



SIGMA-ALDRICH

ALDRICH CHEMICAL COMPANY, INC.
P.O. BOX 355
MILWAUKEE, WISCONSIN 53201, USA

Lab
PO 86165

ATTN: SAFETY DIRECTOR

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SCHOOLCRAFT COLLEGE
18600 HAGGERTY ROAD
LIVONIA MI 48152-3932

DATE 01/28/98
CUST#: 938609
PO#: 86165

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 1

SECTION 1. - - - - - C H E M I C A L I D E N T I F I C A T I O N - - - - -

CATALOG #: M18-8
NAME: MALEIC ANHYDRIDE, BRIQUETTES, 99%

SECTION 2. - - - - - C O M P O S I T I O N / I N F O R M A T I O N O N I N G R E D I E N T S - - - - -

CAS #: 108-31-6
MF: C₄H₂O₃
EC NO: 203-571-6

SYNONYMS

ANHYDRID KYSELINY MALEINOVE (CZECH) * CIS-BUTENEDIOIC ANHYDRIDE * 2,5-FURANDIONE * MALEIC ACID ANHYDRIDE * MALEIC ANHYDRIDE (ACGIH:DOT:OSHA) * MALEINANHYDRID (CZECH) * TOXILIC ANHYDRIDE * RCRA WASTE NUMBER U147 * UN2215 (DOT) *

SECTION 3. - - - - - H A Z A R D S I D E N T I F I C A T I O N - - - - -

LABEL PRECAUTIONARY STATEMENTS

CORROSIVE
CAUSES BURNS.
HARMFUL BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.
POSSIBLE SENSITIZER.
STERNUTATOR.
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.
TAKE OFF IMMEDIATELY ALL CONTAMINATED CLOTHING.
WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION.
KEEP CONTAINER TIGHTLY CLOSED IN A COOL WELL-VENTILATED PLACE.
MOISTURE SENSITIVE
STORE UNDER NITROGEN.
KEEP TIGHTLY CLOSED.

SECTION 4. - - - - - F I R S T - A I D M E A S U R E S - - - - -

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.

SECTION 5. - - - - - F I R E F I G H T I N G M E A S U R E S - - - - -

EXTINGUISHING MEDIA
WATER SPRAY.

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CARBON DIOXIDE.
DO NOT USE DRY CHEMICAL POWDER EXTINGUISHER ON THIS MATERIAL.

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

UNUSUAL FIRE AND EXPLOSIONS HAZARDS
THIS MATERIAL, LIKE MOST MATERIALS IN POWDER FORM, IS CAPABLE OF
CREATING A DUST EXPLOSION.

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

EVACUATE AREA.
WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY
RUBBER GLOVES.
SWEEP UP, PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL.
AVOID RAISING DUST.
VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

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

REFER TO SECTION 8.

ADDITIONAL INFORMATION

CAUTION: MALEIC ANHYDRIDE DECOMPOSES (DECARBOXYLATION AND
POLYMERIZATION) IN THE PRESENCE OF THE ALKALI METALS OR AMINES AT
TEMPERATURES ABOVE 150 C. THE CONCENTRATION OF THESE IMPURITIES
NECESSARY TO TRIGGER THE DECOMPOSITION IS AS LOW AS 200 PPM. THE
EXOTHERMIC REACTION WILL TAKE PLACE RAPIDLY AND THE GAS WHICH IS
EVOLVED CAN CAUSE EQUIPMENT TO RUPTURE.

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

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 DUST.
AVOID CONTACT WITH EYES, SKIN AND CLOTHING.
AVOID PROLONGED OR REPEATED EXPOSURE.
WASH THOROUGHLY AFTER HANDLING.
CORROSIVE.
TOXIC.
STERNUTATOR.
POSSIBLE SENSITIZER.
KEEP TIGHTLY CLOSED.
STORE IN A COOL DRY PLACE.

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

APPEARANCE AND ODOR

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WHITE CRYSTALLINE BRIQUETTES

PHYSICAL PROPERTIES

BOILING POINT: 200 C
MELTING POINT: 54 C TO 56 C
FLASHPOINT: 218 F
103C

EXPLOSION LIMITS IN AIR:

UPPER 7.1%
LOWER 1.4%
AUTOIGNITION TEMPERATURE: 870 F 465C
VAPOR PRESSURE: 0.16MM 20 C 1MM 44 C
VAPOR DENSITY: 3.4

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

INCOMPATIBILITIES

STRONG OXIDIZING AGENTS
STRONG ACIDS
STRONG BASES
STRONG REDUCING AGENTS
ALKALI METALS
AMINES

MAY DECOMPOSE ON EXPOSURE TO MOIST AIR OR WATER.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS

TOXIC FUMES OF:
CARBON MONOXIDE, CARBON DIOXIDE

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

ACUTE EFFECTS

HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN.
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.
CAUSES SNEEZING. DO NOT INHALE.
PROLONGED OR REPEATED EXPOSURE MAY CAUSE ALLERGIC REACTIONS IN CERTAIN
SENSITIVE INDIVIDUALS.

