Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	**Flammable material; avoid heat and sources of ignition.** **Corrosive to eyes and skin on contact.** **Harmful compound, minimize exposure.** **POSSIBLE CARCINOGEN. MINIMIZE EXPOSURE.** **Lachrymator.** **Hygroscopic -- keep container tightly sealed.** **Refrigerate.**	

Section I. Chemical Product and Company Identification

Chemical Name: **P-Anisaldehyde (contains Acetic Acid, H_2SO_4) Ethanol Solution [for TLC stain]**

Catalog Number: A1674

Synonym: Not available.

Chemical Formula: $C_8H_8O_2$

CAS Number: 123-11-5 (p-Anisaldehyde)
7664-93-9 (Sulfuric Acid)
64-19-7 (Acetic Acid)
64-17-5 (Ethanol)

Supplier: TCI America
9211 N. Harborgate St.
Portland OR
1-800-423-8616

In case of Emergency Call: **Chemtrec®**
(800) 424-9300 (U.S.)
(703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
P-Anisaldehyde (contains Acetic Acid, H_2SO_4) Ethanol Solution [for TLC stain]	123-11-5 (p-Anisaldehyde) 7664-93-9 (Sulfuric Acid) 64-19-7 (Acetic Acid) 64-17-5 (Ethanol)	Not available.	This chemical is classified as a possible carcinogen. There is no acceptable exposure limit for a carcinogen.	(p-Anisaldehyde) Rat LD_{50} (oral) 1510 mg/kg Mouse LD_{50} (oral) 1859 mg/kg Guinea Pig LD_{50} (oral) 1260 mg/kg Rabbit LD_{50} (dermal) >5 gm/kg (Sulfuric Acid) Rat LD_{50} (oral) 2140 mg/kg Rat LC_{50} (inhalation) 510 mg/m^3 Mouse LC_{50} (inhalation) 320 mg/m 3 Guinea Pig LC_{50} (inhalation) 18 mg/m^3 (Acetic Acid) Rat LD_{50} (oral) 3310 mg/kg Rabbit LD_{50} (dermal) 1060 uL/kg (Ethanol) Rat LC_{50} (inhalation) 20000 ppm/10H

Section III. Hazards Identification

Acute Health Effects:
Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested.
Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Chronic Health Effects:
CARCINOGENIC EFFECTS : Not available.
MUTAGENIC EFFECTS : Not available.
TERATOGENIC EFFECTS : Tumorigenic Effects. (Ethanol)
Mouse TD Oral 400 gm/kg/57 weeks intermittent
TOXIC Effects:
Tumorigenic - Equivocal tumorigenic agent by RTECS criteria
Gastrointestinal - Tumors
Mouse TDLo Oral 320 mg/kg/50 weeks intermittent
TOXIC Effects:
Tumorigenic - Equivocal tumorigenic agent by RTECS criteria
Liver - Tumors
Blood - Lymphomas including Hodgkin's disease
Mouse TDLo Rectal 120 gm/kg/18 weeks intermittent
TOXIC Effects:
Tumorigenic - Equivocal tumorigenic agent by RTECS criteria
Gastrointestinal - Tumors
Liver - Tumors
DEVELOPMENTAL TOXICITY: Reproductive Effects. (Sulfuric Acid)
Rabbit TCLo Inhalation 20 mg/m3/7 hours, female 6-18 days of pregnancy
TOXIC Effects:

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Specific Developmental Abnormalities - Musculoskeletal system
DEVELOPMENTAL TOXICITY: Reproductive Effects. (Acetic Acid)
Rat TDLo Intratesticular 400 mg/kg, male 1 day prior to mating
TOXIC Effects:
Effects on Fertility - Male fertility index
Rat TDLo Oral 700 mg/kg, female 18 days after birth
TOXIC Effects:
Effects on Newborn - Behavioral
DEVELOPMENTAL TOXICITY: Reproductive Effects. (Ethanol)
Rat TDLo Intraperitoneal 600 mg/kg, female 8-15 days of pregnancy
TOXIC Effects:
Effects on Fertility - Post-implantation mortality
Effects on Embryo or Fetus - Extra embryonic structures
Effects on Embryo or Fetus - Fetotoxicity
Rat TDLo Oral 135 gm/kg, female 1 day of pregnancy-7 days after birth
TOXIC Effects:
Effects on Newborn - Behavioral
Effects on Newborn - Physical
Rat TDLo Oral 147 mg/kg, female 1-21 days of pregnancy
TOXIC Effects:
Specific Developmental Abnormalitites - Endocrine system
Effects on Newborn - Delayed effects

Section IV. First Aid Measures

Eye Contact
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact
In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Inhalation
If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.

