



**SIGMA-ALDRICH**

SIGMA CHEMICAL COMPANY  
POST OFFICE BOX 14508  
SAINT LOUIS, MISSOURI 63178, USA

ATTN: SAFETY DIRECTOR  
UNIV OF WISCONSIN - WHITEWATER  
PURCHASING OFFICE  
800 W MAIN ST  
WHITEWATER WI 53190-1705

EMERGENCY PHONE 1-314-771-5765

DATE 01/21/99  
CUST#: 0-495-04629  
PO#: 1235

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

THIS MSDS IS FOR A COMPONENT OF CATALOG #: P2069

SECTION 1. - - - - - CHEMICAL IDENTIFICATION- - - - -

CATALOG #: CHLOROFORM ACS GRADE  
NAME:

SECTION 2. - - - - - COMPOSITION/INFORMATION ON INGREDIENTS - - - - -

CAS #: 67-66-3  
EC NO: 200-663-8

HAZARDOUS INGREDIENTS  
CONTAINS ETHYL ALCOHOL, CHEMICAL ABSTRACTS REGISTRY NUMBER 64-17-5.

SYNONYMS  
CHLOROFORM (ACGIH:OSHA) \* CHLOROFORME (FRENCH) \* CLOROFORMIO (ITALIAN)  
\* FORMYL TRICHLORIDE \* METHANE TRICHLORIDE \* METHANE TRICHLORO- \*  
METHENYL TRICHLORIDE \* METHYL TRICHLORIDE \* NCI-C02686 \* R 20 \* R 20  
(REFRIGERANT) \* RCRA WASTE NUMBER U044 \* TRICHLORMETHAAN (DUTCH) \*  
TRICHLORMETHAN (CZECH) \* TRICHLOROFORM \* TRICHLOROMETHANE (OSHA) \*  
TRICLOROMETANO (ITALIAN) \*

SECTION 3. - - - - - HAZARDS IDENTIFICATION - - - - -

LABEL PRECAUTIONARY STATEMENTS

TOXIC  
MAY CAUSE CANCER.  
MAY CAUSE HERITABLE GENETIC DAMAGE.  
HARMFUL IF SWALLOWED.  
IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN.  
HARMFUL: DANGER OF SERIOUS DAMAGE TO HEALTH BY PROLONGED  
EXPOSURE THROUGH INHALATION AND IF SWALLOWED.  
TARGET ORGAN(S):  
LIVER  
CARDIOVASCULAR SYSTEM  
IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE  
IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).  
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF  
WATER AND SEEK MEDICAL ADVICE.  
WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE  
PROTECTION.  
DO NOT BREATHE VAPOR.

SECTION 4. - - - - - FIRST-AID MEASURES- - - - -

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.  
CONTAMINATION OF THE EYES SHOULD BE TREATED BY IMMEDIATE AND PROLONGED

CONTINUED ON NEXT PAGE

5073

We are Committed to the Success of our Customers through Science, Technology and Service.



SIGMA CHEMICAL COMPANY  
POST OFFICE BOX 14508  
SAINT LOUIS, MISSOURI 63178, USA

CUST#: 0-495-04629  
PO#: 1235

M A T E R I A L   S A F E T Y   D A T A   S H E E T                      PAGE 2

THIS MSDS IS FOR A COMPONENT OF CATALOG #: P2069

CATALOG #: CHLOROFORM ACS GRADE  
NAME:

IRRIGATION WITH COPIOUS AMOUNTS OF WATER.  
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 IMMEDIATELY.  
WASH CONTAMINATED CLOTHING BEFORE REUSE.

SECTION 5. - - - - - FIRE FIGHTING MEASURES - - - - -

EXTINGUISHING MEDIA  
NONCOMBUSTIBLE.  
USE EXTINGUISHING MEDIA APPROPRIATE TO SURROUNDING FIRE CONDITIONS.

SPECIAL FIREFIGHTING PROCEDURES  
WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO  
PREVENT CONTACT WITH SKIN AND EYES.

UNUSUAL FIRE AND EXPLOSIONS HAZARDS  
EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

SECTION 6. - - - - - ACCIDENTAL RELEASE MEASURES - - - - -

EVACUATE AREA.  
WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY  
RUBBER GLOVES.  
ABSORB ON SAND OR VERMICULITE AND PLACE IN CLOSED CONTAINERS FOR  
DISPOSAL.  
VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

SECTION 7. - - - - - HANDLING AND STORAGE - - - - -

REFER TO SECTION 8.

