

Appendix D
Material Safety Data Sheets

MSDS - ANTIMONY

AIM CANADA / ANTIMONY / 11/29/2001
ANTIMONY

Revised: 11/29/2001

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AIM

MATERIAL SAFETY DATA SHEET

WHMIS: D-2A

POISONOUS AND INFECTIOUS MATERIAL, D2 - MATERIAL CAUSING OTHER TOXIC EFFECTS.

PROTECTIVE CLOTHING:

CHEMICAL GOGGLES

LAB COAT

DUST RESPIRATOR

GLOVES

TDG ROAD RAIL: NOT CONTROLLED UNDER TDG (CANADA)

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

COMMON NAME: ANTIMONY

CODE: 3010

PRODUCT TYPE: PURE METAL

SYNONYM: STIBIUM

VALIDATION DATE: 11/29/2001

VERSION NUMBER: 2

MATERIAL USES:

EXPLOSIVES INDUSTRY: PYROTECHNICS.

INDUSTRIAL APPLICATIONS:

HARDENING ALLOY FOR LEAD. SEMICONDUCTOR IN SOLID STATE.

OTHER NON SPECIFIED INDUSTRY:

HARDENING ALLOY FOR LEAD, ESPECIALLY STORAGE BATTERIES AND CABLE SHEATHS;

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BEARING METAL; TYPE METAL; SOLDER; COLLAPSIBLE TUBES AND FOIL; SHEET AND PIPE; SEMICONDUCTOR TECHNOLOGY (99.999% GRADE); PYROTECHNICS.

SUPPLIER: AIM

MANUFACTURER: AIM

IN CASE OF EMERGENCY:

INFOTRAC:

(NORTH AMERICA): (800) 535-5053

(INTERNATIONAL): (352) 323-3500

SECTION 2. HAZARDOUS COMPONENTS

NAME	CAS#	% BY WEIGHT	TOXICITY DATA (LC50/LD50, TLV)
1) ANTIMONY	7440-36-0	100	ORAL (LD50): ACUTE: 7000 MG/KG (RAT.). TWA: 0.5 (MG/M3) FROM OSHA (PEL) (UNITED STATES) (1993)

SECTION 3. HAZARDS IDENTIFICATION

PHYSICAL STATE AND APPEARANCE: SOLID. (LUSTROUS SOLID.)

EMERGENCY OVERVIEW:

WARNING!

AVOID CONTACT WITH EYES DO NOT INGEST. AVOID BREATHING DUST. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. KEEP CONTAINER CLOSED. USE ONLY WITH ADEQUATE VENTILATION. AVOID EXPOSURE DURING PREGNANCY. WASH THOROUGHLY AFTER HANDLING. AVOID CONTACT OF SPILLED MATERIAL AND RUNOFF WITH SOIL AND SURFACE WATERWAYS.

ROUTES OF ENTRY:

EYE CONTACT.

INHALATION.

INGESTION.

POTENTIAL ACUTE HEALTH EFFECTS:

EYES: THIS PRODUCT MAY BE HAZARDOUS IN CASE OF EYE CONTACT (IRRITANT).

SKIN:

THIS PRODUCT MAY BE HAZARDOUS IN CASE OF SKIN CONTACT (IRRITANT, SENSITIZER). SKIN INFLAMMATION IS CHARACTERIZED BY ITCHING, SCALING, REDDENING, OR OCCASIONALLY BLISTERING.

INHALATION:

FUMES AND/OR DUSTS PRODUCED BY THIS PRODUCT MAY BE HAZARDOUS IN CASE OF INHALATION. MAY BE FATAL IF INHALED.

INGESTION:

FUMES AND/OR DUSTS PRODUCED BY THIS PRODUCT MAY BE HAZARDOUS IN CASE OF INGESTION. MAY BE FATAL IF SWALLOWED.

POTENTIAL CHRONIC HEALTH EFFECTS:

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FUMES AND/OR DUSTS PRODUCED BY THIS PRODUCT MAY BE HAZARDOUS IN CASE OF INGESTION, OF INHALATION. THIS PRODUCT MAY BE HAZARDOUS IN CASE OF SKIN CONTACT (IRRITANT, SENSITIZER).

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:
REPEATED EXPOSURE TO TOXIC MATERIAL MAY PRODUCE GENERAL DETERIORATION OF HEALTH BY AN ACCUMULATION IN ONE OR MANY HUMAN ORGANS.

OVEREXPOSURE/SIGNS/SYMPTOMS: NOT AVAILABLE.

SEE TOXICOLOGICAL INFORMATION (SECTION 11)

SECTION 4. FIRST AID MEASURES

EYE CONTACT:

CHECK FOR AND REMOVE ANY CONTACT LENSES. IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.

SKIN CONTACT:

IN CASE OF CONTACT, IMMEDIATELY FLUSH SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. COVER THE IRRITATED SKIN WITH AN EMOLLIENT. WASH CLOTHING BEFORE REUSE. THOROUGHLY CLEAN SHOES BEFORE REUSE. GET MEDICAL ATTENTION.

HAZARDOUS SKIN CONTACT:

WASH WITH A DISINFECTANT SOAP AND COVER THE CONTAMINATED SKIN WITH AN ANTI-BACTERIAL CREAM. SEEK MEDICAL ATTENTION.

INHALATION:

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

HAZARDOUS INHALATION: NO ADDITIONAL INFORMATION.

INGESTION:

DO NOT INDUCE VOMITING UNLESS DIRECTED TO DO SO BY MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. LOOSEN TIGHT CLOTHING SUCH AS A COLLAR, TIE, BELT OR WAISTBAND. GET MEDICAL ATTENTION IF SYMPTOMS APPEAR.

HAZARDOUS INGESTION: NO ADDITIONAL INFORMATION.

NOTES TO PHYSICIAN: NOT AVAILABLE.

SECTION 5. FIRE FIGHTING MEASURES

FLAMMABILITY OF THE PRODUCT: MAY BE COMBUSTIBLE AT HIGH TEMPERATURE.

AUTO-IGNITION TEMPERATURE: NOT AVAILABLE.

FLASH POINTS: NOT AVAILABLE.

FLAMMABLE LIMITS: NOT AVAILABLE.

PRODUCTS OF COMBUSTION: SOME METALLIC OXIDES.

FIRE HAZARDS IN PRESENCE OF VARIOUS SUBSTANCES:

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COMBUSTIBLE IN PRESENCE OF OPEN FLAMES AND SPARKS.

EXPLOSION HAZARDS IN PRESENCE OF VARIOUS SUBSTANCES:

RISKS OF EXPLOSION OF THE PRODUCT IN PRESENCE OF MECHANICAL IMPACT:
NOT AVAILABLE

RISKS OF EXPLOSION OF THE PRODUCT IN PRESENCE OF STATIC DISCHARGE:
NOT AVAILABLE

FIRE FIGHTING MEDIA AND INSTRUCTIONS:
SMALL FIRE: USE DRY CHEMICAL POWDER.
LARGE FIRE: USE WATER SPRAY, FOG OR FOAM. DO NOT USE WATER JET

PROTECTIVE CLOTHING (FIRE):
BE SURE TO USE AN APPROVED/CERTIFIED RESPIRATOR OR EQUIVALENT.

