



chemists helping chemists in research & industry

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DATE: 07/27/93  
CUST#: 938609  
PO#: P0074850

## M A T E R I A L   S A F E T Y   D A T A   S H E E T

PAGE 1

### IDENTIFICATION

PRODUCT #: 17996-5  
CAS #: 108-88-3  
MF: C7H8

NAME: TOLUENE, 99%

### SYNONYMS

ANTISAL 1A \* BENZENE, METHYL \* METHACIDE \* METHANE, PHENYL \*  
METHYLBENZENE \* METHYLBENZOL \* NCI-C07272 \* PHENYLMETHANE \* RCRA  
WASTE NUMBER U220 \* TOLUEEN (DUTCH) \* TOLUEN (CZECH) \* TOLUENE (ACGIH,  
DOT, OSHA) \* TOLUENO (SPANISH) \* TOLUOL \* TOLUOL (DOT) \* TOLUOLO  
(ITALIAN) \* TOLU-SOL \* UN 1294 (DOT) \*

### TOXICITY HAZARDS

TECS #: XS5250000  
TOLUENE

### IRRITATION DATA

EYE-HMN 300 PPM  
SKN-RBT 435 MG MLD  
SKN-RBT 500 MG MOD  
SKN-RBT 20 MG/24H MOD  
EYE-RBT 870 UG MLD  
EYE-RBT 2 MG/24H SEV  
EYE-RBT 100 MG/30S RINSE MLD

JIHTAB 25,282,43  
UCDS\*\* 7/23/70  
FCTDD7 20,563,82  
85JCAE -,29,86  
UCDS\*\* 7/23/70  
85JCAE -,29,86  
FCTDD7 20,573,82

### TOXICITY DATA

ORL-HMN LD50:50 MG/KG  
ORL-RAT LD50:636 MG/KG  
IHL-RAT LC50: >26700 PPM/1H  
IPR-RAT LD50:1332 MG/KG  
IVN-RAT LD50:1960 MG/KG  
UNR-RAT LD50:6900 MG/KG  
IHL-MUS LC50:400 PPM/24H  
IPR-MUS LD50:59 MG/KG  
SCU-MUS LD50:2250 MG/KG  
UNR-MUS LD50:2000 MG/KG  
SKN-RBT LD50:12124 MG/KG  
IPR-GPG LD50:500 MG/KG

YAKUD5 22,883,80  
NRTXDN 2,567,81  
NRTXDN 2,567,81  
ENVRAL 40,411,86  
MELAAD 54,486,63  
GISAAA 45(12),64,80  
NRTXDN 2,567,81  
NRTXDN 2,567,81  
NRTXDN 8,237,87  
GISAAA 45(12),64,80  
AIHAAP 30,470,69  
NRTXDN 2,567,81

### REVIEWS, STANDARDS, AND REGULATIONS

ACGIH TLV-TWA 100 PPM; STEL 150 PPM 85INA8 5,578,86  
IARC CANCER REVIEW:ANIMAL INADEQUATE EVIDENCE IMEMDT 47,79,89  
IARC CANCER REVIEW:HUMAN INADEQUATE EVIDENCE IMEMDT 47,79,89  
IARC CANCER REVIEW:GROUP 3 IMEMDT 47,79,89  
MSHA STANDARD-AIR-TWA 100 PPM (375 MG/M3) (SKIN) DTLWS\* 3,29,73  
OSHA PEL:8H TWA 200 PPM;CL 300;PK 500/10M FEREAC 54,2923,89

CONTINUED ON NEXT PAGE

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# M A T E R I A L   S A F E T Y   D A T A   S H E E T

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CUST#: 938609  
PO#: P0074850

PRODUCT #:

NAME: TOLUENE, 99%

MF: C7H8

## TOXICITY HAZARDS

OSHA PEL FINAL: 8H TWA 100 PPM (375 MG/M3); STEL 150 PPM (560 MG/M3)  
FEREAC 54,2923,89  
OEL-AUSTRALIA: TWA 100 PPM (375 MG/M3); STEL 150 PPM (560 MG/M3)  
JANUARY 1993  
OEL-BELGIUM: TWA 100 PPM (377 MG/M3); STEL 150 PPM (565 MG/M3) JANUARY 1993  
OEL-CZECHOSLOVAKIA: TWA 200 MG/M3; STEL 1000 MG/M3 JANUARY 1993  
OEL-DENMARK: TWA 50 PPM (190 MG/M3); SKIN JANUARY 1993  
OEL-FINLAND: TWA 100 PPM (375 MG/M3); STEL 150 PPM (565 MG/M3); SKIN  
JANUARY 1993  
OEL-FRANCE: TWA 100 PPM (375 MG/M3); STEL 150 PPM (560 MG/M3) JANUARY 1993  
OEL-GERMANY: TWA 100 PPM (380 MG/M3) JANUARY 1993  
OEL-HUNGARY: TWA 100 MG/M3; STEL 300 MG/M3; SKIN JANUARY 1993  
OEL-JAPAN: TWA 100 PPM (380 MG/M3) JANUARY 1993  
OEL-THE NETHERLANDS: TWA 100 PPM (375 MG/M3); SKIN JANUARY 1993  
OEL-THE PHILIPPINES: TWA 100 PPM (375 MG/M3) JANUARY 1993  
OEL-POLAND: TWA 100 MG/M3 JANUARY 1993  
OEL-RUSSIA: TWA 100 PPM; STEL 50 MG/M3 JANUARY 1993  
OEL-SWEDEN: TWA 50 PPM (200 MG/M3); STEL 100 PPM (400 MG/M3); SKIN  
JANUARY 1993  
OEL-SWITZERLAND: TWA 100 PPM (380 MG/M3); STEL 500 PPM (1900 MG/M3)  
JANUARY 1993  
OEL-THAILAND: TWA 200 PPM; STEL 300 PPM JANUARY 1993  
OEL-TURKEY: TWA 200 PPM (750 MG/M3) JANUARY 1993  
OEL-UNITED KINGDOM: TWA 100 PPM (375 MG/M3); STEL 150 PPM (560 MG/M3);  
SKIN JANUARY 1993  
OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA, NEW ZEALAND, SINGAPORE,  
VIETNAM CHECK ACGIH TLV  
NIOSH REL TO TOLUENE-AIR: 10H TWA 100 PPM; STEL 150 PPM NIOSH\* DHHS #92-  
100,92  
NOHS 1974: HZD 73300; NIS 412; TNF 125516; NOS 206; TNE 1589482  
NOES 1983: HZD 73300; NIS 399; TNF 128510; NOS 232; TNE 2015881; TFE  
391255  
ATSDR TOXICOLOGY PROFILE (NTIS\*\* PB/90/198904/AS)  
EPA GENETOX PROGRAM 1988, NEGATIVE: CELL TRANSFORM.-SA7/SHE; IN VITRO  
SCE-HUMAN  
EPA GENETOX PROGRAM 1988, NEGATIVE: SPERM MORPHOLOGY-MOUSE  
EPA GENETOX PROGRAM 1988, INCONCLUSIVE: E COLI POLA WITHOUT S9  
EPA TSCA CHEMICAL INVENTORY, JUNE 1990

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**M A T E R I A L   S A F E T Y   D A T A   S H E E T**

**PAGE 3**

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NAME: TOLUENE, 99%

MF: C7H8

**TOXICITY HAZARDS**

EPA TSCA 8(A) PRELIMINARY ASSESSMENT INFORMATION, FINAL RULE FEREAC 47,26992,82  
EPA TSCA SECTION 8(E) STATUS REPORT 8EHQ-0680-0345; 8EHQ-1080-0368; 8EHQ-0278-0079 P  
ON EPA IRIS DATABASE  
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JANUARY 1993  
NIOSH ANALYTICAL METHODS: SEE HYDROCARBONS, AROMATIC, 1501;  
HYDROCARBONS, BP 36-126 C, 1500;  
NIOSH ANALYTICAL METHODS: SEE TOLUENE, 4000; 2-BUTANONE, ETHANOL, AND TOLUENE IN BLOOD, 8002  
NIOSH ANALYTICAL METHODS: SEE HYDROCARBONS, BP 36-126 DEGREE C 1500  
NIOSH ANALYTICAL METHODS: SEE HYDROCARBONS, AROMATIC 1501  
NTP CARCINOGENESIS STUDIES (INHALATION); NO EVIDENCE: RAT, MOUSE NTPTR\*  
NTP-TR-371,90

