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

CATALOG #: 295582  
NAME: NITROGEN DIOXIDE, 99.5+%

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

CAS #: 10544-72-6  
MF: N2O4  
EC NO: 234-126-4

SYNONYMS

AZOTE (FRENCH) \* AZOTO (ITALIAN) \* NITRITO \* NITROGEN DIOXIDE (ACGIH:  
OSHA) \* NITROGEN PEROXIDE \* RCRA WASTE NUMBER P078 \* STICKSTOFFDIOXID  
(GERMAN) \* STIKSTOFDIOXYDE (DUTCH) \*

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

LABEL PRECAUTIONARY STATEMENTS

OXIDIZING  
HIGHLY TOXIC (USA)  
TOXIC (EU)  
CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.  
TOXIC BY INHALATION.  
CAUSES BURNS.  
DANGER: POISONOUS, CORROSIVE AND OXIDIZING LIQUID AND GAS UNDER  
PRESSURE.  
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.  
IN CASE OF INSUFFICIENT VENTILATION, WEAR SUITABLE  
RESPIRATORY EQUIPMENT.  
IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE  
IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).  
USE WITH EQUIPMENT RATED FOR CYLINDER PRESSURE, AND OF COMPATIBLE  
MATERIALS OF CONSTRUCTION. CLOSE VALVE WHEN NOT IN USE AND WHEN EMPTY.  
MAKE SURE CYLINDER IS PROPERLY SECURED WHEN IN USE OR STORED.

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.

KEEP UNDER MEDICAL OBSERVATION.  
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL  
RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.

SECTION 5. - - - - - FIRE FIGHTING MEASURES - - - - -  
EXTINGUISHING MEDIA

USE WATER SPRAY OR FOG NOZZLE TO KEEP CYLINDER COOL. MOVE CYLINDER  
AWAY FROM FIRE IF THERE IS NO RISK.

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

UNUSUAL FIRE AND EXPLOSIONS HAZARDS  
CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.  
EMITS TOXIC FUMES UNDER FIRE CONDITIONS.  
VIGOROUSLY SUPPORTS COMBUSTION.

SECTION 6. - - - - - ACCIDENTAL RELEASE MEASURES- - - - -  
EVACUATE AREA AND KEEP PERSONNEL UPWIND.

SHUT OFF ALL SOURCES OF IGNITION.  
SHUT OFF LEAK IF THERE IS NO RISK.

SECTION 7. - - - - - HANDLING AND STORAGE- - - - -  
REFER TO SECTION 8.

SECTION 8. - - - - - EXPOSURE CONTROLS/PERSONAL PROTECTION- - - - -  
NIOSH/MSHA-APPROVED RESPIRATOR IN NONVENTILATED AREAS AND/OR FOR  
EXPOSURE ABOVE THE ACGIH TLV.  
RUBBER GLOVES.

CHEMICAL SAFETY GOGGLES.  
USE ONLY IN A CHEMICAL FUME HOOD.  
SAFETY SHOWER AND EYE BATH.  
AVOID CONTACT AND INHALATION.  
AVOID PROLONGED OR REPEATED EXPOSURE.  
WASH THOROUGHLY AFTER HANDLING.  
DISCARD CONTAMINATED CLOTHING AND SHOES.

POISON  
CORROSIVE.  
CYLINDER TEMPERATURE SHOULD NOT EXCEED 125 F(52 C).  
KEEP AWAY FROM COMBUSTIBLE MATERIALS, HEAT, SPARKS, AND OPEN FLAME.

SECTION 9. - - - - - PHYSICAL AND CHEMICAL PROPERTIES - - - - -  
APPEARANCE AND ODOR  
RED-BROWN GAS

PHYSICAL PROPERTIES  
BOILING POINT: 21 C  
MELTING POINT: -11 C  
VAPOR PRESSURE: 14.33PSI 20 C 61.45PSI 55 C  
SPECIFIC GRAVITY: 2.620  
VAPOR DENSITY: 1.58 @ 21 C  
SWISS POISON CLASS: 2

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

ALCOHOLS  
COPPER, COPPER ALLOYS  
PHOSPHORUS  
AMMONIA

SECTION 11. - - - - - TOXICOLOGICAL INFORMATION - - - - -  
ACUTE EFFECTS

INHALATION OF VAPORS MAY CAUSE RHINITIS, PHARYNGITIS, CYANOSIS,  
RESPIRATORY ARREST, COMA, UNCONSCIOUSNESS AND DEATH. CHRONIC EFFECTS:  
WEIGHT LOSS, PERSISTENT LOW BLOOD PRESSURE, LOSS OF SENSE OF SMELL,  
NEUROLOGIC SEQUELAE SUCH AS AMNESIA, INTENTION TREMOR, NEURASTHENIA,  
DISTURBANCE OF EQUILIBRIUM OR MORE SERIOUS BRAIN STEM AND CORTICAL  
DAMAGE.

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.

MAY BE FATAL IF INHALED, SWALLOWED, OR ABSORBED THROUGH SKIN.