SPECIAL REMARKS ON FIRE HAZARDS:
MASSIVE METAL IS NONFLAMMABLE. DUST AND POWDERS MAY BE FLAMMABLE.

SPECIAL REMARKS ON EXPLOSION HAZARDS: NOT AVAILABLE.

SECTION 6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL AND LEAK:

MOLTEN METAL:
LET COOL BEFORE PICKING UP AND RETURNING TO PROCESS OR RECYCLING.

OTHER:
USE APPROPRIATE TOOLS TO PUT THE SPILLED SOLID IN A CONTAINER RESERVED TO THAT EFFECT.

LARGE SPILL AND LEAK:

MOLTEN METAL:
LET COOL BEFORE PICKING UP AND RETURNING TO PROCESS OR RECYCLING.

OTHER:
USE APPROPRIATE INSTRUMENTS TO PUT THE SPILLED MATERIAL IN A CONTAINER RESERVED TO THAT EFFECT.

SECTION 7. HANDLING AND STORAGE

HANDLING:
AVOID CONTACT WITH EYES AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. WASH THOROUGHLY AFTER HANDLING.

STORAGE:
KEEP CONTAINER TIGHTLY CLOSED. KEEP CONTAINER IN A COOL, WELL-VENTILATED AREA.

SECTION 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

ENGINEERING CONTROLS:

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USE PROCESS ENCLOSURES, LOCAL EXHAUST VENTILATION. OR OTHER ENGINEERING CONTROLS TO KEEP AIRBORNE LEVELS BELOW RECOMMENDED EXPOSURE LIMITS. IF USER OPERATIONS GENERATE DUST. FUME OR MIST. USE VENTILATION TO KEEP EXPOSURE TO AIRBORNE CONTAMINANTS BELOW THE EXPOSURE LIMIT.

PERSONAL PROTECTION:

EYES: SPLASH GOGGLES.

BODY: LAB COAT

RESPIRATORY:

DUST RESPIRATOR. BE SURE TO USE AN APPROVED/CERTIFIED RESPIRATOR OR EQUIVALENT. WEAR APPROPRIATE RESPIRATOR WHEN VENTILATION IS INADEQUATE.

HANDS: GLOVES.

FEET: NOT APPLICABLE.

NOTE:

SUGGESTED PROTECTIVE CLOTHING MAY NOT BE ADEQUATE FOR A SPECIFIC PROCESS. CONSULT A SPECIALIST BEFORE USING.

PERSONAL PROTECTION IN CASE OF A LARGE SPILL:

SPLASH GOGGLES. FULL SUIT. DUST RESPIRATOR. BOOTS. GLOVES. A SELF CONTAINED BREATHING APPARATUS SHOULD BE USED TO AVOID INHALATION OF THE PRODUCT. SUGGESTED PROTECTIVE CLOTHING MIGHT NOT BE SUFFICIENT; CONSULT A SPECIALIST BEFORE HANDLING THIS PRODUCT.

PRODUCT NAME

EXPOSURE LIMITS

NO HAZARDOUS INGREDIENTS.

CONSULT LOCAL AUTHORITIES: FOR ACCEPTABLE EXPOSURE LIMITS.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE AND APPEARANCE: SOLID. (LUSTROUS SOLID.)

ODOR: NOT APPLICABLE. ODORLESS

TASTE: NOT APPLICABLE.

COLOR: GREY.

MOLECULAR WEIGHT: 121.75 G/MOLE

CHEMICAL FORMULA: Sb

pH (1% SOLN/WATER): NOT APPLICABLE.

SPECIFIC GRAVITY: 6.69 (WATER = 1)

ACID VALUE (IPC TM-650, 2.3.13): NOT AVAILABLE.

BOILING/CONDENSATION POINT: 1635 DEG. C (2975 DEG. F)

MELTING/FREEZING POINT: 630.74 DEG. C (1167.3 DEG. F)

CRITICAL TEMPERATURE: NOT AVAILABLE.

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VAPOR PRESSURE: NOT AVAILABLE.

VAPOR DENSITY: NOT AVAILABLE.

VOLATILITY: NOT AVAILABLE.

ODOR THRESHOLD: NOT AVAILABLE.

EVAPORATION RATE: NOT AVAILABLE.

VOC: NOT AVAILABLE.

VISCOSITY: NOT AVAILABLE.

LOGKOW: NOT AVAILABLE.

IONICITY (IN WATER): NOT AVAILABLE.

DISPERSION PROPERTIES: NOT AVAILABLE.

SOLUBILITY: INSOLUBLE IN COLD WATER. HOT WATER.

PHYSICAL CHEMICAL COMMENTS: NOT AVAILABLE.

SECTION 10. STABILITY AND REACTIVITY

STABILITY AND REACTIVITY: THE PRODUCT IS STABLE.

CONDITIONS OF INSTABILITY: NOT AVAILABLE.

INCOMPATIBILITY WITH VARIOUS SUBSTANCES:
REACTIVE WITH OXIDIZING AGENTS, ACIDS.

HAZARDOUS DECOMPOSITION PRODUCTS: NOT AVAILABLE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

CORROSIVITY:
NOT CONSIDERED TO BE CORROSIVE FOR METALS AND GLASS ACCORDING TO OUR DATABASE.

SPECIAL REMARKS ON CORROSIVITY: NO ADDITIONAL REMARK.

SECTION 11. TOXICOLOGICAL INFORMATION

TOXIC AND CHRONIC EFFECTS ON HUMANS:
FUMES AND/OR DUSTS PRODUCED BY THIS PRODUCT MAY BE HAZARDOUS IN CASE OF
INGESTION, OR INHALATION. THIS PRODUCT MAY BE HAZARDOUS IN CASE OF SKIN
CONTACT (IRRITANT, SENSITIZER), OF EYE CONTACT (IRRITANT).

CARCINOGENIC EFFECTS: NOT AVAILABLE.

MUTAGENIC EFFECTS: NOT AVAILABLE.

TERATOGENIC EFFECTS: NOT AVAILABLE.

DEVELOPMENTAL TOXICITY: PROVEN

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THE PRODUCT MAY BE TOXIC TO THE REPRODUCTIVE SYSTEM, UPPER RESPIRATORY TRACT, SKIN, EYES. REPEATED OR PROLONGED EXPOSURE TO THE SUBSTANCE CAN PRODUCE TARGET ORGANS DAMAGE. REPEATED EXPOSURE TO TOXIC MATERIAL MAY PRODUCE GENERAL DETERIORATION OF HEALTH BY AN ACCUMULATION IN ONE OR MANY HUMAN ORGANS.

TOXICITY TO ANIMALS:
ACUTE ORAL TOXICITY (LD50): 7000 MG/KG (RAT).

SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS:
HUMAN: PASSES THE PLACENTAL BARRIER, DETECTED IN MATERNAL MILK.

SPECIAL REMARKS ON OTHER TOXIC EFFECTS ON HUMANS: NOT AVAILABLE.

SPECIAL REMARKS ON TOXICITY TO ANIMALS: NOT AVAILABLE.

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICITY: NOT AVAILABLE.