**TARGET ORGAN DATA**

BRAIN AND COVERINGS (RECORDINGS FROM SPECIFIC AREAS OF CNS)  
AUTONOMIC NERVOUS SYSTEM (OTHER: PARASYMPATHOMIMETIC)  
BEHAVIORAL (GENERAL ANESTHETIC)  
BEHAVIORAL (SOMNOLENCE)  
BEHAVIORAL (HALLUCINATIONS, DISTORTED PERCEPTIONS)  
BEHAVIORAL (CONVULSIONS OR EFFECT ON SEIZURE THRESHOLD)  
BEHAVIORAL (CHANGE IN MOTOR ACTIVITY)  
BEHAVIORAL (MUSCLE CONTRACTION OR SPASTICITY)  
BEHAVIORAL (ANTIPSYCHOTIC)  
BEHAVIORAL (IRRITABILITY)  
BEHAVIORAL (CHANGE IN PSYCHOPHYSIOLOGICAL TESTS)  
LUNGS, THORAX OR RESPIRATION (OTHER CHANGES)  
BLOOD (CHANGES IN BONE MARROW NOT INCLUDED IN ABOVE)  
EFFECTS ON FERTILITY (ABORTION)  
SPECIFIC DEVELOPMENTAL ABNORMALITIES (MUSCULOSKELETAL SYSTEM)  
SPECIFIC DEVELOPMENTAL ABNORMALITIES (UROGENITAL SYSTEM)  
EFFECTS ON NEWBORN (BIOCHEMICAL AND METABOLIC)  
ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR COMPLETE INFORMATION.

**HEALTH HAZARD DATA**

**ACUTE EFFECTS**

CONTINUED ON NEXT PAGE

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CUST#: 938609  
PO#: P0074850

PRODUCT #:

NAME: TOLUENE, 99%

MF: C7H8

**HEALTH HAZARD DATA**

HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN.  
CAUSES SEVERE IRRITATION.  
HIGH CONCENTRATIONS ARE EXTREMELY DESTRUCTIVE TO TISSUES OF THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT, EYES AND SKIN.  
SYMPTOMS OF EXPOSURE MAY INCLUDE BURNING SENSATION, COUGHING, WHEEZING, LARYNGITIS, SHORTNESS OF BREATH, HEADACHE, NAUSEA AND VOMITING.  
EXPOSURE CAN CAUSE:  
LUNG IRRITATION, CHEST PAIN AND EDEMA WHICH MAY BE FATAL.

**CHRONIC EFFECTS**

MAY CAUSE NERVOUS SYSTEM DISTURBANCES.  
INHALATION STUDIES ON TOLUENE HAVE DEMONSTRATED THE DEVELOPMENT OF INFLAMMATORY AND ULCEROUS LESIONS OF THE PENIS, PREPUCE AND SCROTUM IN ANIMALS.  
TARGET ORGAN(S):  
BRAIN  
LIVER  
KIDNEYS  
BLADDER

**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.  
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.  
IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS.  
CALL A PHYSICIAN.  
WASH CONTAMINATED CLOTHING BEFORE REUSE.

**ADDITIONAL INFORMATION**

EXPOSURE TO AND/OR CONSUMPTION OF ALCOHOL  
MAY INCREASE TOXIC EFFECTS.

**PHYSICAL DATA**

BOILING POINT: 110.6 C  
MELTING POINT: -93 C

CONTINUED ON NEXT PAGE

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**PHYSICAL DATA**

SPECIFIC GRAVITY: 0.865  
VAPOR DENSITY: 3.2  
VAPOR PRESSURE: 22 MM @ 20 C  
26 MM @ 25 C

APPEARANCE AND ODOR  
COLORLESS LIQUID

**FIRE AND EXPLOSION HAZARD DATA**

FLASHPOINT: 40 F  
AUTOIGNITION TEMPERATURE: 997 F  
LOWER EXPLOSION LEVEL: 1%  
UPPER EXPLOSION LEVEL: 7%

**EXTINGUISHING MEDIA**

CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.  
WATER MAY BE EFFECTIVE FOR COOLING, BUT MAY NOT EFFECT EXTINGUISHMENT.