Ingestion
DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

Section V. Fire and Explosion Data

Flammability
Flammable.

Auto-Ignition
Not available.

Flash Points
40°C (104°F). (Acetic Acid)
14°C (57.2°F). (Ethanol)

Flammable Limits
LOWER: 4% UPPER: 19.9% (Acetic Acid)

Combustion Products
These products include toxic carbon oxides (CO,CO_2), sulfur oxides (SO_x).

Fire Hazards
Not available.

Explosion Hazards
Risks of explosion of the product in presence of mechanical impact: Not available.
Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions
Flammable liquid.
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion. Consult with local fire authorities before attempting large scale fire-fighting operations.

Section VI. Accidental Release Measures

Spill Cleanup Instructions
Flammable material. Corrosive material. Harmful material. Possibly carcinogenic material. Lachrymatory material. Hygroscopic material.
Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT get water inside container. DO NOT touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and Storage

Handling and Storage Information
FLAMMABLE. CORROSIVE. HARMFUL. POSSIBLE CARCINOGEN. LACHRYMATOR. HYGROSCOPIC. REFRIGERATE. Keep container dry. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. Wear suitable protective clothing. If you feel unwell, seek medical attention and show the label when possible. Treat symptomatically and supportively.
Always store away from incompatible compounds such as oxidizing agents, reducing agents, acids.

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Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.
Personal Protection	Face shield. Lab coat. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent. 
Exposure Limits	This chemical is classified as a possible carcinogen. There is no acceptable exposure limit for a carcinogen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid. (Clear, colorless.)	Solubility	(p-Anisaldehyde) Very slightly soluble in water. Miscible with alcohol, ether. (Sulfuric Acid) Miscivle with water, alcohol, witht the generation of much heat and with contraction in volume. (Acetic Acid) Miscible with water, alcohol, glycerol, ether, carbon tetrachloride, acetone. Practically insoluble in carbon disulfide.
Specific Gravity	1.119 (water=1) (p-Anisaldehyde) 1.84 (watear=1) (Sulfuric Acid) 1.049 (water=1) (Acetic Acid) 0.79 (water=1) (Ethanol)		
Molecular Weight	$C_8H_8O_2$=136.15 (p-Anisaldehyde) H_2SO_4=98.08 (Sulfuric Acid) $C_2H_4O_2$=60.05 (Acetic Acid) C_2H_6O=46.07 (Ethanol)	Partition Coefficient	Not available.
Boiling Point	118 to 121°C (244.4 to 249.8°F) (p-Anisaldehyde) 290°C (554°F) (Ethanol) 117 to 118°C (242.6 to 244.4°F) (Acetic Acid) 78 to 80°C (172.4 to 176°F) (Ethanol)	Vapor Pressure	1 mmHg (@ 145.8°C) (Sulfuric Acid) 11.4 mmHg (@ 20°C) (Acetic Acid)
Melting Point	-1°C (30.2°F) (p-Anisaldehyde) 10°C (50°F) (Sulfuric Acid) 4°C (39.2°F) (Acetic Acid)	Vapor Density	4.7 (Air = 1) (p-Anisaldehyde) < 0.3 (Air=1) (Sulfuric Acid) 2.07 (Air=1) (Acetic Acid)
Refractive Index	1.573 (p-Anisaldehyde) 1.3718 (Acetic Acid)	Volatility	Not available.
Critical Temperature	Not available.	Odor	Characteristic.
Viscosity	21 Pas (Sulfuric Acid)	Taste	Not available.

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Avoid excessive heat and light. Moisture sensitive.
Incompatibilities	Reactive with strong oxidizing agents, strong reducing agents, strong acids, metals, peroxides, ammonia, alkali metals.

