m³, Ceiling as F

**Carbonyl Fluoride as a degradation product**
CAS #: 353-50-4 Percentage: <1
OSHA PEL: None established
ACGIH TLV: 2 ppm, 5.4 mg/m³, 8 Hr. TWA
STEL 5 ppm, 13 mg/m³

**Perfluoroisobutylene as a degradation product**
CAS #: 382-21-8 Percentage: <0.01
OSHA PEL: None established
ACGIH TLV: Ceiling 0.01 ppm, 0.082 mg/m³

SECTION III - PHYSICAL DATA

Description: Film
Color: Red
Odor: None
Melting point: 260-275°C (500-527°F)
Solubility in water: Insoluble
Specific gravity: 2.1 - 2.2
Form: Film

SECTION IV - FIRE AND EXPLOSION DATA

**Flammable Properties:**
Flash Ignition Temperature: 530-550°C (986-1022°F) Method: ASTM D1929
Self Ignition Temperature: 520-560°C (968-1040°F) Method: ASTM D1929
UL-94 Flammability Rating: V-0
Limiting Oxygen Index: >95 Method: ASTM D2863


**Fire and Explosion Hazard:**
Hazardous gases/vapors produced in fire are hydrogen fluoride (HF), carbon monoxide, potentially toxic fluorinated compounds.

**Fire Fighting Instructions:**
Wear self-contained breathing apparatus. Wear full protective equipment. Does not burn without an external flame. Protect from hydrogen fluoride fumes which react with water to form hydrofluoric acid. Wear neoprene gloves when handling refuse from a fire.

**Extinguishing media:**
Water, foam, dry chemical, CO2

SECTION V - HEALTH HAZARD DATA

A4000R and A4000R Bondable are not hazardous as shipped. The primary hazard associated with these polymers is the inhalation of fumes from overheating or burning, which may cause "polymer fume fever". (See Human Health Effects Below).
Tetrafluoroethylene-Hexafluoropropylene Copolymer (FEP)
Inhalation 4 hour LC50 > 4,900 mg/m³ in rats. At very high exposure levels, animals were suffocated by accumulated dust in the lungs. Repeated exposure by ingestion caused no adverse effects.

Human Health Effects of Overexposure to FEP Co-Polymer:
Inhalation of fumes from overheating FEP 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 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, hydrogen fluoride and perfluoroisobutylene may also be evolved when FEP Copolymer 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 or 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. Symptoms may be delayed.

Perfluoroisobutylene is an extremely toxic gas for which inhalation is the most likely route of human exposure. Inhalation exposure may cause severe symptoms of pulmonary edema with wheezing, difficulty in breathing, coughing up sputum and bluish discoloration of the skin. Coughing and chest pain may occur initially. However, severe symptoms of pulmonary edema may be delayed for several hours and then become rapidly worse. Overexposure may cause death. (Inhalation 2-hour LC50 = 1.05 ppm in rats).

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

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.

SECTION VI – EMERGENCY AND FIRST AID PROCEDURE

In case of 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.

In case of 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.

In case of eye contact:
Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

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

SECTION VII - REACTIVITY DATA

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, C1F3). Contact with incompatibles can cause fire, an explosion.

Hazardous Decomposition Products:
Heating above 275EC (527EF) may cause evolution of particulate matter, which can cause polymer fume fever see HUMAN HEALTH EFFECTS). Trace amounts of hydrogen fluoride, carbonyl fluoride, and perfluoroisobutylene may be evolved at about 380EC (716EF), with larger amounts at higher temperatures.

SECTION VIII - SPILL, LEAK, DISPOSAL PROCEDURE
Steps to be taken in case material is released or spilled
Review Fire and Explosion Data Section IV before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Sweep up to avoid slipping hazard.

Ecotoxicological Information

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

Waste Disposal
Preferred options for disposal are (1) recycling and (2) landfill. 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.

SECTION VIII - SPECIAL PROTECTION INFORMATION

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

Respiratory Protection:
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 dust/mist cartridge or canister may provide protection from airborne particulates which cause polymer fume fever. At higher processing temperatures 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.

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

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.

Other Protection:
Avoid contamination of cigarettes or tobacco with dust from this material. Do not use a torch to clean this material from equipment without local exhaust, ventilation and respirator.

SECTION IX – SPECIAL PRECAUTIONS

Storage:
Keep containers closed to avoid contamination.

Medical Use:
CAUTION: Do not use in medical applications involving permanent implantation in the human body.

Transportation Information:
DOT Proper Shipping Name: Not regulated.

SECTION XI – REGULATORY INFORMATION

State Right-to-know Laws
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.

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. None known.

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

U.S. Federal Regulations: TSCA Inventory Status: Listed

USER'S RESPONSIBILITY

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of your operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained in this bulletin should be provided to your employees or customers. It is your responsibility...
to use this information to develop appropriate work practice guidelines and employee instructional programs for your operation.

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