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E. I. DU PONT DE NEMOURS & COMPANY

WILMINGTON 98, DELAWARE

ORGANIC CHEMICALS DEPARTMENT
DYES AND CHEMICALS DIVISION

January 12, 1977

Mr. Rowland LeCain, Mgr, Purchases
Goodyear Tire & Rubber Company
P. O. Box 460
Niagara Falls, NY 14302

Dear Mr. LeCain:

We are writing to all purchasers of o-Toluidine Technical and o-Toluidine S2 Technical to inform them of a possible carcinogen problem with this chemical.

While o-Toluidine has been manufactured and processed at our Chambers Works for some fifty years, we have seen no evidence that it ever caused cancer in any of our employees. However, in a preliminary study* sponsored by the National Cancer Institute, tumors were observed in some rats and mice fed o-Toluidine hydrochloride for their lifetime. National Cancer Institute is repeating this study on a larger scale to establish whether or not o-Toluidine is a carcinogen. Pending the results of this study, anticipated in 1977, we consider it prudent to handle o-Toluidine as a suspected carcinogen.

We are informing all customers of the manufacturing practices we will use to minimize personnel exposure. (See attached Bulletin No. 12976). In addition, we are enclosing a copy of the product label we will be using on all containers of o-Toluidine Tech and o-Toluidine S2 Tech shipped in the future, and a current Material Safety Data Sheet. If you have an earlier Material Safety Data Sheet for o-Toluidine, please replace it with this one.

We request that you make this information known to your employees handling this material. Should you have additional questions, please do not hesitate to call.

Very truly yours,
E. F. Schultz
E. F. Schultz
Technical Manager
Intermediates Division

EFS/mec
Enc.

* Homburger, R., et al., Paper presented at Society of Toxicology, 11th Annual Meeting (1972). Abstract from Tox. Appl. Pharm. 22, p. 280 (1972).

BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY

This information, based upon our testing and experience, is offered without charge as part of our service to customers. It is intended for use by persons having technical skill, at their own discretion and risk. We do not guarantee favorable results, and we assume no liability in connection with its use. This information is not intended as a license to operate under, or a recommendation to infringe, any patent of Du Pont or others covering any material or use.

THIS PAPER IS COLORED WITH DU PONT DYES

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11/17/89

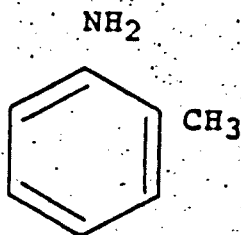
TOXICITY AND SAFE HANDLING

OF

o-TOLUIDINE TECHNICAL
o-TOLUIDINE S2 TECHNICAL

(2 Methyl Aniline)

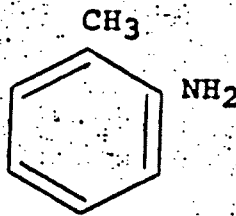
SOCMA Registry Number 99534



o-Toluidine and o-Toluidine S2 Technical are aromatic amines used in the manufacture of rubber chemicals, dyes, and other miscellaneous chemical products.

PRODUCT DESCRIPTION

Chemical Structure



Names

ortho-Aminotoluene
ortho-Toluidine
1-Methyl-2-Aminobenzene
2-Methylaniline

Chemical Composition

CH₃C₆H₄NH₂

Purity by Weight

99.5% (Min.)

Molecular Weight

107.2

Physical Form

Liquid

Color

Clear to light yellow.

Odor

Aromatic, aniline-like.

Freezing Point, °C

-16.3

H₂O Content, % by Weight

0.1 max.

Storage Stability

Darkens on prolonged storage.

Solubility

1.5% in water at 40°C.

Completely miscible with
alcohol and ether.

U.S. DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
MATERIAL SAFETY DATA SHEET

SECTION I

MANUFACTURER'S NAME E. I. du Pont de Nemours, Inc.		EMERGENCY TELEPHONE NO. (302)-774-7500
ADDRESS (Number, Street, City, State, and ZIP Code) Wilmington, Delaware 19898		
CHEMICAL NAME AND SYNONYMS 2-Methyl Aniline	TRADE NAME AND SYNONYMS O-Toluidine Tech. & S2 Tech	
CHEMICAL FAMILY Aromatic Amine	FORMULA CH ₃ C ₆ H ₄ NH ₂	

SECTION II HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS	0	
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
This section is not applicable.					