Section XI. Toxicological Information

RTECS Number	BZ2625000 (p-Anisaldehyde) WS5600000 (Sulfuric Acid) AF1225000 (Acetic Acid) KQ6300000 (Ethanol)
Routes of Exposure	Eye Contact. Ingestion. Inhalation. Skin contact.
Toxicity Data	(p-Anisaldehyde) Rat LD_{50} (oral) 1510 mg/kg Mouse LD_{50} (oral) 1859 mg/kg Guinea Pig LD_{50} (oral) 1260 mg/kg Rabbit LD_{50} (dermal) >5 gm/kg (Sulfuric Acid) Rat LD_{50} (oral) 2140 mg/kg Rat LC_{50} (inhalation) 510 mg/m^3 Mouse LC_{50} (inhalation) 320 mg/m^3 Guinea Pig LC_{50} (inhalation) 18 mg/m^3 (Acetic Acid) Rat LD_{50} (oral) 3310 mg/kg Rabbit LD_{50} (dermal) 1060 uL/kg (Ethanol) Rat LC_{50} (inhalation) 20000 ppm/10H

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Chronic Toxic Effects	**CARCINOGENIC EFFECTS** : Not available. **MUTAGENIC EFFECTS** : Not available. **TERATOGENIC EFFECTS** : Tumorigenic Effects. (Ethanol) Mouse TD Oral 400 gm/kg/57 weeks intermittent TOXIC Effects: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Gastrointestinal - Tumors Mouse TDLo Oral 320 mg/kg/50 weeks intermittent TOXIC Effects: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Liver - Tumors Blood - Lymphomas including Hodgkin's disease Mouse TDLo Rectal 120 gm/kg/18 weeks intermittent TOXIC Effects: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Gastrointestinal - Tumors Liver - Tumors **DEVELOPMENTAL TOXICITY**: Reproductive Effects. (Sulfuric Acid) Rabbit TCLo Inhalation 20 mg/m3/7 hours, female 6-18 days of pregnancy TOXIC Effects: Specific Developmental Abnormalities - Musculoskeletal system **DEVELOPMENTAL TOXICITY**: Reproductive Effects. (Acetic Acid) Rat TDLo Intratesticular 400 mg/kg, male 1 day prior to mating TOXIC Effects: Effects on Fertility - Male fertility index Rat TDLo Oral 700 mg/kg, female 18 days after birth TOXIC Effects: Effects on Newborn - Behavioral **DEVELOPMENTAL TOXICITY**: Reproductive Effects. (Ethanol) Rat TDLo Intraperitoneal 600 mg/kg, female 8-15 days of pregnancy TOXIC Effects: Effects on Fertility - Post-implantation mortality Effects on Embryo or Fetus - Extra embryonic structures Effects on Embryo or Fetus - Fetotoxicity Rat TDLo Oral 135 gm/kg, female 1 day of pregnancy-7 days after birth TOXIC Effects: Effects on Newborn - Behavioral Effects on Newborn - Physical Rat TDLo Oral 147 mg/kg, female 1-21 days of pregnancy TOXIC Effects: Specific Developmental Abnormalitites - Endocrine system Effects on Newborn - Delayed effects
Acute Toxic Effects	Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	(Acetic Acid) Acetic acid's production and use in the manufacture of various chemicals, explosives, lacquers, starch, sugars, wines and vinegar and from wood distillation plants and textile mills may result in its release to the environment through various waste streams. Atmospheric emissions occur from combustion of biomass, plastics and refuse and in exhaust from gasoline and diesel engines. Acetic acid was reported as a reaction product from the biodegradation of petroleum compounds in groundwater. Formation of acetic acid can occur via the reaction of olefins with ozone in the atmosphere. Decomposition of solid biological wastes produces acetic acid which is readily metabolized by living organisms; acetic acid occurs as a normal metabolite in both plants and animals. If released to air, a vapor pressure of 15.7 mm Hg at 25 deg C indicates acetic acid will exist solely as a vapor in the ambient atmosphere. Vapor-phase acetic acid will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 22 days. Acetic acid does not absorb light with wavelengths >290 nm, and is not expected to be susceptible to direct photolysis by sunlight. If released to soil, acetic acid is expected to have very high to moderate mobility based upon Koc values ranging from 6.5 to 228. Volatilization from moist soil surfaces is not expected to be an important fate process, since the pKa of acetic acid is 4.74, indicating that it will primarily exist in the dissociated form in the environment. Acetic acid may volatilize from dry soil surfaces based upon its vapor pressure. The major environmental fate process for acetic acid is biodegradation. A large number of biological screening studies have determined that acetic acid biodegrades readily under both aerobic and anaerobic conditions. If released into water, acetic acid is not expected to adsorb to suspended solids and sediment based upon the Koc values. Acetic acid is expected to exist in the dissociated form in the environment and therefore volatilization from water surfaces is not expected to be an important fate process. An estimated BCF of 3.2 suggests the potential for bioconcentration in aquatic organisms is low. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions. Occupational exposure to acetic acid may occur through inhalation and dermal contact with this compound at workplaces where acetic acid is produced or used. Acetic acid occurs ubiquitously and is a normal metabolite in animals; therefore, the general population is continually exposed to the compound. Primary routes of exposure to the general population are through consumption of foods and inhalation of air. (Ethanol) Ethanol's production and use in alcoholic beverages, as a solvent, fuel additive, in the manufacture of denatured alcohol, pharmaceuticals (rubbing compounds, tonics, lotions, colognes), in perfumery, and organic synthesis may result in its release to the environment through various waste streams; it's use as a fungicide and plant regulator will result in its direct release to the environment. Ethanol has been identified as a natural emission product from various plants, fermentation product and as a biological decomposition product of wastes and sewage. If released to the atmosphere, an extrapolated vapor pressure of 59.3 mm Hg at 25 deg C indicates that ethanol will exist solely in the vapor phase. Vapor phase ethanol is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 5 days. If released to soil, ethanol is expected to have very high mobility based upon an estimated

