



# UNIVAR

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**(425) 889-3400**

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

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The Version Date for this MSDS is : 01/15/2004

PRODUCT NAME: MANGANESE SULFATE  
 MSDS NUMBER: MZM0793  
 EFFECTIVE DATE: 1/14/2004  
 SUPERSEDES: 9/7/2001  
 ISSUED BY: 008614

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MANGANESE SULFATE

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## 1. PRODUCT IDENTIFICATION

SYNONYMS: MANGANOUS SULFATE, MONOHYDRATE; SULFURIC ACID, MANGANESE  
 (2+) SALT (1:1), MONOHYDRATE; MANGANESE (II) SULFATE,  
 MONOHYDRATE  
 CAS NO: 7785-87-7 (ANHYDROUS) 10034-96-5 (MONOHYDRATE)  
 MOLECULAR WEIGHT: 169.01  
 CHEMICAL FORMULA: MNSO4 H2O  
 Distributed by:  
 Univar USA Inc.  
 6100 Carillon Point  
 Kirkland, WA 98033  
 425-889-3400

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO	PERCENT	HAZARDOUS
MANGANESE(II) SULFATE (1:1)	7785-87-7	98 - 100%	YES

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## 3. HAZARDS IDENTIFICATION

## EMERGENCY OVERVIEW

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WARNING! HARMFUL IF SWALLOWED OR INHALED. AFFECTS LUNGS, CENTRAL NERVOUS SYSTEM, BLOOD AND KIDNEYS. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

## POTENTIAL HEALTH EFFECTS

## INHALATION:

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INHALATION CAN CAUSE A FLU-LIKE ILLNESS (METAL FUME FEVER). THIS 24- TO 48-HOUR ILLNESS IS CHARACTERIZED BY CHILLS, FEVER, ACHING MUSCLES, DRYNESS IN THE MOUTH AND THROAT AND HEADACHE. MAY IRRITATE THE RESPIRATORY TRACT. MAY INCREASE THE INCIDENCE OF UPPER RESPIRATORY INFECTIONS (PNEUMONIA). ABSORPTION OF INORGANIC MANGANESE SALTS THROUGH THE LUNGS IS POOR BUT MAY OCCUR IN CHRONIC POISONING.

## INGESTION:

MAY CAUSE ABDOMINAL PAIN AND NAUSEA. ALTHOUGH THEY ARE POORLY ABSORBED THROUGH THE INTESTINES, INORGANIC MANGANESE SALTS MAY PRODUCE HYPOGLYCEMIA AND DECREASED CALCIUM BLOOD LEVELS SHOULD ABSORPTION OCCUR.

## SKIN CONTACT:

MAY CAUSE IRRITATION WITH REDNESS AND PAIN.

## EYE CONTACT:

MAY CAUSE IRRITATION, REDNESS AND PAIN.

## CHRONIC EXPOSURE:

CHRONIC MANGANESE POISONING CAN RESULT FROM EXCESSIVE INHALATION AND INGESTION EXPOSURE AND INVOLVES IMPAIRMENT OF THE CENTRAL NERVOUS SYSTEM. EARLY SYMPTOMS INCLUDE SLUGGISHNESS, SLEEPINESS, AND WEAKNESS IN THE LEGS. ADVANCED CASES HAVE SHOWN FIXED FACIAL EXPRESSION, EMOTIONAL DISTURBANCES, SPASTIC GAIT, AND FALLING. ILLNESS CLOSELY RESEMBLES PARKINSON'S DISEASE. KIDNEY EFFECTS, BLOOD CHANGES AND MANGANESE PSYCHOSIS ALSO MAY OCCUR AS A RESULT OF CHRONIC EXPOSURE. CHRONIC INHALATION EXPOSURE CAN CAUSE LUNG DAMAGE.

## AGGRAVATION OF PRE-EXISTING CONDITIONS:

PERSONS WITH IMPAIRED RESPIRATORY FUNCTION, PSYCHIATRIC OR NEUROLOGICAL DISTURBANCES, AND NUTRITIONAL DEFICIENCIES MAY BE MORE SUSCEPTIBLE TO THE EFFECT OF THIS SUBSTANCE.

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## 4. FIRST AID MEASURES

## INHALATION:

REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. GET MEDICAL ATTENTION.

## INGESTION:

INDUCE VOMITING IMMEDIATELY AS DIRECTED BY MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL ATTENTION.

## SKIN CONTACT:

IMMEDIATELY FLUSH SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES. WASH CLOTHING BEFORE REUSE. THOROUGHLY

CLEAN SHOES BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS.

EYE CONTACT:

IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, LIFTING UPPER AND LOWER EYELIDS OCCASIONALLY. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

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5. FIRE FIGHTING MEASURES

FIRE:

NOT CONSIDERED TO BE A FIRE HAZARD.

EXPLOSION:

NOT CONSIDERED TO BE AN EXPLOSION HAZARD.

