



OCT 18 1999

SIGMA-ALDRICH

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DATE 10/13/99
CUST#: 0-495-04629
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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 1

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

CATALOG #: A6283
NAME: ACETIC ACID, GLACIAL

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

CAS #: 64-19-7
MF: C₂H₄O₂
EC NO: 200-580-7

SYNONYMS

ACETIC ACID (ACGIH:OSHA) * ACETIC ACID, GLACIAL * ACIDE ACETIQUE
(FRENCH) * ACIDO ACETICO (ITALIAN) * AZIJNZUUR (DUTCH) * ESSIGSAEURE
(GERMAN) * ETHANOIC ACID * ETHYLIC ACID * GLACIAL ACETIC ACID *
Kyselina octova (CZECH) * METHANECARBOXYLIC ACID * OCTOWY KWAS
(POLISH) * VINEGAR ACID *

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

LABEL PRECAUTIONARY STATEMENTS

COMBUSTIBLE (USA)
FLAMMABLE (EU)
CORROSIVE
CAUSES SEVERE BURNS.
HARMFUL IN CONTACT WITH SKIN.
LACHRYMATOR.
TARGET ORGAN(S):
TEETH
KIDNEYS
KEEP AWAY FROM SOURCES OF IGNITION - NO SMOKING.
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.

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

IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS.
CALL A PHYSICIAN IMMEDIATELY.
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL
RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
IN CASE OF SKIN CONTACT, FLUSH WITH COPIOUS AMOUNTS OF WATER
FOR AT LEAST 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND
SHOES. CALL A PHYSICIAN.
IN CASE OF CONTACT WITH EYES, FLUSH WITH COPIOUS AMOUNTS OF WATER
FOR AT LEAST 15 MINUTES. ASSURE ADEQUATE FLUSHING BY SEPARATING
THE EYELIDS WITH FINGERS. CALL A PHYSICIAN.

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

EXTINGUISHING MEDIA

CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

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

EMITS TOXIC FUMES UNDER FIRE CONDITIONS.
CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.

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

WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY RUBBER GLOVES.
COVER WITH DRY LIME OR SODA ASH, PICK UP, KEEP IN A CLOSED CONTAINER AND HOLD FOR WASTE DISPOSAL.
VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.
EVACUATE AREA.

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

REFER TO SECTION 8.

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

SAFETY SHOWER AND EYE BATH.
USE ONLY IN A CHEMICAL FUME HOOD.
WASH CONTAMINATED CLOTHING BEFORE REUSE.
DISCARD CONTAMINATED SHOES.
WASH THOROUGHLY AFTER HANDLING.
DO NOT BREATHE VAPOR.
DO NOT GET IN EYES, ON SKIN, ON CLOTHING.
AVOID PROLONGED OR REPEATED EXPOSURE.
NIOSH/MSHA-APPROVED RESPIRATOR.
COMPATIBLE CHEMICAL-RESISTANT GLOVES.
CHEMICAL SAFETY GOGGLES.
FACESHIELD (8-INCH MINIMUM).
KEEP TIGHTLY CLOSED.
STORE IN A COOL DRY PLACE.

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

PHYSICAL PROPERTIES

BOILING POINT: 117 - 118 C
MELTING POINT: 16.2 C
FLASHPOINT 104 F

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CATALOG #: A6283
NAME: ACETIC ACID, GLACIAL

EXPLOSION LIMITS IN AIR: 40 C
LOWER 16 %
VAPOR PRESSURE: 11.4 MMHG
SPECIFIC GRAVITY: 1.049
VAPOR DENSITY: 2.07 G/L

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

STABILITY
STABLE.

INCOMPATIBILITIES
PROTECT FROM MOISTURE.
OXIDIZING AGENTS
SOLUBLE CARBONATES AND PHOSPHATES
HYDROXIDES
OXIDES
METALS
PEROXIDES
PERMANGANATES
AMINES
ALCOHOLS

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS
CARBON MONOXIDE, CARBON DIOXIDE

HAZARDOUS POLYMERIZATION
WILL NOT OCCUR.

