ATTN: SAFETY DIRECTOR

BEZTRADIN

HARVARD UNIVERSITY

DIVISION OF APPLIED SCIENCES

PURCHASING DEPT/PIERCE HALL

29 OXFORD STREET

CAMBRIDGE MA 02138-2901

EMERGENCY PHONE 1-414-273-3850

DATE 09/29/97

CUST#: 250120

PO#: 69112

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

MATERIAL SAFETY DATA SHEET PAGE 1

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

CATALOG #: 27045-8

NAME: 1-METHYL-2-PYRROLIDINONE, 99+%,
HPLC GRADE

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

CAS #: 872-50-4

MP: C5H9NO

EC NO: 212-828-1

SYNONYMS
N-METHYL-PYRROLIDINONE * N-METHYL-2-PYRROLIDINONE * 1-METHYL-2-
PYRROLIDONE * 1-METHYL-5-PYRROLIDONE * N-METHYL-PYRROLIDONE * N-
METHYL-ALPHA-PYRROLIDONE * N-METHYL-2-PYRROLIDONE * 1-METHYL-2-
PYRROLIDONE * M-PYROL * NMP *

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

LABEL PRECAUTIONARY STATEMENTS

HARMFUL
HARMFUL BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.
IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN.
POSSIBLE RISK OF HARM TO THE UNBORN CHILD.
TARGET ORGAN(S):
BONE MARROW
THYMUS
LYMPHATIC SYSTEM
COMBUSTIBLE.
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF
WATER AND SEEK MEDICAL ADVICE.
IN CASE OF FIRE AND/OR EXPLOSION DO NOT BREATHE FUMES.
WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE
PROTECTION.
HYDROSCOPIC
STORE UNDER NITROGEN.

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.
ASSURE ADEQUATE FLUSHING OF THE EYES BY SEPARATING THE EYELIDS
WITH FINGERS.
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.
REMOVE AND WASH CONTAMINATED CLOTHING PROMPTLY.

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MATERIAL SAFETY DATA SHEET  PAGE 2

CATALOG #: 27045-8
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DISCARD CONTAMINATED SHOES.

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

EXTINGUISHING MEDIA
WATER SPRAY.
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.
COMBUSTIBLE LIQUID.

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/PERSOENAL PROTECTION- - - - -

CHEMICAL SAFETY GOGGLES.
SAFETY SHOWER AND EYE BATH.
NIOSH/MSHA-APPROVED RESPIRATOR.
USE ONLY IN A CHEMICAL FUME HOOD.
WEAR HEAVY RUBBER GLOVES.
DO NOT BREATHE VAPOR.
AVOID CONTACT WITH EYES, SKIN AND CLOTHING.
SKIN ABSORPTION MAY OCCUR.
WASH THOROUGHLY AFTER HANDLING.
HARMFUL LIQUID.
IRRITANT.
POSSIBLE TERATOGEN.
KEEP TIGHTLY CLOSED.
KEEP AWAY FROM HEAT AND OPEN FLAME.
STORE IN A COOL DRY PLACE.

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

APPEARANCE AND ODOR
COLORLESS LIQUID

CONTINUED ON NEXT PAGE
MATERIAL SAFETY DATA SHEET

CATALOG #: 27045-8
NAME: 1-METHYL-2-PYRROLIDINONE, 99+%,
HPLC GRADE

PHYSICAL PROPERTIES
BOILING POINT: 81 C TO 82 C/10MM.
MELTING POINT: -24 C
FLASHPOINT: 187 F
86C

EXPLOSION LIMITS IN AIR:
UPPER: 9.5%
LOWER: 1.3%

AUTOIGNITION TEMPERATURE:
329 F
269C

VAPOR PRESSURE:
0.29MM 20 C
0.99MM 40 C

SPECIFIC GRAVITY: 1.033
VAPOR DENSITY: 3.4

SECTION 10. StABILITY AND REACTIVITY

INCOMPATIBILITIES
STRONG ACIDS
STRONG OXIDIZING AGENTS

PROTECT FROM MOISTURE.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS
THERMAL DECOMPOSITION MAY PRODUCE CARBON MONOXIDE, CARBON DIOXIDE,
AND NITROGEN OXIDES.