FIRE EXTINGUISHING MEDIA:

USE ANY MEANS SUITABLE FOR EXTINGUISHING SURROUNDING FIRE.

SPECIAL INFORMATION:

IN THE EVENT OF A FIRE, WEAR FULL PROTECTIVE CLOTHING AND NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN THE PRESSURE DEMAND OR OTHER POSITIVE PRESSURE MODE.

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6. ACCIDENTAL RELEASE MEASURES

VENTILATE AREA OF LEAK OR SPILL. KEEP UNNECESSARY AND UNPROTECTED PEOPLE AWAY FROM AREA OF SPILL. WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT AS SPECIFIED IN SECTION 8. SPILLS: PICK UP AND PLACE IN A SUITABLE CONTAINER FOR RECLAMATION OR DISPOSAL, USING A METHOD THAT DOES NOT GENERATE DUST. US REGULATIONS (CERCLA) REQUIRE REPORTING SPILLS AND RELEASES TO SOIL, WATER AND AIR IN EXCESS OF REPORTABLE QUANTITIES. THE TOLL FREE NUMBER FOR THE US COAST GUARD NATIONAL RESPONSE CENTER IS (800) 424-8802.

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7. HANDLING AND STORAGE

KEEP IN A TIGHTLY CLOSED CONTAINER, STORED IN A COOL, DRY, VENTILATED AREA. PROTECT AGAINST PHYSICAL DAMAGE. CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTY SINCE THEY RETAIN PRODUCT RESIDUES (DUST, SOLIDS); OBSERVE ALL WARNINGS AND PRECAUTIONS LISTED FOR THE PRODUCT.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

AIRBORNE EXPOSURE LIMITS:

- OSHA PERMISSIBLE EXPOSURE LIMIT (PEL):  
5 MG/M3 CEILING FOR MANGANESE COMPOUNDS AS MN

- ACGIH THRESHOLD LIMIT VALUE (TLV):  
0.2 MG/M3 (TWA) FOR MANGANESE, ELEMENTAL AND INORGANIC COMPOUNDS AS MN

VENTILATION SYSTEM:

A SYSTEM OF LOCAL AND/OR GENERAL EXHAUST IS RECOMMENDED TO KEEP EMPLOYEE EXPOSURES BELOW THE AIRBORNE EXPOSURE LIMITS. LOCAL EXHAUST VENTILATION IS

GENERALLY PREFERRED BECAUSE IT CAN CONTROL THE EMISSIONS OF THE CONTAMINANT AT ITS SOURCE, PREVENTING DISPERSION OF IT INTO THE GENERAL WORK AREA. PLEASE REFER TO THE ACGIH DOCUMENT, "INDUSTRIAL VENTILATION, A MANUAL OF RECOMMENDED PRACTICES", MOST RECENT EDITION, FOR DETAILS.

PERSONAL RESPIRATORS (NIOSH APPROVED):

IF THE EXPOSURE LIMIT IS EXCEEDED AND ENGINEERING CONTROLS ARE NOT FEASIBLE, A HALF FACEPIECE PARTICULATE RESPIRATOR (NIOSH TYPE N95 OR BETTER FILTERS) MAY BE WORN FOR UP TO TEN TIMES THE EXPOSURE LIMIT OR THE MAXIMUM USE CONCENTRATION SPECIFIED BY THE APPROPRIATE REGULATORY AGENCY OR RESPIRATOR SUPPLIER, WHICHEVER IS LOWEST.. A FULL-FACE PIECE PARTICULATE RESPIRATOR (NIOSH TYPE N100 FILTERS) MAY BE WORN UP TO 50 TIMES THE EXPOSURE LIMIT, OR THE MAXIMUM USE CONCENTRATION SPECIFIED BY THE APPROPRIATE REGULATORY AGENCY, OR RESPIRATOR SUPPLIER, WHICHEVER IS LOWEST. IF OIL PARTICLES (E.G. LUBRICANTS, CUTTING FLUIDS, GLYCERINE, ETC.) ARE PRESENT, USE A NIOSH TYPE R OR P FILTER. FOR EMERGENCIES OR INSTANCES WHERE THE EXPOSURE LEVELS ARE NOT KNOWN, USE A FULL-FACEPIECE POSITIVE-PRESSURE, AIR-SUPPLIED RESPIRATOR. WARNING: AIR-PURIFYING RESPIRATORS DO NOT PROTECT WORKERS IN OXYGEN-DEFICIENT ATMOSPHERES.

SKIN PROTECTION:

WEAR PROTECTIVE GLOVES AND CLEAN BODY-COVERING CLOTHING.

EYE PROTECTION:

SAFETY GLASSES. MAINTAIN EYE WASH FOUNTAIN AND QUICK-DRENCH FACILITIES IN WORK AREA.

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9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

PALE PINK GRANULAR POWDER.

BOILING POINT:

850C (1562F) DECOMPOSES.