RTECS #: QW9800000

NITROGEN DIOXIDE

TOXICITY DATA

IHL-HMN LCLO:200 PPM/1M	AOHYA3 17,159,1974
IHL-RAT LC50:88 PPM/4H	AMIHBC 10,418,1954
IHL-MUS LC50:1000 PPM/10M	JCTODH 4,246,1977
IHL-RBT LC50:315 PPM/15M	AIHAAP 23,457,1962
IHL-GPG LC50:30 PPM/1H	AEHLAU 10,220,1965

TARGET ORGAN DATA

SENSE ORGANS AND SPECIAL SENSES (CONJUNCTIVA IRRITATION)  
BEHAVIORAL (CONVULSIONS OR EFFECT ON SEIZURE THRESHOLD)  
BEHAVIORAL (CHANGE IN MOTOR ACTIVITY)  
LUNGS, THORAX OR RESPIRATION (CHANGE IN TRACHEA OR BRONCHI)  
LUNGS, THORAX OR RESPIRATION (CHANGES IN PULMONARY VASCULAR RESISTANCE)  
LUNGS, THORAX OR RESPIRATION (CHRONIC PULMONARY EDEMA OR CONGESTION)  
LUNGS, THORAX OR RESPIRATION (COUGH)  
LUNGS, THORAX OR RESPIRATION (DYSPNAE)  
LUNGS, THORAX OR RESPIRATION (RESPIRATORY DEPRESSION)  
LUNGS, THORAX OR RESPIRATION (RESPIRATORY STIMULATION)  
LUNGS, THORAX OR RESPIRATION (OTHER CHANGES)  
BLOOD (METHEMOGLOBINEMIA-CARBOXHEMOGLOBINEMIA)  
MATERNAL EFFECTS (MENSTRUAL CYLCE CHANGES OR DISORDERS)  
EFFECTS ON FERTILITY (LITTER SIZE)  
EFFECTS ON EMBRYO OR FETUS (FETOTOXICITY)  
EFFECTS ON EMBRYO OR FETUS (FETAL DEATH)  
EFFECTS ON NEWBORN (GROWTH STATISTICS)  
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 - - - - -  
CAUTION: NO-RETURN CYLINDER. DO NOT REUSE. EMPTY CYLINDER WILL CONTAIN HAZARDOUS RESIDUE. FOLLOW PROPER DISPOSAL TECHNIQUES.  
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: 007-002-00-0  
OXIDIZING  
TOXIC  
R 26  
VERY TOXIC BY INHALATION.  
R 34  
CAUSES BURNS.  
S 9  
KEEP CONTAINER IN A WELL-VENTILATED PLACE.  
S 26  
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.  
S 28  
AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH PLENTY OF SOAP SUDS.  
S36/37/39

WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION.

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-NOT CLASSIFIABLE AS A HUMAN CARCINOGEN DTLVS\* TLV/BEI,1999

ACGIH TLV-STEL 5 PPM DTLVS\* TLV/BEI,1999

ACGIH TLV-TWA 3 PPM DTLVS\* TLV/BEI,1999

MSHA STANDARD:AIR-CL 5 PPM (9 MG/M3)

DTLVS\* 3,185,1971

OSHA PEL (GEN INDU):CL 5 PPM (9 MG/M3)

CFRGBR 29,1910.1000,1994

OSHA PEL (CONSTRUC):CL 5 PPM (9 MG/M3)

CFRGBR 29,1926.55,1994

OSHA PEL (SHIPYARD):CL 5 PPM (9 MG/M3)

CFRGBR 29,1915.1000,1993

OSHA PEL (FED CONT):CL 5 PPM (9 MG/M3)

CFRGBR 41,50-204.50,1994

OEL-ARAB REPUBLIC OF EGYPT: TWA 3 PPM (6 MG/M3), JAN1993

OEL-AUSTRIA: MAK 3 PPM (6 MG/M3), JAN1999

OEL-DENMARK: TWA 3 99M (5.6 MG/M3), JAN1999

OEL-FINLAND: TWA 3 PPM (6 MG/M3), STEL 6 PPM (12 MG/M3), JAN1999

OEL-FRANCE: VLE 3 PPM (6 MG/M3), JAN1999

OEL-GERMANY: MAK 5 PPM (9 MG/M3), JAN1999

OEL-JAPAN: OEL PENDING, JAN1999

OEL-THE NETHERLANDS: MAC-TGG 2 PPM (4 MG/M3), JAN1999

OEL-NORWAY: TWA 2 PPM (3.6 MG/M3), JAN1999

OEL-THE PHILIPPINES: TWA 5 PPM (9 MG/M3), JAN1993

OEL-POLAND: MAC(TWA) 5 MG/M3, MAC(STEL) 10 MG/M3, JAN1999

OEL-SWEDEN: NGV 2 PPM (4 MG/M3), TGV 5 PPM (13 MG/M3), JAN1999

OEL-SWITZERLAND: MAK-W 3 PPM (6 MG/M3), KZG-W 6 PPM (12 MG/M3), JAN1999

OEL-THAILAND: TWA 5 PPM (9 MG/M3), JAN1993

OEL-TURKEY: TWA 5 PPM (9 MG/M3), JAN1993

OEL-UNITED KINGDOM: TWA 3 PPM (5.7 MG/M3), STEL 5 PPM (9.6 MG/M3), SEP2000

OEL IN ARGENTINA, BULGARIA, COLOMBIA, JORDAN, KOREA CHECK ACGIH TLV;

OEL IN NEW ZEALAND, SINGAPORE, VIETNAM CHECK ACGIH TLV

NIOSH REL TO NITROGEN DIOXIDE-AIR:STEL 1 PPM

NIOSH\* DHHS #92-100,1992

NOHS 1974: HZD 50870; NIS16; TNF 424; NOS 19; TNE 11419

NOES 1983: HZD 50870; NIS 5; TNF 94; NOS 24; TNE 18737; TFE 1773

EPA TSCA SECTION 8(B) CHEMICAL INVENTORY

EPA TSCA SECTION 8(D) UNPUBLISHED HEALTH/SAFETY STUDIES

ON EPA IRIS DATABASE

EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JANUARY 2001

NIOSH ANALYTICAL METHOD, 1994: NITRIC OXIDE AND NITROGEN DIOXIDE, 6014

OSHA ANALYTICAL METHOD #ID-109

OSHA ANALYTICAL METHOD #ID-182

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

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