CHRONIC EFFECTS

ASTHMA
DERMATITIS
PULMONARY EDEMA. EFFECTS MAY BE DELAYED.
TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND
TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

RTECS #: ON3675000

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MALEIC ANHYDRIDE

IRRITATION DATA
EYE-RBT 1% SEV

AJOPAA 29,1363,1946

TOXICITY DATA

ORL-RAT LD50:400 MG/KG
IPR-RAT LD50:97 MG/KG
ORL-MUS LD50:465 MG/KG
ORL-RBT LD50:875 MG/KG
SKN-RBT LD50:2620 MG/KG
ORL-GPG LD50:390 MG/KG
SKN-GPG LD50:>20 GM/KG

IAEC** 17JUN1974
85GMAT - 79,1982
GTPZAB 13(4),42,1969
85GMAT - 79,1982
TXAPA9 42,417,1977
85GMAT - 79,1982
IAEC** 17JUN1974

TARGET ORGAN DATA

TUMORIGENIC (EQUIVOCAL TUMORIGENIC AGENT BY RTECS CRITERIA)
TUMORIGENIC (TUMORS AT SITE OF APPLICATION)
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 - - - - -

DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A
CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.
OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

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

CONTACT ALDRICH CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

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

EUROPEAN INFORMATION

EC INDEX NO: 607-096-00-9

CORROSIVE

R 22

HARMFUL IF SWALLOWED.

R 36/37/38

IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN.

R 42

MAY CAUSE SENSITIZATION BY INHALATION.

S 22

DO NOT BREATHE DUST.

S 28

AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH PLENTY OF WATER.

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WEAR EYE/FACE PROTECTION.

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REVIEWS, STANDARDS, AND REGULATIONS

OEL=MAK
ACGIH TLV-TWA 1.0 MG/M3 (0.25 PPM) DTLVS* TLV/BEI, 1996
MSHA STANDARD-AIR: TWA 0.25 PPM (1 MG/M3)
DTLVS* 3, 148, 1971
OSHA PEL (GEN INDU): 8H TWA 0.25 PPM (1 MG/M3)
CFR GBR 29, 1910.1000, 1994
OSHA PEL (CONSTRUC): 8H TWA 0.25 PPM
CFR GBR 29, 1926.55, 1994
OSHA PEL (SHIPYARD): 8H TWA 0.25 PPM
CFR GBR 29, 1915.1000, 1993
OSHA PEL (FED CONT): 8H TWA 0.25 PPM (1 MG/M3)
CFR GBR 41, 50-204.50, 1994
OEL-AUSTRALIA: TWA 0.25 PPM (1 MG/M3) JAN 1993
OEL-BELGIUM: TWA 0.25 PPM (1 MG/M3) JAN 1993
OEL-DENMARK: TWA 0.2 PPM (0.8 MG/M3) JAN 1993
OEL-FINLAND: TWA 0.25 PPM (1 MG/M3); STEL 0.75 PPM (3 MG/M3); SKIN JAN 1993
OEL-FRANCE: STEL 1 MG/M3 JAN 1993
OEL-GERMANY: TWA 0.2 PPM (0.8 MG/M3) JAN 1993
OEL-HUNGARY: TWA 1 MG/M3; STEL 2 MG/M3 JAN 1993
OEL-THE NETHERLANDS: TWA 0.25 PPM (1 MG/M3) JAN 1993
OEL-THE PHILIPPINES: TWA 0.25 PPM (1 MG/M3) JAN 1993
OEL-RUSSIA: STEL 1 MG/M3 JAN 1993
OEL-SWEDEN: TWA 0.3 PPM (1.2 MG/M3); STEL 0.6 PPM (2.5 MG/M3) JAN 1993
OEL-SWITZERLAND: TWA 0.2 PPM (0.8 MG/M3); STEL 0.4 PPM (1.6 MG/M3) JAN 1993
OEL-UNITED KINGDOM: TWA 0.25 PPM (1 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 MALEIC ANHYDRIDE-AIR: 10H TWA 0.25 PPM
NIOSH* DHHS #92-100, 1992
NOHS 1974: HZD 43660; NIS 51; TNF 5310; NOS 69; TNE 71386
NOES 1983: HZD 43660; NIS 65; TNF 5924; NOS 69; TNE 81551; TFE 14807
EPA TSCA SECTION 8(B) CHEMICAL INVENTORY
EPA TSCA 8(A) PRELIMINARY ASSESSMENT INFORMATION, FINAL RULE
FEREAC 47, 26992, 82
EPA TSCA SECTION 8(D) UNPUBLISHED HEALTH/SAFETY STUDIES
ON EPA IRIS DATABASE
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, SEPTEMBER 1997
NIOSH ANALYTICAL METHOD, 1994: MALEIC ANHYDRIDE, 3512
OSHA ANALYTICAL METHOD #25

U.S. INFORMATION

THIS PRODUCT IS SUBJECT TO SARA SECTION 313 REPORTING REQUIREMENTS.

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. ALDRICH SHALL NOT BE

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