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

ACUTE EFFECTS
CAUSES BURNS.
HARMFUL IF ABSORBED THROUGH SKIN.
MAY BE HARMFUL IF INHALED.
MAY BE HARMFUL IF SWALLOWED.
MATERIAL IS EXTREMELY DESTRUCTIVE TO TISSUE OF THE MUCOUS MEMBRANES
AND UPPER RESPIRATORY TRACT, EYES AND SKIN.
INHALATION MAY RESULT IN SPASM, INFLAMMATION AND EDEMA OF THE
LARYNX AND BRONCHI, CHEMICAL PNEUMONITIS AND PULMONARY EDEMA.
SYMPTOMS OF EXPOSURE MAY INCLUDE BURNING SENSATION, COUGHING,
WHEEZING, LARYNGITIS, SHORTNESS OF BREATH, HEADACHE, NAUSEA AND
VOMITING.
INGESTION OR INHALATION OF CONCENTRATED ACETIC ACID CAUSES DAMAGE TO
TISSUES OF THE RESPIRATORY AND DIGESTIVE TRACTS. SYMPTOMS INCLUDE:
HEMATEMESIS, BLOODY DIARRHEA, EDEMA AND/OR PERFORATION OF THE ESOPHAGUS
AND PYLORUS, HEMATURIA, ANURIA, UREMIA, ALBUMINURIA, HEMOLYSIS,
CONVULSIONS, BRONCHITIS, PULMONARY EDEMA, PNEUMONIA, CARDIOVASCULAR
COLLAPSE, SHOCK AND DEATH.
DIRECT CONTACT OR EXPOSURE TO HIGH CONCENTRATIONS OF VAPOR WITH SKIN OR

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EYES CAN CAUSE: ERYTHEMA, BLISTERS, TISSUE DESTRUCTION WITH SLOW HEALING, SKIN BLACKENING, HYPERKERATOSIS, FISSURES, CORNEAL EROSION, OPACIFICATION, IRITIS, CONJUNCTIVITIS AND POSSIBLE BLINDNESS. TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

CHRONIC EFFECTS
TARGET ORGAN(S):
TEETH
KIDNEYS

RTECS #: AF1225000
ACETIC ACID

IRRITATION DATA

SKN-HMN 50 MG/24H MLD	TXAPA9 31,481,1975
SKN-RBT 525 MG OPEN SEV	UCDS** 8/7/1963
SKN-RBT 50 MG/24H MLD	TXAPA9 31,481,1975
EYE-RBT 5 MG/30S RINSE MLD	TXCYAC 23,281,1982

TOXICITY DATA

UNR-MAN LDLO:308 MG/KG	85DCAI 2,73,1970
ORL-RAT LD50:3310 MG/KG	DMDJAP 31,276,1959
IHL-MUS LC50:5620 PPM/1H	MELAAD 48,559,1957
IVN-MUS LD50:525 MG/KG	APTOA6 18,141,1961
SKN-RBT LD50:1060 UL/KG	UCDS** 8/7/1963

TARGET ORGAN DATA

SENSE ORGANS AND SPECIAL SENSES (OTHER OLFACTION EFFECTS)
SENSE ORGANS AND SPECIAL SENSES (OTHER EYE EFFECTS)
BEHAVIORAL (CONVULSIONS OR EFFECT ON SEIZURE THRESHOLD)
LUNGS, THORAX OR RESPIRATION (OTHER CHANGES)
GASTROINTESTINAL (CHANGES IN STRUCTURE OR FUNCTION OF ESOPHAGUS)
GASTROINTESTINAL (ULCERATION OR BLEEDING FROM SMALL INTESTINE)
GASTROINTESTINAL (ULCERATION OR BLEEDING FROM LARGE INTESTINE)
EFFECTS ON FERTILITY (MALE FERTILITY INDEX)
EFFECTS ON NEWBORN (BEHAVIORAL)
ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR COMPLETE INFORMATION.

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

SECTION 13. - - - - - DISPOSAL CONSIDERATIONS - - - - -
THIS COMBUSTIBLE MATERIAL MAY BE BURNED IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.
OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION 14. - - - - - TRANSPORT INFORMATION - - - - -

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CONTACT SIGMA CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. REGULATORY INFORMATION

EUROPEAN INFORMATION

EC INDEX NO: 607-002-00-6
FLAMMABLE
CORROSIVE
R 10
FLAMMABLE.
R 35
CAUSES SEVERE BURNS.
S 23
DO NOT BREATHE VAPOR.
S 26
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.
S 45
IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).

