

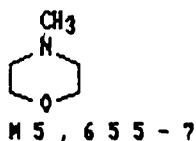
MATERIAL SAFETY DATA SHEET

Sigma-Aldrich Corporation

1001 West Saint Paul Ave, Milwaukee, WI 53233 USA

Version January 1992

	Sigma	Aldrich
For Emergency Contact USA/Canada	800-325-5832	800-231-8327
Outside USA/Canada	314-771-5765	414-273-3850



IDENTIFICATION

PRODUCT #: M5655-7
CAS #: 109-02-4
MF: C5H11NO

NAME: 4-METHYLMORPHOLINE, 99%

SYNONYMS

4-METHYLMORFOLIN (CZECH) * N-METHYLMORPHOLINE * 4-METHYLMORPHOLINE *
METHYLMORPHOLINE (DOT) * MORPHOLINE, N-METHYL- * UN 2535 (DOT) *

TOXICITY HAZARDS

RTECS NO: QE5775000

MORPHOLINE, 4-METHYL-

IRRITATION DATA

SKN-RBT 460 MG OPEN MLD
EYE-RBT 920 UG SEV
EYE-RBT 20 MG/24H MLD

UCDS** 6/30/59
UCDS** 6/30/59
85JCAE -,888,86

TOXICITY DATA

ORL-RAT LD50:1960 MG/KG
ORL-MUS LD50:1970 MG/KG
IHL-MUS LC50:25200 MG/M3/2H
SKN-RBT LD50:1242 MG/KG

85GMAT -,85,82
TPKVAL 15,116,79
TPKVAL 15,116,79
JIHTAB 31,60,49

REVIEWS, STANDARDS, AND REGULATIONS

NOHS 1974: HZD M0796; NIS 6; TNF 123; NOS 8; TNE 1453
NOES 1983: HZD M0796000; TNF 6; NIS 212; NOS 6; TNE 3141; TFE 125

EPA TSCA CHEMICAL INVENTORY, JUNE 1990
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, MARCH 1991
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

HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN.

CAUSES BURNS.

MATERIAL IS EXTREMELY DESTRUCTIVE TO TISSUE OF THE MUCOUS MEMBRANES
AND UPPER RESPIRATORY TRACT, EYES AND SKIN.

INHALATION MAY BE FATAL AS A RESULT OF 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.

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

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.

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.

WASH CONTAMINATED CLOTHING BEFORE REUSE.

----- PHYSICAL DATA -----

BOILING PT: 115 C TO 116 C/750MM.

MELTING PT: -66 C

SPECIFIC GRAVITY: 0.920

VAPOR DENSITY: >1

VAPOR PRESSURE: 18 MM @ 20 C

APPEARANCE AND ODOR

COLORLESS LIQUID

----- FIRE AND EXPLOSION HAZARD DATA -----

FLASHPOINT: 75 F BY:

LOWER EXPLOSION LEVEL: 3%

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.

FLAMMABLE.

UNUSUAL FIRE AND EXPLOSIONS HAZARDS

VAPOR MAY TRAVEL CONSIDERABLE DISTANCE TO SOURCE OF IGNITION AND
FLASH BACK.

CONTAINER EXPLOSION MAY OCCUR UNDER FIRE CONDITIONS.

EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

FORMS EXPLOSIVE MIXTURES IN AIR.

----- REACTIVITY DATA -----

INCOMPATIBILITIES

ACIDS

ACID CHLORIDES

ACID ANHYDRIDES
STRONG OXIDIZING AGENTS
CARBON DIOXIDE.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS

THERMAL DECOMPOSITION MAY PRODUCE CARBON MONOXIDE, CARBON DIOXIDE,
AND NITROGEN OXIDES.

----- 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 DRY-LIME, SAND, OR SODA ASH. PLACE IN COVERED CONTAINERS
USING NON-SPARKING TOOLS AND 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 LAWS.

--- 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.

AVOID CONTACT WITH EYES, SKIN AND CLOTHING.

AVOID PROLONGED OR REPEATED EXPOSURE.

WASH THOROUGHLY AFTER HANDLING.

CORROSIVE.

HARMFUL LIQUID AND FUMES.

KEEP TIGHTLY CLOSED.

KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME.

STORE IN A COOL DRY PLACE.

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 ALDRICH 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