BOD5 AND COD: NOT AVAILABLE.

BIODEGRADABLE/OECD: NOT AVAILABLE.

MOBILITY: NOT AVAILABLE.

POSSIBLY HAZARDOUS SHORT TERM DEGRADATION PRODUCTS ARE NOT LIKELY. HOWEVER, LONG TERM DEGRADATION PRODUCTS MAY ARISE.

TOXICITY OF THE PRODUCTS OF BIODEGRADATION:
THE PRODUCTS OF DEGRADATION ARE AS TOXIC AS THE ORIGINAL PRODUCT.

SPECIAL REMARKS ON THE PRODUCTS OF BIODEGRADATION: NOT AVAILABLE.

SECTION 13. DISPOSAL CONSIDERATION

WASTE INFORMATION:
WASTE MUST BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL ENVIRONMENTAL CONTROL REGULATIONS.

WASTE STREAM: NOT AVAILABLE.

CONSULT YOUR LOCAL OR REGIONAL AUTHORITIES.

SECTION 14. TRANSPORT INFORMATION

TDG CLASSIFICATION: NOT CONTROLLED UNDER TDG (CANADA).

NO PLACARD REQUIRED

NOT AVAILABLE.

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SPECIAL PROVISIONS FOR TRANSPORT: NOT APPLICABLE.

IMO/IMDG CLASSIFICATION: NOT CONTROLLED UNDER IMDG.

MARINE POLLUTANT: NOT AVAILABLE.

ADR/RID CLASSIFICATION: NOT CONTROLLED UNDER ADR (EUROPE).

ICAO/IATA CLASSIFICATION: NOT CONTROLLED UNDER IATA.

SECTION 15. REGULATORY INFORMATION

WHMIS (CANADA):
CLASS D-2A: MATERIAL CAUSING OTHER TOXIC EFFECTS (VERY TOXIC).
CEPA DSL: ANTIMONY
CANADIAN NPRI: ANTIMONY

SECTION 16. OTHER INFORMATION

LABEL STATEMENTS:
MAY CAUSE EYE IRRITATION, MAY CAUSE SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION.

REFERENCES:
ACGIH, THRESHOLD LIMIT VALUES, 1994-1995.
CANADA GAZETTE PART II, VOL. 122, NO. 2 REGISTRATION SOR/88-64 31 DECEMBER.
1987 HAZARDOUS PRODUCTS ACT "INGREDIENT DISCLOSURE LIST" CFR29. OSHA'S
PERMISSIBLE EXPOSURE LIMITS. REVISION JULY, 1993 CFR29, PART 1910.1200
HAZARD COMMUNICATION. CHEMTOX DATABASE. COMPONENTS MANUFACTURER'S MATERIAL
SAFETY DATA SHEET. CRC HANDBOOK OF CHEMISTRY AND PHYSICS. 67TH EDITION, CRC
PRESS INC. BOCA RATON. FLORIDA

CSST (COMMISSION DE SANTE ET SECURITE AU TRAVAIL). DOCUMENT #RT-12:
CLASSIFICATION OF CERTAIN CHEMICAL SUBSTANCES. IATA, DANGEROUS GOODS
REGULATIONS, 37TH EDITION (JANUARY 1, 1996) NFPA, FIRE PROTECTION GUIDE TO
CHEMICAL HAZARDS. 11TH EDITION. NIOSH, POCKET GUIDE TO CHEMICAL HAZARDS.
REVISION JUNE 1994. SIGMA-ALDRICH HANDBOOK OF FINE CHEMICALS, 1998 TSCA
(TOXIC SUBSTANCE CONTROL ACT), CHEMICAL SUBSTANCE INVENTORY LIST. 1985.

OTHER SPECIAL CONSIDERATIONS: NOT AVAILABLE.

DOCUMENT MODIFICATIONS:

VALIDATED BY: P.DIALLO
ON: 11/29/2001.

VERIFIED BY P. DIALLO.

PRINTED: 11/29/2001.

INFORMATION/CONTACT:
AIM
9100 HENRI-BOURASSE EAST
MONTREAL, QUEBEC H1E 2S4
CANADA
(514) 494-2000
(800) 361-0783

MSDS - ANTIMONY

NOTICE TO READER:

TO THE BEST OF OUR KNOWLEDGE, THE INFORMATION CONTAINED HEREIN IS ACCURATE. HOWEVER, NEITHER THE ABOVE NAMED SUPPLIER NOR ANY OF ITS SUBSIDIARIES ASSUMES ANY LIABILITY WHATSOEVER FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION CONTAINED HEREIN. FINAL DETERMINATION OF SUITABILITY OF ANY MATERIAL IS THE SOLE RESPONSIBILITY OF THE USER. ALL MATERIALS MAY PRESENT UNKNOWN HAZARDS AND SHOULD BE USED WITH CAUTION. ALTHOUGH CERTAIN HAZARDS ARE DESCRIBED HEREIN, WE CANNOT GUARANTEE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

International Chemical Safety Cards

BERYLLIUM

ICSC: 0226

<p style="text-align: center;">BERYLLIUM Glucinium (powder) Be Atomic mass: 9.0</p> <p>CAS # 7440-41-7 RTECS # DS1750000 ICSC # 0226 UN # 1567 EC # 004-001-00-7</p>			
TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Special powder, dry sand, NO other agents.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST! AVOID ALL CONTACT!	IN ALL CASES CONSULT A DOCTOR!
• INHALATION	Cough. Shortness of breath. Sore throat. Weakness. Symptoms may be delayed (see Notes).	Local exhaust. Breathing protection.	Fresh air, rest. Refer for medical attention.
• SKIN	Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
• EYES	Redness. Pain.	Face shield or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• INGESTION		Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.
SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING	
Evacuate danger area! Consult an expert! Carefully collect the spilled substance into containers; if appropriate moisten first, then remove to safe place. Do NOT let this chemical enter the environment (extra personal protection: complete protective clothing including self-contained breathing apparatus).	Separated from strong acids, bases, chlorinated solvents, food and feedstuffs.	Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs. T+ symbol R: 49-25-26-36/37/38-43-48/23 S: 53-45 Note: E UN Hazard Class: 6.1 UN Subsidiary Risks: 4.1 UN Packing Group: II	
SEE IMPORTANT INFORMATION ON BACK			
ICSC: 0226		Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities © IPCS CEC 1993	

International Chemical Safety Cards

BERYLLIUM

ICSC: 0226

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: GREY TO WHITE METAL OR POWDER.</p> <p>PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air.</p> <p>CHEMICAL DANGERS: Reacts with strong acids and strong bases forming combustible gas (HYDROGEN - see ICSC # 0001). Forms shock sensitive mixtures with some chlorinated solvents, such as carbon tetrachloride and trichloroethylene.</p> <p>OCCUPATIONAL EXPOSURE LIMITS (OELs): TLV (as TWA): ppm; 0.002 mg/m³ A2 (Suspected Human Carcinogen) (ACGIH 1994-1995).</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.</p> <p>INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The aerosol of this substance irritates the respiratory tract. Inhalation of dust or fumes may cause chemical pneumonitis. Exposure may result in death. The effects may be delayed. Medical observation is indicated.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact may cause skin sensitization. Lungs may be affected by repeated or prolonged exposure to dust particles, resulting in chronic beryllium disease (cough, weight loss, weakness). This substance is carcinogenic to humans.</p>
PHYSICAL PROPERTIES	Boiling point: above 2500°C Melting point: 1287°C	Relative density (water = 1): 1.9 Solubility in water: none
ENVIRONMENTAL DATA	The substance is very toxic to aquatic organisms.	
NOTES		
<p>Depending on the degree of exposure, periodic medical examination is indicated.</p> <p style="text-align: right;">Transport Emergency Card: TEC (R)-61G10 NFPA Code: H3; F1; R0</p>		
ADDITIONAL INFORMATION		
ICSC: 0226	BERYLLIUM	
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IMPORTANT LEGAL NOTICE:	Neither the CEC or the IPCS nor any person acting on behalf of the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use.	