SECTION 8. - - - - - EXPOSURE CONTROLS/PERSONAL PROTECTION - - - - -

WEAR APPROPRIATE NIOSH/MSHA-APPROVED RESPIRATOR, CHEMICAL-RESISTANT  
GLOVES, SAFETY GOGGLES, OTHER PROTECTIVE CLOTHING.  
USE ONLY IN A CHEMICAL FUME HOOD.  
SAFETY SHOWER AND EYE BATH.  
DO NOT BREATHE VAPOR.  
AVOID ALL CONTACT.  
DO NOT GET IN EYES, ON SKIN, ON CLOTHING.  
WASH THOROUGHLY AFTER HANDLING.  
KEEP TIGHTLY CLOSED.  
STORE IN A COOL DRY PLACE.

SECTION 9. - - - - - PHYSICAL AND CHEMICAL PROPERTIES - - - - -

APPEARANCE AND ODOR  
LIQUID.

PHYSICAL PROPERTIES

CONTINUED ON NEXT PAGE

5074



**SIGMA-ALDRICH**

SIGMA CHEMICAL COMPANY  
POST OFFICE BOX 14508  
SAINT LOUIS, MISSOURI 63178, USA

CUST#: 0-495-04629  
PO#: 1235

M A T E R I A L   S A F E T Y   D A T A   S H E E T                      P A G E   3

THIS MSDS IS FOR A COMPONENT OF CATALOG #: P2069

CATALOG #: CHLOROFORM ACS GRADE  
NAME:  
BOILING POINT: 60.5 C TO 61.5 C  
MELTING POINT: -63 C  
VAPOR PRESSURE: 160MM 20 C  
SPECIFIC GRAVITY: 1.492  
VAPOR DENSITY: 4.1

SECTION 10. ----- STABILITY AND REACTIVITY -----

STABILITY  
STABLE.

INCOMPATIBILITIES  
STRONG OXIDIZING AGENTS  
STRONG BASES  
ALUMINUM  
MAGNESIUM  
SODIUM  
LITHIUM  
MAY DECOMPOSE ON EXPOSURE TO LIGHT.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS  
TOXIC FUMES OF:  
CARBON MONOXIDE, CARBON DIOXIDE  
HYDROGEN CHLORIDE GAS  
PHOSGENE GAS  
CHLORINE

HAZARDOUS POLYMERIZATION  
WILL NOT OCCUR.

SECTION 11. ----- TOXICOLOGICAL INFORMATION -----

ACUTE EFFECTS  
HARMFUL IF SWALLOWED.  
MAY BE HARMFUL IF INHALED.  
MAY BE HARMFUL IF ABSORBED THROUGH THE SKIN.  
VAPOR OR MIST IS IRRITATING TO THE EYES, MUCOUS MEMBRANES AND UPPER  
RESPIRATORY TRACT.  
CAUSES SKIN IRRITATION.  
EXPOSURE CAN CAUSE:  
NAUSEA, DIZZINESS AND HEADACHE  
VOMITING  
GASTROINTESTINAL DISTURBANCES  
MAY CAUSE NERVOUS SYSTEM DISTURBANCES.  
SKIN ABSORPTION MAY OCCUR.  
EXPOSURE TO AND/OR CONSUMPTION OF ALCOHOL  
MAY INCREASE TOXIC EFFECTS.  
TARGET ORGAN(S):  
LIVER  
KIDNEYS  
CARDIOVASCULAR SYSTEM  
CENTRAL NERVOUS SYSTEM

CONTINUED ON NEXT PAGE

5075

We are Committed to the Success of our Customers through Science, Technology and Service.



SIGMA CHEMICAL COMPANY  
POST OFFICE BOX 14508  
SAINT LOUIS, MISSOURI 63178, USA

CUST#: 0-495-04629  
PO#: 1235

M A T E R I A L S A F E T Y D A T A S H E E T PAGE 4

THIS MSDS IS FOR A COMPONENT OF CATALOG #: P2069

CATALOG #:  
NAME: CHLOROFORM ACS GRADE

BLOOD

CHRONIC EFFECTS

THIS PRODUCT IS OR CONTAINS A COMPONENT THAT HAS BEEN REPORTED TO BE PROBABLY CARCINOGENIC BASED ON ITS IARC, OSHA, ACGIH, NTP OR EPA CLASSIFICATION.

