

Fox Industries Inc.
Material Safety Data Sheet
OSHA's Hazard Communication Standard,
29 CFR 1910.1200.

IDENTITY: FX-III Jet Set

SECTION I

Manufacturer:	Fox Industries, Inc.	Emergency Number:	1-800-424-9300 CHEMTREC
Address:	3100 Falls Cliff Road Baltimore, MD 21211	Telephone Number:	(410) 243-8856
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SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components	CAS #	OSHA PEL	Hazard Limits	%
Urethane Prepolymer	NE	NE		
Toluene Diisocyanate	584-84-9	.02 PPM		<.5%

Respiratory sensitizer. Lung damage and respiratory sensitization may be permanent. Causes skin irritation. May cause allergic skin reaction. Skin sensitizer. Animal tests and other research indicate that skin contact with TDI can play a role in causing isocyanate sensitization and respiratory reaction. Causes eye irritation. Harmful if swallowed. May cause lung damage.

2,4-Toluene Diisocyanate (584-84-9)

US. ACGIH Threshold Limit Values Time Weighted Average (TWA): 0.005 ppm
US. ACGIH Threshold Limit Values Short Term Exposure Limit (STEL): 0.02 ppm
US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
Ceiling Limit Value: 0.02 ppm, 0.14 mg/m³

HMIS Rating Health 3* Flammability 1 Physical Hazard 1

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point:	N/D	Specific Gravity (H₂O =1):	1.11-1.15
Vapor Pressure (mm Hg.):	(TDI)@117°F .1mmHg	Melting Point:	N/A
Vapor Density (AIR = 1):	>1	Evaporation Rate:	N/A
Solubility in Water:	Not Soluble	(Butyl Acetate = 1)	
Appearance and Odor:	Prepolymer is clear, syrup-like	Isocyanate odor	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used): ASTM D 3278 230 °

Flammable Limits: LEL 1.3% **UEL** 7.0%

Extinguishing Media: Dry chemical, CO₂, foam as used for Class "B" fires.

Special Fire Fighting Procedures: Avoid breathing vapors. Self-contained breathing apparatus should be worn

Unusual Fire and Explosion Hazards: None

SECTION V - REACTIVITY DATA

Stability: Stable **Conditions to Avoid:** Contact with moisture, other materials that react with isocyanates, or temperatures above 350 F (177 C), may cause polymerization.

Materials to avoid

Water, Amines, Strong bases, Alcohols, Copper alloys, Aluminum, Phosphorus, Phosphorus compounds

Hazardous decomposition products By Fire and High Heat: Carbon dioxide (CO₂), carbon monoxide (CO), oxides of nitrogen (NO_x), dense black smoke., Hydrogen cyanide, Isocyanate, Isocyanic Acid, Other undetermined compounds

Incompatibility: Basic compounds; caustic soda

Hazardous Polymerization: Will Not Occur

Conditions to Avoid: None known

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SECTION VI - HEALTH HAZARD DATA

Route(s) of Entry:

Inhalation? Yes Skin? Yes Ingestion? Yes

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

Inhalation

Acute Inhalation Diisocyanate or polyisocyanate vapors or mist at concentrations above the exposure limits or guidelines can

irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) with symptoms of runny nose,

sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing difficulty). Persons with a preexisting, nonspecific bronchial hyper reactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

Chronic Inhalation As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to diisocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to diisocyanates at levels well below the TLV or PEL. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Extreme asthmatic reactions can be life threatening. Similar to many nonspecific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Sensitization can be permanent. Chronic overexposure to

diisocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may be permanent.

Acute Skin Causes irritation with symptoms of reddening, itching, and swelling. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove.

Chronic Skin Prolonged contact can cause reddening, swelling, rash, and, in some cases, skin sensitization. Animal tests and other research indicates that skin contact with TDI can play a role in causing isocyanate sensitization and respiratory reaction.

Eye

Acute Eye Causes irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor may cause irritation with symptoms of burning and tearing.

Chronic Eye prolonged vapor contact may cause conjunctivitis.

Ingestion

Acute Ingestion

May cause irritation; Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

Carcinogenicity:

NTP and IARC evaluated TDI as a mixture of the 2,4 and 2,6 isomers.

2,4-Toluene Diisocyanate **IARC** - Overall evaluation: 2B Possible carcinogen.

Hazardous components Residual diisocyanate monomer content: < 0.50%

Weight % Components CAS-No. >=95% Aromatic Polyisocyanate CAS# is a trade secret

0.1 - 0.5% 2,4-Toluene Diisocyanate 584-84-9

Health Hazards (Acute and Chronic): May cause allergic response to skin and pulmonary sensitization can occur in some individuals

Carcinogenicity: NTP? Not Listed **IARC Monographs?** Not Listed **OSHA Regulated?** Not Regulated

Signs and Symptoms of Exposure: Difficulty in respiratory functions, irritation of lungs and skin

Medical Conditions Generally Aggravated by Exposure: Pulmonary disorders

Emergency and First Aid Procedures:

4. First aid measures Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Use lukewarm water if possible. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Then remove

contact lenses, if easily removable, and continue eye irrigation for not less than 15 minutes. Get medical attention.