SECTION 11. TOXICOLOGICAL INFORMATION

ACUTE EFFECTS
HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN.
VAPOR OR MIST IS IRRITATING TO THE EYES, MUCOUS MEMBRANES AND UPPER
RESPIRATORY TRACT.
CAUSES SKIN IRRITATION.
PROLONGED EXPOSURE CAN CAUSE:
STOMACH PAINS, VOMITING, DIARRHEA.

CHRONIC EFFECTS
OVEREXPOSURE MAY CAUSE REPRODUCTIVE DISORDER(S) BASED ON TESTS WITH
LABORATORY ANIMALS.
TARGET ORGAN(S):
BONE MARROW
THYMUS
Spleen
LYMPHATIC SYSTEM

ADDITIONAL INFORMATION
RATS EXPOSED TO 1-METHYL-2-PYRROLIDINONE AT A CONCENTRATION OF 1 MG/L
AS AN AEROSOL FOR 10 DAYS SHOWED DEPLETION OF HEMATOPOIETIC CELLS IN
THE BONE MARROW AND ATROPHY OF THE LYMPHOID TISSUES OF THE THYMUS,
Spleen AND LYMPH NODES.

RTECS #: UY5790000

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CATHALOG #: 27045-8
NAME: 1-METHYL-2-PYRROLIDINONE, 99%, HPLC GRADE

2-PYRROLIDINONE, 1-METHYL-

IRRITATION DATA
EYE-RBT 100 MG MOD

TOXICITY DATA
ORL-RAT LD50: 3914 MG/KG
IPR-RAT LD50: 2472 MG/KG
IVN-RAT LD50: 80500 UG/KG
UNR-RAT LD50: 7 GM/KG
ORL-MUS LD50: 5130 MG/KG
IPR-MUS LD50: 3050 MG/KG
IVN-MUS LD50: 54500 UG/KG
IVN-DOG LD50: 63300 UG/KG
SKN-RBT LD50: 8 GM/KG

TARGET ORGAN DATA
EFFECTS ON FERTILITY (POST-IMPLANTATION MORTALITY)
SPECIFIC DEVELOPMENTAL ABNORMALITIES (CENTRAL NERVOUS SYSTEM)
SPECIFIC DEVELOPMENTAL ABNORMALITIES (MUSCULOSKELETAL SYSTEM)
EFFECTS ON NEWBORN (GROWTH STATISTICS)
EFFECTS ON NEWBORN (DELAYED EFFECTS)
ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES
(RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR
COMPLETE INFORMATION.

SECTION 12. -- ECOCLOGICAL 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 --

CONTACT ALDRICH CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. -- REGULATORY INFORMATION --

EUROPEAN INFORMATION
EC INDEX NO: 606-021-00-7
HARMFUL
R 36/38
IRRITATING TO EYES AND SKIN.
S 41
IN CASE OF FIRE AND/OR EXPLOSION DO NOT BREATHE FUMES.

REVIEWS, STANDARDS, AND REGULATIONS

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NAME: 1-METHYL-2-PYRROLIDINONE, 99+%,
HPLC GRADE

OEL=MAK
OEL-DENMARK: TWA 100 PPM (400 MG/M3) JAN 1993
OEL-GERMANY: TWA 100 PPM (400 MG/M3) JAN 1993
OEL-THE NETHERLANDS: TWA 100 PPM (400 MG/M3) JAN 1993
OEL-RUSSIA: STEL 100 MG/M3 JAN 1993
OEL-SWITZERLAND: TWA 200 PPM (400 MG/M3) JAN 1993
OEL-UNITED KINGDOM: TWA 100 PPM (400 MG/M3) JAN 1993
NOHS 1974: HZD M1560; NIS 30; TNP 2458; NOS 43; TNE 25255
NOBS 1983: HZD M1560; NIS 63; TNP 3902; NOS 73; TNE 85169; TFE 23478
EPA TSCA SECTION 8(B) CHEMICAL INVENTORY
EPA TSCA SECTION 8(D) UNPUBLISHED HEALTH/SAFETY STUDIES
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, APRIL 1997

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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