THE NATIONAL CANCER INSTITUTE (NCI) HAS FOUND CLEAR EVIDENCE FOR CARCINOGENICITY.

MAY ALTER GENETIC MATERIAL.

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

RTECS #: FS9100000  
CHLOROFORM

IRRITATION DATA

SKN-RBT 10 MG/24H OPEN MLD	AIHAAP 23,95,1962
SKN-RBT 500 MG/24H MLD	85JCAE -,89,1986
EYE-RBT 148 MG	AIHAAP 37,697,1976
EYE-RBT 20 MG/24H MOD	85JCAE -,89,1986

TOXICITY DATA

ORL-MAN LDLO:2514 MG/KG	AJEMEN 6,507,1988
IHL-HMN LCLO:25000 PPM/5M	TABIA2 3,231,1933
UNR-MAN LDLO:546 MG/KG	85DCAI 2,73,1970
ORL-RAT LD50:908 MG/KG	JPFCD2 17,205,1982
IHL-RAT LC50:47702 MG/M3/4H	ENVRAL 40,411,1986
IPR-RAT LD50:894 MG/KG	ENVRAL 40,411,1986
ORL-MUS LD50:36 MG/KG	ATSUDG 2,371,1979
IPR-MUS LD50:623 MG/KG	AGGHAR 18,109,1960
SCU-MUS LD50:704 MG/KG	JPETAB 123,224,1958
IPR-DOG LD50:1 GM/KG	TXAPA9 10,119,1967
SKN-RBT LD50:>20 GM/KG	NTIS** AD-A062-138
ORL-GPG LD50:820 MG/KG	GISAAA 48(3),10,1983

TARGET ORGAN DATA

BEHAVIORAL (FOOD INTAKE)  
LIVER (LIVER FUNCTION TESTS IMPAIRED)  
BLOOD (OTHER CHANGES)  
EFFECTS ON FERTILITY (FEMALE FERTILITY INDEX)  
EFFECTS ON FERTILITY (POST-IMPLANTATION MORTALITY)  
EFFECTS ON FERTILITY (OTHER MEASURES OF FERTILITY)  
EFFECTS ON EMBRYO OR FETUS (FETOTOXICITY)  
EFFECTS ON EMBRYO OR FETUS (FETAL DEATH)  
SPECIFIC DEVELOPMENTAL ABNORMALITIES (CRANIOFACIAL)  
SPECIFIC DEVELOPMENTAL ABNORMALITIES (MUSCULOSKELETAL SYSTEM)  
SPECIFIC DEVELOPMENTAL ABNORMALITIES (GASTROINTESTINAL SYSTEM)  
SPECIFIC DEVELOPMENTAL ABNORMALITIES (HOMEOSTASIS)  
NUTRITIONAL AND GROSS METABOLIC (WEIGHT LOSS OR DECREASED WEIGHT GAIN)  
ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR COMPLETE INFORMATION.

CONTINUED ON NEXT PAGE

5076



**SIGMA-ALDRICH**

SIGMA CHEMICAL COMPANY  
POST OFFICE BOX 14508  
SAINT LOUIS, MISSOURI 63178, USA

CUST#: 0-495-04629  
PO#: 1235

M A T E R I A L   S A F E T Y   D A T A   S H E E T                      P A G E   5

THIS MSDS IS FOR A COMPONENT OF CATALOG #: P2069

CATALOG #: CHLOROFORM ACS GRADE  
NAME:

SECTION 12. ----- ECOLOGICAL INFORMATION -----  
DATA NOT YET AVAILABLE.

SECTION 13. ----- DISPOSAL CONSIDERATIONS -----  
CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL.  
OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION 14. ----- TRANSPORT INFORMATION -----  
CONTACT SIGMA CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. ----- REGULATORY INFORMATION -----

EUROPEAN INFORMATION

EC INDEX NO: 602-006-00-4

TOXIC

R 22

HARMFUL IF SWALLOWED.

R 38

IRRITATING TO SKIN.

R 40

POSSIBLE RISK OF IRREVERSIBLE EFFECTS.