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	392°F	SPECIFIC GRAVITY (H ₂ O=1)	1.004
VAPOR PRESSURE (mm Hg.)	1MM /111°F	PERCENT VOLATILE BY VOLUME (%)	Not applicable.
VAPOR DENSITY (AIR=1)	3.69	EVAPORATION RATE (=1)	Not applicable.
SOLUBILITY IN WATER	1.5% /70°F		
APPEARANCE AND ODOR	Straw colored liquid, tends to darken on storage. Characteristic aromatic amine odor.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	Open cup 167°F	FLAMMABLE LIMITS	Not available.	LeI	UeI
EXTINGUISHING MEDIA	CO ₂ , dry chemical, foam or water spray.				
SPECIAL FIRE FIGHTING PROCEDURES	If product is exposed to fire or intense heat, toxic fumes may be generated. If exposure is likely, complete body protection may be required.				
UNUSUAL FIRE AND EXPLOSION HAZARDS	None except toxic fumes noted above.				

Revised 12/9/76

NOTICE FROM DU PONT

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE 5ppm, 22 mg/cu. m

EFFECTS OF OVEREXPOSURE o-Toluidine is cyanogenic and can be absorbed through the skin & respiratory tract, exposure symptoms may include bluish lips or fingernails, headache, nausea, or fatigue. Product may cause cancer in animals.

EMERGENCY AND FIRST AID PROCEDURES
 Remove from source of exposure. Remove contaminated clothing, wash exposed body areas with cold water, obtain prompt medical treatment for chemical cyanosis.

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)		Oxidizing agent.	
HAZARDOUS DECOMPOSITION PRODUCTS		Oxides of nitrogen.	
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
 Clear contaminated area of people and barricade area. Provide complete body protection (air-supplied butyl rubber suit) for cleanup crew. Contain spill if possible. Wash contaminated area with water.

WASTE DISPOSAL METHOD Dispose of contaminated recovered material in approved landfill or incinerate in approved incinerator.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)
 Where exposure is likely, use air-supplied butyl rubber suit.

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General) X	OTHER
PROTECTIVE GLOVES	Butyl rubber.	EYE PROTECTION Side-shield safety glasses.
OTHER PROTECTIVE EQUIPMENT		

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in well-ventilated storage area. Direct body exposure to fumes or liquid must be prevented.

OTHER PRECAUTIONS

SAFETY AND HANDLING PRECAUTIONS

o-Toluidine is recognized as a hazardous chemical compound and may cause chemical cyanosis on prolonged contact with the body. All persons handling the product must wear protective clothing designed to avoid skin contact and efficient ventilation must be provided in all work areas.

TOXICITY

o-Toluidine is a toxic aromatic amine that will cause chemical cyanosis on prolonged or severe exposure. The TLV (ACCIH) is 5ppm or 22 mg per cubic meter of air. Toxic levels may be reached through the skin, inhalation of vapors or ingestion of the liquid. Acute exposure symptoms are indicated by cyanosis (blue coloration of lips and fingernails), anemia and jaundice. A rise in blood pressure may also occur. The toxic effect on the central nervous system can result in restlessness, agitation, confusion, depression, convulsion and coma. Hemorrhagic cystitis may occur in the urinary tract. Occasional dermatitis has been reported in industrial workers.

CARCINOGENICITY IN TEST ANIMALS

Tests under the direction of the National Cancer Institute have indicated that o-Toluidine may cause tumors in certain laboratory animals. Tests are continuing by NCI. On the basis of these tests, o-Toluidine should be regarded as a "suspected carcinogen." It should be handled especially carefully as described in this bulletin, the label, and the Material Safety Data Sheet. There are no literature references which link cancer in man to o-Toluidine exposure.

MINIMAL EXPOSURE IN MANUFACTURING OPERATIONS

The Du Pont Company has over 50 years of experience with o-Toluidine in its manufacturing operations. The material has been treated as a toxic chemical and handled so as to minimize employee exposure.

MANUFACTURING AND USE PRACTICE

The Du Pont practice in all its chemical manufacturing areas requires assigned personnel to wear fresh, company-laundered clothes for each shift, and to shower at the end of the work period before changing to street clothes. In o-Toluidine production areas where the process is completely contained, i.e. no exposure to vapor or mist, personnel are required to wear butyl rubber shoe protection and butyl rubber gloves in addition to the above. Side-shield safety glasses are worn throughout the work area. In locations where containment is not complete, a full, air-supplied butyl rubber suit must be worn.

All protective clothing, i.e. rubbers, gloves and suits, is decontaminated by washing with water whenever the employee leaves the work area. Likewise all tools, equipment and materials which may have contacted o-Toluidine are thoroughly washed to decontaminate the items prior to reuse. Each person leaving the work area is required to wash his face, neck, hands and forearms.