MSDS - BLEACH

AMWAY / CHLORINE BLEACH / 02/22/1994AMWAY
CHLORINE BLEACH Revised: 02/22/1994

MSDS Contents

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- HANDLING PRECAUTIONS
- DISCLAIMER

USDS1240

MATERIAL SAFETY DATA SHEET (USA)

PRODUCT NAME: AMWAY* CHLORINE BLEACH

DISTRIBUTED BY:

AMWAY CORPORATION
7575 FULTON STREET EAST
ADA, MICHIGAN 49355

MSDS/PRODUCT INFORMATION:

COMMERCIAL SERVICES (49-2A)
AMWAY CORPORATION
7575 FULTON STREET EAST
ADA, MICHIGAN 49355

EMERGENCY #: 1-616-676-6307
INFORMATION #: 1-800-992-6929, EXT. 32

HAZARDOUS INGREDIENTS

(PER OSHA HAZARD COMMUNICATION STANDARD)

% IN PRODUCT	CAS NUMBER	COMMON NAME CHEMICAL NAME
<25	51580-86-0	SODIUM DICHOROISOCYANURATE DIHYDRATE SODIUM DICHORO-S-TRIAZINETRIONE DIHYDRATE
<10	497-19-8	SODIUM CARBONATE CARBONIC ACID DISODIUM SALT

PHYSICAL AND CHEMICAL CHARACTERISTICS

SPECIFIC GRAVITY (H2O=1): 1.00-1.30 (BULK DENSITY)

SOLUBILITY IN WATER: NOT DETERMINED.

PH: 8.9-10.0 (1% SOLUTION)

VAPOR PRESSURE (MM HG): NOT DETERMINED.

VAPOR DENSITY (AIR = 1): NOT DETERMINED.

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APPEARANCE AND ODOR:

THIS PRODUCT IS A FREE-FLOWING WHITE POWDER WITH A CHLORINE ODOR.

PHYSICAL HAZARD DATA

HAZARDS:

SODIUM DICHOROISOCYANURATE DIHYDRATE IS DEFINED AS A CLASS 1 OXIDIZER BY NFPA. IT IS NOT CLASSIFIED BY DOT.

FIRE HAZARDS:

FLASH POINT: THIS PRODUCT IS NOT FLAMMABLE OR COMBUSTIBLE.

FIRE FIGHTING TECHNIQUES:

STANDARD: WEAR FULL BODY PROTECTION. WEAR SELF-CONTAINED BREATHING APPARATUS TO PROTECT AGAINST PRODUCTS OF COMBUSTION (E.G. CO, CO₂, NO₂, COCl₂, HCl, SMOKE, SOOT, UNIDENTIFIED ORGANICS.) USE WATER SPRAY, FOAM, DRY CHEMICAL, CO₂. COOL CONTAINERS WITH WATER. NO EXPLOSION HAZARDS IDENTIFIED.

REACTIVITY

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

CONDITIONS/MATERIAL TO AVOID:

AVOID EXCESSIVE HEAT, FLAME, CONTACT WITH ACIDS, BASES, AMMONIA, ORGANIC MATERIALS.

HEALTH HAZARD DATA

EXPOSURE LIMIT:

AN EXPOSURE LIMIT FOR THIS PRODUCT HAS NOT BEEN ESTABLISHED. EXPOSURE LIMITS FOR INGREDIENTS HAVE NOT BEEN ESTABLISHED.

PRIMARY ROUTES OF EXPOSURE/ENTRY:

THIS PRODUCT CAN AFFECT THE BODY IF IT CONTACTS THE SKIN OR EYES, IS INHALED OR INGESTED.

SIGNS/SYMPTOMS/EFFECTS OF EXPOSURE

SKIN CONTACT: THIS PRODUCT IS NOT A PRIMARY SKIN IRRITANT. PROLONGED OR REPEATED SKIN CONTACT WITH THIS PRODUCT MAY CAUSE DRY SKIN.

EYE CONTACT: CAUSES EYE BURNS.

INGESTION:

INGESTION OF THIS PRODUCT MAY CAUSE IRRITATION OF THE MOUTH AND THROAT, UPSET STOMACH, NAUSEA, VOMITING, AND DIARRHEA.

INHALATION:

INHALATION MAY CAUSE IRRITATION OF THE NOSE, THROAT, AND LUNGS.

AGGRAVATED MEDICAL CONDITIONS:

PRE-EXISTING SKIN, EYE AND RESPIRATORY DISORDERS.

EMERGENCY AND FIRST AID PROCEDURES

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SKIN CONTACT:

REMOVE CONTAMINATED CLOTHING AND RINSE SKIN WITH WATER FOR 15 MINUTES. IF IRRITATION DEVELOPS, GET MEDICAL ADVICE BY CALLING THE EMERGENCY PHONE NUMBER ON PAGE ONE OF THIS MSDS, OR A LOCAL/REGIONAL POISON CONTROL CENTER, OR A HOSPITAL EMERGENCY ROOM. LAUNDRY CONTAMINATED CLOTHING BEFORE REUSE.

EYE CONTACT:

REMOVE CONTACT LENSES. RINSE WITH A GENTLE STREAM OF LUKEWARM WATER FOR 15 MINUTES, HOLDING EYELIDS OPEN. GET IMMEDIATE MEDICAL ADVICE BY CALLING THE EMERGENCY PHONE NUMBER AT THE BEGINNING OF THIS MSDS, OR A LOCAL/REGIONAL POISON CONTROL CENTER, OR A HOSPITAL EMERGENCY ROOM.

INGESTION:

IF VICTIM IS A CHILD, GIVE 4-8 OUNCES OF WATER. FOR ADULTS, GIVE 8-12 OUNCES OF WATER. DO NOT INDUCE VOMITING WHEN THIS PRODUCT IS SWALLOWED. IF VOMITING OCCURS SPONTANEOUSLY, KEEP VICTIM IN AN UPRIGHT POSITION. GET MEDICAL ADVICE IMMEDIATELY BY CALLING THE EMERGENCY PHONE NUMBER AT THE BEGINNING OF THIS MSDS, OR A LOCAL/REGIONAL POISON CONTROL CENTER, OR A HOSPITAL EMERGENCY ROOM.