Skin contact Immediately remove contaminated clothing and shoes. Wash off with soap and water. Use lukewarm water if possible. Wash contaminated clothing before re-use. For severe exposures, immediately get under safety shower and begin rinsing. Get medical attention if irritation develops.

Inhalation Move to an area free from further exposure. Get medical attention immediately. Administer oxygen or artificial respiration as needed. Asthmatic symptoms may develop and may be immediate or delayed up to several hours. Extreme asthmatic reactions can be life threatening.

Ingestion Do NOT induce vomiting. Wash mouth out with water. Do not give anything by mouth to an unconscious person. Get medical attention.

Notes to physician

Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision. Skin: This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn. Ingestion: Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the compound. Inhalation: Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from further exposure to any diisocyanate.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to Be Taken in Case Material Is Released or Spilled:

Control source of the leak. Ventilate. Contain the spill to prevent spread into drains, sewers, water supplies, or soil. foam (AFFF). Released material may be pumped into closed, but not sealed, metal container for disposal. Process can generate heat. Minor Spill or Leak (Wet surface): Cover spill area with suitable absorbent material (Kitty Litter, Oil-Dri®, etc). Saturate absorbent material with neutralization solution and mix. Wait 15 minutes. Collect material in open-head metal containers. Repeat applications of decontamination solution, with scrubbing, followed by absorbent until the surface is decontaminated. Check for residual surface contamination. Swype® test kits have been used for this purpose. Apply lid loosely and allow containers to vent for 72 hours to let carbon dioxide (CO₂) escape.

Additional Spill Procedures/Neutralization

Neutralization solutions:

- (1) Colorimetric Laboratories Inc. (CLI) decontamination solution.
- (2) A mixture of 75% water, 20% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10) and 5% npropane.
- (3) A mixture of 80% water, 20% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10).
- (4) A mixture of 90% water, 3-8% ammonium hydroxide or concentrated ammonia, and 2% liquid detergent.

Waste Disposal Method:Waste disposal should be in accordance with existing federal, state and local environmental control laws.Incineration is the preferred method.

Precautions to be taken in Handling and Storing:

Do not breathe vapors, mists, or dusts. Use adequate ventilation to keep airborne isocyanate levels below the exposure limits. Wear respiratory protection if material is heated, sprayed, used in a confined space, or if the exposure limit is exceeded. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Individuals with lung or breathing problems or prior allergic reactions to isocyanates must not be exposed to vapor or spray mist. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do not breathe smoke and gases created by overheating or burning this material. Decomposition products can be highly toxic and irritating. Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected.

Other Precautions: Avoid breathing vapors.

11. Toxicological information

Toxicity Note Toxicity data is for TDI mixed isomers

Acute oral toxicity LD50: 4,130 - 5,110 mg/kg (rat, Male/Female)

Acute inhalation toxicity LC50: 1 h (Male/Female)

LC50: 49 - 50.4, 4 h (Male/Female) aerosol

Acute dermal toxicity LD50: > 9,400 mg/kg (rabbit, Male/Female)

Skin irritation rabbit, moderate irritant

Eye irritation rabbit, severe irritant

Sensitisation dermal: sensitizer (guinea pig, Maximization Test)

inhalation: sensitizer (guinea pig, Other method)

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Mutagenicity

Genetic Toxicity in Vitro: Ames: positive, negative (Salmonella typhimurium, Metabolic Activation: with/without)
Positive and negative results were seen in various in vitro studies. Questionable validity of studies due to rapid hydrolysis in solvents.

Genetic Toxicity in Vivo: Micronucleus Assay: negative (rat,)

Unscheduled DNA synthesis: negative (rat,)

Carcinogenicity rat, Male/Female, inhalation, 113 w, 6 hrs/day 5 days/week,

rat, Male/Female, oral, 106 w, daily, negative

Positive, however the study validity is questioned due to the dose exceeding maximum tolerated dose and irregularities in compound storage and analysis.

Toxicity to Reproduction/Fertility

SECTION VIII - CONTROL MEASURES

Respiratory Protection: In inadequately ventilated environments and spray applications respiratory protection must be worn. NIOSH, or (b) a change out schedule, based on objective information or data that will ensure that the cartridges are changed out before the end of their service life, must be developed and implemented. The basis for the change out schedule must be described in the written respirator program. Further, if an APR is selected, the airborne concentration must be no greater than 10 times the TLV or PEL.

Ventilation: Mechanical (General) Good general ventilation.

Protective Gloves: Rubber Gloves

Eye Protection: Safety Glasses

Other Protective Clothing or Equipment: Clean work clothing.

Work/Hygienic Practices: Follow practices of good industrial hygiene.

N/A = Not Applicable

N/D = Not Determined

N/E = Not Establish