ODOR:

ODORLESS.  
400-500C

MELTING POINT:

700C (1292F) LOSES ALL WATER @

SOLUBILITY:

SOLUBLE IN 1 PART WATER.

VAPOR DENSITY (AIR=1):

NO INFORMATION FOUND.

DENSITY:

2.95

VAPOR PRESSURE (MM HG):

NO INFORMATION FOUND.

PH:

NO INFORMATION FOUND.

EVAPORATION RATE (BUAC=1):

NO INFORMATION FOUND.

% VOLATILES BY VOLUME @ 21C (70F):

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10. STABILITY AND REACTIVITY

STABILITY:

STABLE UNDER ORDINARY CONDITIONS OF USE AND STORAGE.

HAZARDOUS DECOMPOSITION PRODUCTS:

OXIDES OF SULFUR AND THE CONTAINED METAL.

HAZARDOUS POLYMERIZATION:  
WILL NOT OCCUR.

INCOMPATIBILITIES:  
POWDERED METALS, STRONG OXIDIZERS.

CONDITIONS TO AVOID:  
INCOMPATIBLES.

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#### 11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA:  
ANHYDROUS: NO LD50/LC50 INFORMATION FOUND RELATING TO NORMAL ROUTES OF OCCUPATIONAL EXPOSURE. INVESTIGATED AS A TUMORIGEN, MUTAGEN, REPRODUCTIVE EFFECTOR.  
HYDRATE: ORAL RAT LD50: 2150 MG/KG.

REPRODUCTIVE TOXICITY:  
FOR MANGANESE METAL:  
MAY DAMAGE THE REPRODUCTIVE SYSTEM. HAS SHOWN TERATOGENIC EFFECTS IN LABORATORY ANIMALS.

-----/CANCER LISTS/-----

INGREDIENT	---NTP CARCINOGEN---		IARC CATEGOR
	KNOWN	ANTICIPATED	
MANGANESE(II) SULFATE (1:1) (7785-87-7)	NO	NO	NONE

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#### 12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE:  
NO INFORMATION FOUND.

ENVIRONMENTAL TOXICITY:  
NO INFORMATION FOUND.

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#### 13. DISPOSAL CONSIDERATIONS

WHATEVER CANNOT BE SAVED FOR RECOVERY OR RECYCLING SHOULD BE MANAGED IN AN APPROPRIATE AND APPROVED WASTE DISPOSAL FACILITY. PROCESSING, USE OR CONTAMINATION OF THIS PRODUCT MAY CHANGE THE WASTE MANAGEMENT OPTIONS. STATE AND LOCAL DISPOSAL REGULATIONS MAY DIFFER FROM FEDERAL DISPOSAL REGULATIONS.

DISPOSE OF CONTAINER AND UNUSED CONTENTS IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS.

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#### 14. TRANSPORT INFORMATION

NOT REGULATED.

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15. REGULATORY INFORMATION

-----/CHEMICAL INVENTORY STATUS - PART 1/-----

INGREDIENT	TSCA	EC	JAPAN	AUSTRALIA
MANGANESE(II) SULFATE (1:1) (7785-87-7)	YES	YES	YES	YES

-----/CHEMICAL INVENTORY STATUS - PART 2/-----

INGREDIENT	KOREA	DSL	NDSL	PHIL.	--CANADA--
MANGANESE(II) SULFATE (1:1) (7785-87-7)	YES	YES	NO	YES	

-----/FEDERAL, STATE & INTERNATIONAL REGULATIONS - PART 1/-----

INGREDIENT	-SARA 302-	TPQ	LIST	-SARA 313-	CHEMICAL CATG
MANGANESE(II) SULFATE (1:1) (7785-87-7)	NO	NO	NO		MANGANESE COMP

-----/FEDERAL, STATE & INTERNATIONAL REGULATIONS - PART 2/-----

INGREDIENT	CERCLA	-RCRA-	-TSCA-
MANGANESE(II) SULFATE (1:1) (7785-87-7)	1	261.33	8(D)

CHEMICAL WEAPONS CONVENTION: NO TSCA 12(B): NO CDTA: NO  
 SARA 311/312: ACUTE: YES CHRONIC: YES FIRE: NO PRESSURE: NO  
 REACTIVITY: NO (PURE / SOLID)

AUSTRALIAN HAZCHEM CODE: NONE ALLOCATED.  
 POISON SCHEDULE: NONE ALLOCATED.

WHMIS: THIS MSDS HAS BEEN PREPARED ACCORDING TO THE HAZARD CRITERIA OF  
 THE CONTROLLED PRODUCTS REGULATIONS (CPR) AND THE MSDS CONTAINS  
 ALL OF THE INFORMATION REQUIRED BY THE CPR.

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16. OTHER INFORMATION

NFPA RATINGS:  
 HEALTH: 2 FLAMMABILITY: 0 REACTIVITY: 0

For Additional Information:  
 Contact: MSDS Coordinator - Univar USA  
 During business hours, Pacific Time - (425) 889-3400

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END OF MSDS