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Koc of 1. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 5X10-6 atm-cu m/mole. Ethanol may also volatilize from dry soils based upon it vapor pressure. Biodegradation is expected to occur rapidly in the environment based on numerous screening tests using different types of inocula and incubation periods. Ethanol was degraded with half-lives on the order of a few days using microcosms constructed with a low organic sandy soil and groundwater, indicating it is unlikely to be persistent in the environment. If released into water, ethanol is not expected to adsorb to suspended solids and sediment based upon the estimated Koc. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 3 and 39 days, respectively. An estimated BCF of 3 suggests the potential for bioconcentration in aquatic organisms is low. Hydrolysis of ethanol and photolysis in sunlit surface waters are not expected since ethanol lacks functional groups that are susceptible to hydrolysis or photolysis under environmental conditions. Occupational exposure to ethanol may occur through inhalation and dermal contact with this compound at workplaces where ethanol is produced or used. The general population is directly exposed to ethanol through the consumption of alcoholic beverages and other products that contain ethanol. Monitoring data also indicate that the general population may be exposed to ethanol via inhalation of ambient air.

Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.

Section XIV. Transport Information

DOT Classification	DOT Class 3: Flammable liquid DOT Class 8: Corrosive material
PIN Number	UN2924
Proper Shipping Name	Flammable liquid, corrosive, n.o.s.
Packing Group (PG)	II
DOT Pictograms	

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS E: Corrosive liquid. On DSL (p-Anisaldehyde, Sulfuric Acid, & Ethanol)
EINECS Number (EEC)	204-602-6 (p-Anisaldehyde) 231-639-5 (Sulfuric Acid) 200-580-7 (Acetic Acid) 200-578-6 (Ethanol)
EEC Risk Statements	R10- Flammable. R18- In use, may form flammable/explosive vapor-air mixture. R20/21/22- Harmful by inhalation, in contact with skin and if swallowed. R34- Causes burns. R45- May cause cancer.
Japanese Regulatory Data	ENCS No. 3-2661 (p-Anisaldehyde) ENCS No. 1-430 ; 1-724 (Sulfuric Acid) ENCS No. 2-688 (Acetic Acid)

Section XVI. Other Information

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Notice to Reader

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