REVIEWS, STANDARDS, AND REGULATIONS

OEL=MAK
ACGIH TLV-STEL 37 MG/M3 (15 PPM)
ACGIH TLV-TWA 25 MG/M3 (10 PPM)
EPA FIFRA 1988 PESTICIDE SUBJECT TO REGISTRATION OR RE-REGISTRATION
PEREAC 54,7740,1989
MSHA STANDARD-AIR:TWA 10 PPM (25 MG/M3)
DTLVS* 3,2,1971
OSHA PEL (GEN INDU):8H TWA 10 PPM (25 MG/M3)
CFRGBR 29,1910.1000,1994
OSHA PEL (CONSTRUC):8H TWA 10 PPM (25 MG/M3)
CFRGBR 29,1926.55,1994
OSHA PEL (SHIPYARD):8H TWA 10 PPM (25 MG/M3)
CFRGBR 29,1915.1000,1993
OSHA PEL (FED CONT):8H TWA 10 PPM (25 MG/M3)
CFRGBR 41,50-204.50,1994
OEL-AUSTRALIA:TWA 10 PPM (25 MG/M3);STEL 15 PPM (37 MG/M3) JAN 1993
OEL-AUSTRIA: MAK 10 PPM (25 MG/M3), JAN1999
OEL-AUSTRIA:TWA 10 PPM (25 MG/M3) JAN 1993
OEL-BELGIUM:TWA 10 PPM (25 MG/M3);STEL 15 PPM (37 MG/M3) JAN 1993
OEL-DENMARK: TWA 10 PPM (25 MG/M3), JAN1999
OEL-FINLAND:TWA 10 PPM (25 MG/M3);STEL 15 PPM (37 MG/M3);SKIN JAN 1993
OEL-JAPAN: OEL 10 PPM (25 MG/M3), JAN1999
OEL-GERMANY:TWA 10 PPM (25 MG/M3) JAN 1993
OEL-HUNGARY:TWA 10 MG/M3;STEL 20 MG/M3 JAN 1993
OEL-POLAND: MAC(TWA) 5 MG/M3, MAC(STEL) 35 MG/M3, JAN1999
OEL-INDIA:TWA 10 PPM (25 MG/M3);STEL 15 PPM (37 MG/M3) JAN 1993
OEL-JAPAN:TWA 10 PPM (25 MG/M3) JAN 1993

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CATALOG #: A6283
NAME: ACETIC ACID, GLACIAL

OEL-THE NETHERLANDS:TWA 10 PPM (25 MG/M3) JAN 1993
OEL-THE PHILIPPINES:TWA 10 PPM (25 MG/M3) JAN 1993
OEL-RUSSIA:TWA 10 PPM;STEL 5 MG/M3;SKIN JAN 1993
OEL-SWEDEN:TWA 10 PPM (25 MG/M3);STEL 15 PPM (35 MG/M3) JAN 1993
OEL-SWITZERLAND:TWA 10 PPM (25 MG/M3);STEL 20 PPM (50 MG/M3) JAN 1993
OEL-THAILAND:TWA 10 PPM (25 MG/M3) JAN 1993
OEL-TURKEY:TWA 10 PPM (25 MG/M3) JAN 1993
OEL-UNITED KINGDOM:TWA 10 PPM (25 MG/M3);STEL 15 PPM (35 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 ACETIC ACID-AIR:10H TWA 10 PPM;STEL 15 PPM
NIOSH* DHHS #92-100, 1992
NOHS 1974: HZD 01568; NIS 264; TNF 51469; NOS 150; TNE 486503
NOES 1983: HZD 01568; NIS 266; TNF 49403; NOS 169; TNE 907205; TFE 322123
EPA GENETOX PROGRAM 1988, NEGATIVE: HISTIDINE REVERSION-AMES TEST
EPA TSCA SECTION 8(B) CHEMICAL INVENTORY
EPA TSCA SECTION 8(D) UNPUBLISHED HEALTH/SAFETY STUDIES
EPA TSCA SECTION 8(E) RISK NOTIFICATION, 8EHQ-0892-9237;8EHQ-0892-9238
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JUNE 1999
NIOSH ANALYTICAL METHOD, 1994: ACETIC ACID, 1603
OSHA ANALYTICAL METHOD #ID-118

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

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