Strict high standards for housekeeping are maintained in manufacturing locations. Work areas are flushed with water at appropriate intervals.

Production facilities are designed to contain the product, i.e. all vessels and piping systems are closed. Potential exposure to personnel occurs primarily from leaks, packaging or equipment malfunction. Hood-type ventilation of specific design is provided at locations such as sampling and packaging where the possibility of exposure to personnel is most likely. Whenever ventilation is not adequate to prevent exposure, a full air-supplied butyl rubber suit is used.

SPILL AND EMISSION CONTROL

In the event of a large spill, the immediate vicinity must be cleared of people until personnel with full-body protection are available to apply corrective measures or to start cleanup procedure. Since o-Toluidine is a liquid, reasonable effort should be made to contain the material. If containment is possible, the spilled material can be recovered for disposal by incineration or by approved landfill. Clean up the contaminated area by washing with large quantities of water. Contamination of the ground will require removal of the contaminated soil for disposal in an approved landfill.

In all cleanup operations, personnel must wear full-body protection of an air-supplied butyl rubber suit. The exterior of all containers must be thoroughly washed with water before removal for disposal.

STORAGE

o-Toluidine may be stored in normal, well-ventilated storage areas. There is essentially no hazard associated with the storage of o-Toluidine. Body exposure must be prevented.

FIRE AND EXPLOSION HAZARD

o-Toluidine is a combustible liquid with a flash point of 167°C (open cup). If the material is exposed to fire or intense heat, toxic fumes or oxides of nitrogen may be generated. Carbon dioxide, dry chemical, foam or water spray are suitable fire extinguishing agents. Full protective clothing should be worn. No other unusual fire or explosion hazards are known.

FIRST AID

In case of contact, immediately flush eyes or skin with copious amounts of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician.

E. I. du Pont de Nemours & Company
Organic Chemicals Department
Intermediates Division
Wilmington, Delaware 19898

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PKG. _____

O-TOLUIDINE TECH.

DANGER! May Be Fatal If Inhaled or Absorbed Through Skin
Rapidly Absorbed
Causes Cyanosis
Combustible

BEFORE USING, READ DU PONT PRODUCT BULLETIN 129-76.

- Keep away from heat and open flame.
- Do not breathe vapor.
- Do not get in eyes, on skin, on clothing.
- Use only with adequate ventilation.
- Wash thoroughly after handling.

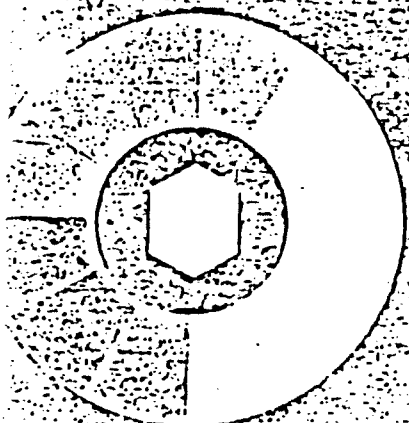
FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. Discard contaminated shoes. If inhaled, remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

FIRE: In case of fire, use water, dry chemical or CO₂.

SPILL: Soak up with sand or earth.

MADE IN U.S.A.

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DUPONT RESEARCH AND DEVELOPMENT
CORPORATION
WILMINGTON, DELAWARE
19880

LOT _____



PKG. _____

O-TOLUIDINE S-2 TECH.

DANGER! May Be Fatal If Inhaled or Absorbed Through Skin
Rapidly Absorbed
Causes Cyanosis
Combustible

BEFORE USING, READ DU PONT PRODUCT BULLETIN 129-76.

- Keep away from heat and open flame.
- Do not breathe vapor.
- Do not get in eyes, on skin, on clothing.
- Use only with adequate ventilation.
- Wash thoroughly after handling.

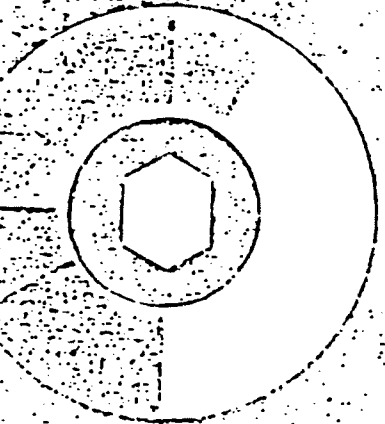
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FIRE: In case of fire, use water, dry chemical or CO₂.

SPILL: Soak up with sand or earth.

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