INHALATION:

REMOVE TO FRESH AIR. IF IRRITATION OR BREATHING DIFFICULTY DEVELOPS, GET MEDICAL ADVICE BY CALLING THE EMERGENCY PHONE NUMBER AT THE BEGINNING OF THIS MSDS, OR A LOCAL/REGIONAL POISON CONTROL CENTER, OR A HOSPITAL EMERGENCY ROOM.

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF SPILLED OR RELEASED:

WEAR APPROPRIATE PERSONAL PROTECTION EQUIPMENT (RESPIRATOR, GLOVES, GOGGLES, AND/OR FACE SHIELD, BOOTS, PROTECTIVE CLOTHING). CONTAIN/DIKE SPILL TO PREVENT ENVIRONMENTAL RELEASE.

WASTE DISPOSAL:

DISPOSE OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

HANDLING PRECAUTIONS

PROTECTIVE MEASURES:

THIS PRODUCT IS A CONSUMER PRODUCT PACKAGED IN BOTH CONSUMER AS WELL AS LARGER SIZES. TO THE EXTENT THE PRODUCT IS USED IN A FASHION TYPICAL TO THAT OF A CONSUMER, PROTECTIVE MEASURES, WITH THE EXCEPTION OF THOSE INDICATED ON THE LABEL, ARE NOT NORMALLY NECESSARY. WHERE USE CONDITIONS AND/OR EXTENT AND DURATION OF EXPOSURE DIFFER FROM TYPICAL CONSUMER USE, HOWEVER, APPROPRIATE PROTECTIVE MEASURES TO PREVENT EYE AND PROLONGED SKIN CONTACT (GLASSES, GOGGLES, RUBBER GLOVES, PROTECTIVE CLOTHING) AND MINIMIZE INHALATION EXPOSURE (ENGINEERING CONTROLS, NIOSH-APPROVED RESPIRATORY PROTECTION APPROPRIATE FOR THE HAZARD PRESENTED) SHOULD BE IMPLEMENTED.

WORK/HYGIENE PRACTICES:

FOR GOOD PERSONAL HYGIENE, INSURE PROMPT REMOVAL FROM SKIN, AND CLOTHING.

DISCLAIMER

THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE AND REPRESENTS THE
Page 3

MSDS - BLEACH

BEST INFORMATION CURRENTLY AVAILABLE TO US, MUCH OF WHICH COMES FROM THE MANUFACTURER OR SUPPLIER OF COMPONENTS OF THIS PRODUCT. THEREFORE, AMWAY CORPORATION MAKES NO WARRANTY, EXPRESS OR IMPLIED, REGARDING THE ACCURACY OF THE DATA. HEALTH AND SAFETY PRECAUTIONS IN THIS DATA SHEET MAY NOT BE ADEQUATE FOR ALL INDIVIDUALS AND PRODUCT USES. IT IS THE USER'S OBLIGATION TO MAKE CERTAIN THAT THIS MSDS IS THE MOST CURRENT MSDS FOR THE PRODUCT; TO EVALUATE THE INFORMATION CONTAINED IN THIS SHEET IN CONNECTION WITH THE USES TO WHICH THE PRODUCT IS TO BE PUT IN THE WORKPLACE AND TO USE THE PRODUCT SAFELY IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS.

IF THERE ARE ANY QUESTIONS CONCERNING THE INFORMATION CONTAINED IN THIS SHEET OR ITS APPLICABILITY TO A PARTICULAR USE, THE USER IS INSTRUCTED TO TELEPHONE 1-800-992-6929, EXT. 32. AMWAY CORPORATION ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED IN THIS SHEET IN A WAY DIFFERENT FROM THAT PROVIDED IN THE LABEL DIRECTIONS.

* TRADEMARK OF AMWAY CORPORATION, ADA, MICHIGAN

REVISED: 02-22-94
SUPERSEDES: 09-01-93
DL:MS010143

MSDS - CADMIUM
EM SCIENCE / CADMIUM / 11/21/1989
CADMIUM Revised: 11/21/1989
MSDS Contents

MATERIAL SAFETY DATA SHEET

EM SCIENCE
A DIV OF EM INDUSTRIES
P.O. BOX 70
480 DEMOCRAT RD.
GIBBSTOWN, N.J. 08027

MARITZA NIEVES/MS T41
HUGHES AIRCRAFT CO.
8433 FALL BROOK AVE,
CANOGA PARK, CA
91304-0445

PREPARATION DATE: NOV 21, '89

DATE SENT TO CUSTOMER.....: MAY 29, '91

INFORMATION PHONE NUMBER :
(609) 354-9200

CHEMTREC EMERGENCY NUMBER:
1-800-424-9300

NFPA HAZARD RATINGS

HEALTH: 3

FLAMMABILITY ...: 1

REACTIVITY : ...: 0

SPECIAL HAZARDS.:

SECTION I - GENERAL INFORMATION

CATALOG NUMBER(S): CX0012 CX0013 CX0015 2001 16411

CHEMICAL NAME.....: CADMIUM

TRADE NAME.....: N/A

C.A.S. NUMBER.....: 7440-43-9

CHEMICAL FAMILY...: METAL

FORMULA.....: Cd

MOLECULAR WEIGHT.: 112.40

DOT SHIPPING NAME: ORM-A, N.O.S. (CADMIUM) FOR CX0012
(NON-REGULATED) FOR CX0013, CX0015, 16411, 2001

DOT NUMBER.....: NA1693 FOR CX0012
(NONE) FOR CX0013, CX0015, 16411, 2001

SECTION II - HAZARDOUS INGREDIENTS

MSDS - CADMIUM

NONE OTHER THAN SPECIFIED PRODUCT

SECTION III - PHYSICAL DATA

BOILING POINT (C DEG. 760 MM HG)..: 767C
MELTING POINT (C DEG.).....: 321C
SPECIFIC GRAVITY (H2O = 1).....: 8.642
VAPOR PRESSURE.. (MM HG).....: N/A 20C
PERCENT VOLATILE BY VOL (%).....: N/A
VAPOR DENSITY (AIR=1).....: N/A
EVAPORATION RATE (BUAC=1).....: N/A
SOLUBILITY IN WATER (%).....: INSOLUBLE
APPEARANCE AND ODOR.....: GRAY POWDER, GRANULES, METALLIC RODS
OR PIECES

SECTION IV - FIRE & EXPLOSION HAZARD DATA

FLASH POINT (F DEG.).....: NONE
FLAMMABLE LIMITS LEL %.....: N/A
FLAMMABLE LIMITS UEL %.....: N/A
EXTINGUISHING MEDIA.....: CO2, DRY CHEMICAL
FIRE FIGHTING PROC.....:
WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING.
FIRE & EXPL. HAZARDS.....:
CADMIUM DUST IS A MODERATE FIRE AND EXPLOSION HAZARD.