R 48/20/22

HARMFUL: DANGER OF SERIOUS DAMAGE TO HEALTH BY PROLONGED EXPOSURE THROUGH INHALATION AND IF SWALLOWED.

S 36/37

WEAR SUITABLE PROTECTIVE CLOTHING AND GLOVES.

TLV AND SOURCE

FOR ETHYL ALCOHOL (ETHANOL):

ACGIH TLV-TWA: 1000 PPM (1880 MG/M3).

OSHA PEL: 8H TWA 1000 PPM (1900 MG/M3).

REVIEWS, STANDARDS, AND REGULATIONS

OEL=MAK

ACGIH TLV-ANIMAL CARCINOGEN

ACGIH TLV-TWA 49 MG/M3 (10 PPM)

IARC CANCER REVIEW:ANIMAL SUFFICIENT EVIDENCE

IARC CANCER REVIEW:HUMAN INADEQUATE EVIDENCE

IARC CANCER REVIEW:GROUP 2B

MSHA STANDARD:AIR-CL 50 PPM (240 MG/M3)

DTLWS\* 3,14,1973

OSHA PEL (GEN INDU):CL 50 PPM (240 MG/M3)

CFRGBR 29,1910.1000,1994

OSHA PEL (CONSTRUC):CL 50 PPM (240 MG/M3)

CFRGBR 29,1926.55,1994

OSHA PEL (SHIPYARD):CL 50 PPM (240 MG/M3)

DTLVS\* TLV/BEI,1997

DTLVS\* TLV/BEI,1997

IMEMDT 20,401,1979

IMEMDT 20,401,1979

IMSUDL 7,152,1987

CONTINUED ON NEXT PAGE

5077

We are Committed to the Success of our Customers through Science, Technology and Service.



SIGMA CHEMICAL COMPANY  
POST OFFICE BOX 14508  
SAINT LOUIS, MISSOURI 63178, USA

CUST#: 0-495-04629  
PO#: 1235

M A T E R I A L   S A F E T Y   D A T A   S H E E T                      P A G E   6

THIS MSDS IS FOR A COMPONENT OF CATALOG #:                      P2069

CATALOG #:                      CHLOROFORM ACS GRADE  
NAME:

CFRGBR 29,1915.1000,1993  
OSHA PEL (FED CONT):CL 50 PPM (240 MG/M3)  
CFRGBR 41,50-204.50,1994  
OEL-ARAB REPUBLIC OF EGYPT:TWA 10 PPM (50 MG/M3) JAN 1993  
OEL-AUSTRALIA:TWA 10 PPM (50 MG/M3);CARCINOGEN JAN 1993  
OEL-AUSTRIA:TWA 10 PPM (50 MG/M3) JAN 1993  
OEL-BELGIUM:TWA 10 PPM (49 MG/M3);CARCINOGEN JAN 1993  
OEL-DENMARK:TWA 2 PPM (10 MG/M3);CARCINOGEN JAN 1993  
OEL-FINLAND:TWA 10 PPM (50 MG/M3);STEL 20 PPM;SKIN;CARCINOGEN JAN 1993  
OEL-FRANCE:TWA 5 PPM (25 MG/M3);STEL 50 PPM (250 MG/M3);CARCINOGEN JAN 1993  
OEL-GERMANY:TWA 10 PPM (50 MG/M3);CARCINOGEN JAN 1993  
OEL-HUNGARY:STEL 10 MG/M3 JAN 1993  
OEL-INDIA:TWA 10 PPM (50 MG/M3);CARCINOGEN JAN 1993  
OEL-JAPAN:TWA 50 PPM (240 MG/M3);CARCINOGEN JAN 1993  
OEL-THE NETHERLANDS:TWA 10 PPM (50 MG/M3) JAN 1993  
OEL-THE PHILIPPINES:TWA 50 PPM (240 MG/M3) JAN 1993  
OEL-POLAND:TWA 50 MG/M3 JAN 1993  
OEL-RUSSIA:TWA 50 PPM JAN 1993  
OEL-SWEDEN:TWA 2 PPM (10 MG/M3);STEL 5 PPM (25 MG/M3);CARCINOGEN JAN 1993  
OEL-SWITZERLAND:TWA 10 PPM (50 MG/M3);STEL 20 PPM (100 MG/M3) JAN 1993  
OEL-THAILAND:TWA 50 PPM (240 MG/M3) JAN 1993  
OEL-TURKEY:TWA 50 PPM (240 MG/M3) JAN 1993  
OEL-UNITED KINGDOM:TWA 10 PPM (50 MG/M3);STEL 50 PPM (225 MG/M3) JAN 1993  
OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA CHECK ACGIH TLV  
OEL IN NEW ZEALAND, SINGAPORE, VIETNAM CHECK ACGIH TLV  
NIOSH REL TO CHLOROFORM-AIR:CA STEL 2 PPM/60M  
NIOSH\* DHHS #92-100,1992  
NIOSH REL TO WASTE ANESTHETIC GASES AND VAPORS-AIR:CL 2 PPM/1H  
MMWR\*\* 37(S-7),28,1988  
NOHS 1974: HZD 18500; NIS 78; TNF 5120; NOS 66; TNE 96747  
NOES 1983: HZD 18500; NIS 65; TNF 4890; NOS 55; TNE 95773; TFE 41397  
ATSDR TOXICOLOGY PROFILE (NTIS\*\* PB/89/160360/AS)  
EPA GENETOX PROGRAM 1988, POSITIVE: CARCINOGENICITY-MOUSE/RAT; S  
CEREVISIAE GENE CONVERSION  
EPA GENETOX PROGRAM 1988, POSITIVE: S CEREVISIAE-HOMOZYGOSIS; S  
CEREVISIAE-REVERSION  
EPA GENETOX PROGRAM 1988, NEGATIVE: CELL TRANSFORM.-SA7/SHE; V79 CELL  
CULTURE-GENE MUTATION  
EPA GENETOX PROGRAM 1988, INCONCLUSIVE: MAMMALIAN MICRONUCLEUS; SPERM  
MORPHOLOGY-MOUSE  
EPA TSCA SECTION 8(B) CHEMICAL INVENTORY  
EPA TSCA SECTION 8(D) UNPUBLISHED HEALTH/SAFETY STUDIES  
ON EPA IRIS DATABASE  
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JUNE 1998  
NIOSH CURRENT INTELLIGENCE BULLETIN 9, 1976  
NIOSH ANALYTICAL METHOD, 1994: HYDROCARBONS, HALOGENATED, 1003  
NCI CARCINOGENESIS BIOASSAY (GAVAGE);CLEAR EVIDENCE:MOUSE,RAT  
NCITR\* NCI-TR,1976  
NTP 8TH ANNUAL REPORT ON CARCINOGENS, 1998:REASONABLY ANTICIPATED TO BE

CONTINUED ON NEXT PAGE

5078



**SIGMA-ALDRICH**

SIGMA CHEMICAL COMPANY  
POST OFFICE BOX 14508  
SAINT LOUIS, MISSOURI 63178, USA

CUST#: 0-495-04629  
PO#: 1235

M A T E R I A L   S A F E T Y   D A T A   S H E E T                      P A G E   7

THIS MSDS IS FOR A COMPONENT OF CATALOG #: P2069

CATALOG #: CHLOROFORM ACS GRADE  
NAME:

HUMAN CARCINOGEN  
OSHA ANALYTICAL METHOD #05

U.S. INFORMATION  
THIS PRODUCT IS SUBJECT TO SARA SECTION 313 REPORTING REQUIREMENTS.  
CALIFORNIA PROPOSITION 65:  
THIS PRODUCT IS OR CONTAINS CHEMICAL(S) KNOWN TO THE STATE OF  
CALIFORNIA TO CAUSE CANCER.

SECTION 16. - - - - - OTHER INFORMATION - - - - -

THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT BUT DOES NOT PURPORT TO BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. SIGMA SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM HANDLING OR FROM CONTACT WITH THE ABOVE PRODUCT. SEE REVERSE SIDE OF INVOICE OR PACKING SLIP FOR ADDITIONAL TERMS AND CONDITIONS OF SALE.

COPYRIGHT 1998 SIGMA-ALDRICH CO.  
LICENSE GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.

MATERIAL WAS SHIPPED TO THIS ADDRESS:  
UNIV OF WISCONSIN - WHITEWATER  
N FREMONT ST  
WHITEWATER WI 53190

5079

*We are Committed to the Success of our Customers through Science, Technology and Service.*