**SPECIAL FIREFIGHTING PROCEDURES**

WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO  
PREVENT CONTACT WITH SKIN AND EYES.  
USE WATER SPRAY TO COOL FIRE-EXPOSED CONTAINERS.

**UNUSUAL FIRE AND EXPLOSIONS HAZARDS**

DANGER:  
EXTREMELY FLAMMABLE.  
VAPOR MAY TRAVEL CONSIDERABLE DISTANCE TO SOURCE OF IGNITION AND  
FLASH BACK.  
CONTAINER EXPLOSION MAY OCCUR UNDER FIRE CONDITIONS.

**REACTIVITY DATA**

**INCOMPATIBILITIES**

OXIDIZING AGENTS

**HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS**

TOXIC FUMES OF:  
CARBON MONOXIDE, CARBON DIOXIDE

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**PRODUCT #:**

**NAME: TOLUENE, 99%**

**MF: C7H8**

**SPILL OR LEAK PROCEDURES**

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED**

**EVACUATE AREA.**  
**SHUT OFF ALL SOURCES OF IGNITION.**  
**WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY RUBBER GLOVES.**  
**COVER WITH AN ACTIVATED CARBON ADSORBENT, TAKE UP AND PLACE IN CLOSED CONTAINERS. TRANSPORT OUTDOORS.**  
**VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.**  
**WASTE DISPOSAL METHOD**  
**BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER BUT EXERT EXTRA CARE IN IGNITING AS THIS MATERIAL IS HIGHLY FLAMMABLE.**  
**OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.**

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE**

**WEAR APPROPRIATE NIOSH/MSHA-APPROVED RESPIRATOR, CHEMICAL-RESISTANT GLOVES, SAFETY GOGGLES, OTHER PROTECTIVE CLOTHING.**  
**SAFETY SHOWER AND EYE BATH.**  
**USE ONLY IN A CHEMICAL FUME HOOD.**  
**DO NOT BREATHE VAPOR.**  
**DO NOT GET IN EYES, ON SKIN, ON CLOTHING.**  
**AVOID PROLONGED OR REPEATED EXPOSURE.**  
**READILY ABSORBED THROUGH SKIN.**  
**WASH THOROUGHLY AFTER HANDLING.**

**TOXIC.**  
**SEVERE IRRITANT.**  
**KEEP TIGHTLY CLOSED.**  
**KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME.**  
**STORE UNDER NITROGEN.**  
**STORE IN A COOL DRY PLACE.**

**ADDITIONAL PRECAUTIONARY STATEMENTS**

**FLAMMABLE (USA DEFINITION)**  
**HIGHLY FLAMMABLE (EUROPEAN DEFINITION)**  
**TOXIC**  
**TOXIC BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.**  
**CAUSES SEVERE IRRITATION.**  
**TARGET ORGAN(S):**

**CONTINUED ON NEXT PAGE**

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**M A T E R I A L   S A F E T Y   D A T A   S H E E T**

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CUST#: 938609  
PO#: P0074850

PRODUCT #:

NAME: TOLUENE, 99%

MF: C7H8

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

LIVER, KIDNEYS

BRAIN

BLADDER

KEEP AWAY FROM SOURCES OF IGNITION. NO SMOKING.

IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE (SHOW THE LABEL WHERE POSSIBLE).

IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.

AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH PLENTY OF WATER. WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION.

**REGULATORY INFORMATION**

THIS PRODUCT IS SUBJECT TO SARA SECTION 313 REPORTING REQUIREMENTS.

ADDITIONAL PRECAUTIONS AND COMMENTS

**ADDITIONAL INFORMATION**

IRON OR FERRIC CHLORIDE CATALYZES A VIGOROUS EXOTHERMIC REACTION BETWEEN TOLUENE AND SULFUR DICHLORIDE. REF: CHEM. ENG. NEWS, P.2, AUGUST 8, 1988.

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