SECTION V - HEALTH HAZARD DATA (ACUTE AND CHRONIC)

ACGIH TLV/OSHA PEL (TWA).....: (TLV) 0.05 MG/CU.M. (DUST)
(PEL) 0.1 MG/CU.M. (FUME)
TOXICITY DATA.....: IHL-HMN LCLo: 39 MG/CU.M./20M
ORL-RAT LD50: 225 MG/KG

SYMPTOMS OF EXPOSURE.....:
INHALATION OF DUST OR FUME CAN CAUSE SEVERE LUNG IRRITATION AND PULMONARY
EDEMA, WHICH MAY BE FATAL.
CHRONIC EXPOSURE CAN ALSO CAUSE KIDNEY DAMAGE.
INGESTION CAUSES SEVERE GASTROINTESTINAL IRRITATION.
CONTACT WITH SKIN OR EYES MAY CAUSE IRRITATION.
MEDICAL SURVEILLANCE OF PERSONNEL CONTINUALLY EXPOSED TO CADMIUM DUST OR
FUMES IS RECOMMENDED.

MEDICAL COND. AGGRAVATED BY EXP: KIDNEY CONDITIONS

ROUTES OF ENTRY.....: INHALATION, INGESTION

CARCINOGENICITY.....:
PROVEN ANIMAL CARCINOGENIC SUBSTANCE. POSSIBLE CANCER HAZARD.

MSDS - CADMIUM

EMERGENCY FIRST AID.....:
GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE

SKIN: WASH THOROUGHLY WITH SOAP AND WATER

EYES: IMMEDIATELY FLUSH THOROUGHLY WITH LARGE AMOUNTS OF WATER

INHALATION: REMOVE TO FRESH AIR; GIVE ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED

INGESTION: IF CONSCIOUS, INDUCE VOMITING

SECTION VI - REACTIVITY DATA

STABILITY.....: YES

CONDITIONS TO AVOID.....:
DUSTING; CONTACT OF DUST WITH IGNITION SOURCE.

MATERIALS TO AVOID.....:

- WATER
- ACIDS
- BASES
- CORROSIVES
- OXIDIZERS
- OTHER: HYDRAZOIC ACID, Te, Se, S, Zn

HAZARDOUS POLYMERIZATION.: DOES NOT OCCUR

HAZARDOUS DECOMPOSITION..: NONE; FORMS CdO AS COMBUSTION PRODUCT

SECTION VII - ENVIRONMENTAL PROTECTION PROCEDURES

SPILL RESPONSE: TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL

WASTE DISPOSAL: TO BE PERFORMED IN COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII - SPECIAL PROTECTION INFORMATION

VENTILATION, RESPIRATORY PROTECTION, PROTECTIVE CLOTHING, EYE PROTECTION:

RESPIRATORY PROTECTION: IF WORKPLACE EXPOSURE LIMIT(S) OF PRODUCT OR ANY COMPONENT IS EXCEEDED (SEE TLV/PEL), A NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS (NEGATIVE PRESSURE TYPE) UNDER SPECIFIED CONDITIONS (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING AND/OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

-MATERIAL MUST BE HANDLED OR TRANSFERRED IN AN APPROVED FUME HOOD OR WITH EQUIVALENT VENTILATION
PROTECTIVE GLOVES (NEOPRENE, NATURAL RUBBER, PVC OR EQUIVALENT) SHOULD BE WORN TO PREVENT SKIN CONTACT
SAFETY GLASSES WITH SIDE SHIELDS SHOULD BE WORN AT ALL TIMES

SECTION IX - SPECIAL PRECAUTIONS

HANDLING & STORAGE

-KEEP CONTAINER CLOSED
STORE IN A COOL AREA AWAY FROM IGNITION SOURCES AND OXIDIZERS

MSDS - CADMIUM

DO NOT BREATHE DUST OR FUMES
DO NOT GET IN EYES
AVOID PROLONGED OR REPEATED SKIN CONTACT.

WORK/HYGIENIC PRACTICES: WASH THOROUGHLY AFTER HANDLING. DO NOT TAKE INTERNALLY. EYE WASH AND SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.

SECTION X - OTHER INFORMATION

COMMENTS.....:
TESTS ON LABORATORY ANIMALS INDICATE MATERIAL MAY PRODUCE ADVERSE REPRODUCTIVE EFFECTS.

REVISION HISTORY.....: 2/01/82, 10/83, 1/21/87, 10/27/87, 6/15/88

N/A = NOT AVAILABLE:

THE STATEMENTS CONTAINED HEREIN ARE OFFERED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED UPON TECHNICAL DATA THAT EM SCIENCE BELIEVES TO BE ACCURATE. IT IS INTENDED FOR USE ONLY BY PERSONS HAVING THE NECESSARY TECHNICAL SKILL AND AT THEIR OWN DISCRETION AND RISK. SINCE CONDITIONS AND MANNER OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE.

MSDS - COPPER POWDER

ACUPOWDER INTERNATIONAL / COPPER POWDER / 09/01/1999
COPPER POWDER Revised: 09/01/1999

- MSDS Contents
- INGREDIENTS
- CHEMICAL & PHYSICAL PROPERTIES
- FIRE & EXPLOSION HAZARDS
- ACUTE HEALTH EFFECTS/ROUTES OF ENTRY
- FIRST AID PROCEDURES
- REACTIVITY
- SPILLS, LEAKS, HANDLING & STORAGE
- SPECIAL PRECAUTIONS

MATERIAL SAFETY DATA SHEET

PRODUCT:

41, 41-C, 102, 102-P, 151, 151-K, 165, 165-A, 165-EP, 165-KO, 165-P, 165-S, 180, 180-P, 185-E, 185-P, 201, 201-D, 301, 301B, 800, 5276, 5386, 5425, 5516, 5742, 5757, 5772, 5776, 5781, 5783, 5784, 8081, 8082, 8144, 8804, INF EL-70, EL-100, EL-135, EL-160, EL-165, EL-185, EL-195, EL-215, EL-240, EL-250, EL-260

NAME: COPPER POWDER

DATE: REV. SEPT. 1999

MANUFACTURER'S NAME & ADDRESS:

ACuPOWDER INTERNATIONAL LLC
901 LEHIGH AVENUE
UNION, NJ 07083
TEL: 908-851-4500, EXT. 530
EMERGENCY: 908-851-4500

PRODUCT NAME & SYNONYMS: COPPER POWDER

INGREDIENTS

MATERIAL OR COMPONENT	CAS NUMBER	%	THRESHOLD LIMIT VALUE	
			OSHA	PEL
COPPER	7440-50-8	100	1 MG/M3 DUST	0.1 MG/M3 FUME

CHEMICALS LISTED AS CARCINOGEN OR POSSIBLE CARCINOGEN

	YES	NO
NTP		X
IARC		X
OSHA		X

SECTION 313 INFORMATION - SEE MSDS FOR INFORMATION.

CHEMICAL & PHYSICAL PROPERTIES

BOILING POINT: 2567 DEG. C

MELTING POINT: 1083 DEG. C

MSDS - COPPER POWDER

SOLUBILITY IN WATER: NONE

% VOLATILE (VOL.): N.A.

SPECIFIC GRAVITY (WATER = 1): N.A.

VAPOR PRESSURE (MMHG): N.A.

EVAPORATION RATE: N.A.

PH: N.A.

APPEARANCE AND ODOR: REDDISH COLOR AND ODORLESS.

OTHER: N.A.

FIRE & EXPLOSION HAZARDS

FLASH POINT (METHOD): N.A.

AUTOIGNITION TEMP: N.A.

FLAMMABLE LIMITS (%):

LOWER:

UPPER: N.A.

EXTINGUISHING MEDIA:

DRY SAND OR OTHER INERT EXTINGUISHING MATERIAL.

SPECIAL FIRE FIGHTING PROCEDURES:

GENTLY COVER THE BURNING MASS WITH SAND OR INERT MATERIAL AND ALLOW TO COOL.

UNUSUAL FIRE & EXPLOSION HAZARDS: N.A.

ACUTE HEALTH EFFECTS/ROUTES OF ENTRY

INHALATION:

CAN CAUSE SNEEZING, NAUSEA, WEAKNESS, METAL FUME FEVER WITH FLU LIKE SYMPTOMS.

SKIN CONTACT: CAN CAUSE IRRITATION AND DERMATITIS.

EYE CONTACT: CAN CAUSE IRRITATION.

INGESTION:

CAN CAUSE NAUSEA, VOMITING, DIARRHEA, METAL FUME FEVER WITH FLU LIKE SYMPTOMS.

SUPPLEMENTAL INFORMATION:

CHRONIC EFFECTS, SEE MSDS FOR INFORMATION.

FIRST AID PROCEDURES

MSDS - COPPER POWDER

INHALATION: REMOVE FROM EXPOSURE.

SKIN CONTACT:
WASH AFFECTED SKIN WITH SOAP AND WATER. CONSULT A PHYSICIAN.

EYE CONTACT:
FLUSH EYES WITH WATER AT LEAST 15 MINUTES. CONSULT A PHYSICIAN.

INGESTION:
CONSULT A PHYSICIAN IMMEDIATELY.

REACTIVITY

PRODUCT CORROSIVE:
YES
NO X

STABILITY:
UNSTABLE
STABLE X

HAZARDOUS POLYMERIZATION:
MAY OCCUR
WILL NOT OCCUR X

CONDITIONS AND MATERIALS TO AVOID:
STRONG ACIDS, BROMATES, CHLORATES, IODATES.

HAZARDOUS DECOMPOSITION PRODUCTS:
NITROGEN OXIDE IF REACTED WITH NITRIC ACID.

SPIILLS, LEAKS, HANDLING & STORAGE

SPIILL & LEAK PROCEDURES:
WEAR PROTECTIVE CLOTHING, GOGGLES AND A NIOSH APPROVED RESPIRATOR. SPRINKLE MODERATELY WITH DAMP SAND AND COLLECT FOR DISPOSAL AVOIDING DUST CLOUDS AS MUCH AS POSSIBLE.

WASTE DISPOSAL METHOD: PUT IN A CLOSED CONTAINER FOR DISPOSAL.
(DISPOSER MUST COMPLY WITH FEDERAL, STATE OR LOCAL WASTE DISPOSAL LAWS)

HANDLING AND STORAGE METHODS:
STORE IN A COOL, DRY PLACE AVOIDING CONTACT WITH HEAT AND ACIDS. AVOID CREATING DUST CLOUDS.

SPECIAL PRECAUTIONS

VENTILATION REQUIREMENTS:
LOCAL EXHAUST, MINIMUM FACE VELOCITY OF 60 F.P.M.

RESPIRATORY PROTECTION:
(USE NIOSH/MSHA APPROVED RESPIRATORS) USE SUPPLIED AIR RESPIRATORY PROTECTION IN CONFINED OR ENCLOSED SPACES IF NEEDED.

MSDS - COPPER POWDER

PROTECTIVE CLOTHING:

USE CHEMICAL RESISTANT GLOVES AND APRON TO AVOID PROLONGED OR REPEATED SKIN CONTACT.

ADDITIONAL PROTECTIVE MEASURES:

GOGGLES. WASH AFTER USE AND BEFORE EATING/DRINKING.

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ACUTE HEALTH HAZARDS

OVEREXPOSURE TO FUME, DUSTS AND MISTS MAY RESULT IN SNEEZING, NAUSEA, WEAKNESS. ACUTE OVER-EXPOSURE WILL RESULT IN "METAL FUME FEVER" WITH FLU LIKE SYMPTOMS LASTING 24 TO 48 HOURS.

CHRONIC AFFECTS:

ANEMIA, "LEAD LINE" ON GUMS, POSSIBLE NERVOUS SYSTEM DAMAGE, ATROPHIC CHANGES IN MUCOUS MEMBRANES.

PRE-EXISTING MEDICAL CONDITIONS AGGRAVATED:

PRE-EXISTING RESPIRATORY, KIDNEY DISEASE, WILSON'S DISEASE.

SECTION 313 SUPPLIER NOTIFICATION:

THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1988 AND OF 40 CFR 372.

CAS #	CHEMICAL NAME	PERCENT WEIGHT
7440-50-8	COPPER	100



**Material Safety
Data Sheets**

[Division of Facilities Services](#)

**DOD Hazardous Material Information (ANSI Format)
For Cornell University Convenience Only**

DIESEL FUEL NO. 2

Section 1 - Product and Company Identification	Section 9 - Physical & Chemical Properties
Section 2 - Compositon/Information on Ingredients	Section 10 - Stability & Reactivity Data
Section 3 - Hazards Identification Including Emergency Overview	Section 11 - Toxicological Information
Section 4 - First Aid Measures	Section 12 - Ecological Information
Section 5 - Fire Fighting Measures	Section 13 - Disposal Considerations
Section 6 - Accidental Release Measures	Section 14 - MSDS Transport Information
Section 7 - Handling and Storage	Section 15 - Regulatory Information
Section 8 - Exposure Controls & Personal Protection	Section 16 - Other Information

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**Section 1 - Product and Company Identification
DIESEL FUEL NO. 2**

Product Identification: DIESEL FUEL NO. 2

Date of MSDS: 03/10/1992 **Technical Review Date:** 11/24/1992

FSC: 9140 **NIIN:** 00-286-5294

Submitter: D DG

Status Code: C

MFN: 01

Article: N

Kit Part: N

Manufacturer's Information

Manufacturer's Name: JACE OIL CO
Manufacturer's Address1: 180 E OCEAN BLVD SUITE 902
Manufacturer's Address2: LONG BEACH, CA 90802
Manufacturer's Country: US
General Information Telephone: 213-495-3342
Emergency Telephone: 213-495-3342
Emergency Telephone: 213-495-3342
MSDS Preparer's Name: N/P
Proprietary: N
Reviewed: Y
Published: Y
CAGE: 0KB31
Special Project Code: N

Item Description

Item Name: DIESEL FUEL
Item Manager:
Specification Number: VV-F-800
Type/Grade/Class: GRADE DF-2
Unit of Issue: GL
Unit of Issue Quantity: X
Type of Container: BULK

Contractor Information

Contractor's Name: JACE OIL CO
Contractor's Address1: 180 E OCEAN BLVD SUITE 902
Contractor's Address2: LONG BEACH, CA 90802
Contractor's Telephone: 213-495-3342
Contractor's CAGE: 0KB31

Section 2 - Compositon/Information on Ingredients DIESEL FUEL NO. 2

Ingredient Name: PETROLEUM MID-DISTILLATE (DIESEL FUEL NO. 2)
Ingredient CAS Number: 68476-34-6 **Ingredient CAS Code:** M
RTECS Number: **RTECS Code:** X
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: 100

% Environmental Weight:
Other REC Limits: NONE RECOMMENDED
OSHA PEL: NOT ESTABLISHED **OSHA PEL Code:** M
OSHA STEL: **OSHA STEL Code:**
ACGIH TLV: NOT ESTABLISHED **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical: N

Section 3 - Hazards Identification, Including Emergency Overview DIESEL FUEL NO. 2

Health Hazards Acute & Chronic: ACUTE: EYES- SLIGHT TO MODERATE IRRITATION. SKIN- MODERATELY TO EXTREMELY IRRITATING. INHALATION- IRRITATING TO MUCOUS MEMBRANES AND RESPIRATORY TRACT. INGESTION- STOMACH IRRITATION, GASTRITIS, LOSS OF CONSCIOUSNESS, HEMORRHAGING OF THE LUNG AND INTERNAL ORGANS. CHRONIC: SKIN- DERMATITIS & KIDNEY DAMAGE.

Signs & Symptoms of Overexposure:
SKIN- REDNESS, DRYING, BURNING OR BLISTERING OF SKIN. INHALATION- INTOXICATION, HEADACHE, DIZZINESS, NAUSEA, VOMITING AND LOSS OF COORDINATION. INGESTION- CONVULSIONS, CYANOSIS, AND MILD EXCITATION.

Medical Conditions Aggravated by Exposure:
MAY AGGRAVATE PRE-EXISTING DERMATITIS.

LD50 LC50 Mixture: UNKNOWN

Route of Entry Indicators:

Inhalation: YES
Skin: YES
Ingestion: NO

Carcinogenicity Indicators

NTP: NO
IARC: NO
OSHA: NO

Carcinogenicity Explanation: NIOSH RECOMMENDS THAT WHOLE DIESEL EXHAUST BE REGARDED AS A "POTENTIAL OCCUPATIONAL CARCINOGEN".

Section 4 - First Aid Measures DIESEL FUEL NO. 2

First Aid:

EYES- FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15 MIN. GET MEDICAL ATTENTION. SKIN- COOL THE EXPOSED AREA IMMEDIATELY. REMOVE CONTAMINATED CLOTHING. IMMEDIATELY WASH AFFECTED AREAS WITH SOAP AND WATER. INHALATION- REMOVE TO FRESH AIR. APPLY ARTIFICIAL RESPIRATION IF NOT

BREATHING. GET MEDICAL ATTENTION. INGESTION- DO NOT INDUCE VOMITING. KEEP VICTIM'S HEAD LOWER THAN HIPS IN CASE OF VOMITING.

Section 5 - Fire Fighting Measures **DIESEL FUEL NO. 2**

Fire Fighting Procedures:

USE A WATER SPRAY TO COOL FIRE-EXPOSED CONTAINERS. USE A SMOTHERING TECHNIQUE FOR EXTINGUISHING FIRE OF THIS COMBUSTIBLE MATERIAL. WEAR FULL SCBA GEAR.

Unusual Fire or Explosion Hazard:

FLOWING OIL CAN BE IGNITED BY SELF-GENERATED STATIC ELECTRICITY.

Extinguishing Media:

DRY CHEMICAL, CARBON DIOXIDE, FOAM, AND WATER.

Flash Point: Flash Point Text: 125F,52C

Autoignition Temperature:

Autoignition Temperature Text: 495F

Lower Limit(s): 0.6

Upper Limit(s): 7.5

Section 6 - Accidental Release Measures **DIESEL FUEL NO. 2**

Spill Release Procedures:

REMOVE SOURCES OF HEAT OR IGNITION INCLUDING INTERNAL COMBUSTION ENGINES AND POWER TOOLS. CLEAN-UP SPILL, BUT DO NOT FLUSH TO SEWER OR SURFACE WATER. VENTILATE AREA AND AVOID BREATHING VAPORS OR MISTS .

Section 7 - Handling and Storage **DIESEL FUEL NO. 2**

Handling and Storage Precautions:

Other Precautions:

Section 8 - Exposure Controls & Personal Protection **DIESEL FUEL NO. 2**

Respiratory Protection:

USE APPROVED RESPIRATORY PROTECTIVE EQUIPMENT FOR CLEANING LARGE SPILLS OR ENTRY INTO LARGE TANKS, VESSELS OR OTHER CONFINED SPACES.

Ventilation:

PROVIDE ADEQUATE VENTILATION TO MEET OCCUPATIONAL EXPOSURE LIMITS AND PREVENT THE FORMATION OF EXPLOSIVE.

Protective Gloves:

WEAR IMPERVIOUS GLOVES.

Eye Protection: WEAR SAFETY GLASSES.

Other Protective Equipment: NONE SPECIFIED BY MANUFACTURER.

Work Hygienic Practices: THOROUGHLY WASH HANDS AFTER HANDLING THIS MATERIAL.

Supplemental Health & Safety Information: DO NOT WEAR CONTACT LENSES WHERE CONTACT WITH LIQUID OF MIST MAY OCCUR.

**Section 9 - Physical & Chemical Properties
DIESEL FUEL NO. 2**

HCC: F4
NRC/State License Number: N/R
Net Property Weight for Ammo: N/R
Boiling Point: Boiling Point Text: 300F,149C
Melting/Freezing Point: Melting/Freezing Text: N/K
Decomposition Point: Decomposition Text: N/K
Vapor Pressure: 1.6 @ 20C **Vapor Density:** 8
Percent Volatile Organic Content:
Specific Gravity: 0.87
Volatile Organic Content Pounds per Gallon:
pH: N/R
Volatile Organic Content Grams per Liter:
Viscosity: 1.9 CST @ 40C
Evaporation Weight and Reference: 0.01 (NO REFERENCE GIVEN)
Solubility in Water: INSOLUBLE
Appearance and Odor: CLEAR TO LIGHT AMBER LIQUID. MILD PETROLEUM ODOR.
Percent Volatiles by Volume: N/R
Corrosion Rate: N/R

**Section 10 - Stability & Reactivity Data
DIESEL FUEL NO. 2**

Stability Indicator: YES
Materials to Avoid:
STRONG OXIDIZING AGENTS.
Stability Condition to Avoid:
HEAT, SPARK, FLAME AND BUILD-UP OF STATIC ELECTRICITY.
Hazardous Decomposition Products:
CARBON MONOXIDE, CARBON DIOXIDE, SULFUR DIOXIDE, AND HYDROCARBONS.
Hazardous Polymerization Indicator: NO
Conditions to Avoid Polymerization:
NOT APPLICABLE

**Section 11 - Toxicological Information
DIESEL FUEL NO. 2**

Toxicological Information:
N/P

**Section 12 - Ecological Information
DIESEL FUEL NO. 2**

Ecological Information:
N/P

Section 13 - Disposal Considerations

DIESEL FUEL NO. 2

Waste Disposal Methods:

DISPOSE THROUGH A LICENSED WASTE DISPOSAL COMPANY. FOLLOW FEDERAL, STATE AND LOCAL REGULATIONS.

Section 14 - MSDS Transport Information**DIESEL FUEL NO. 2**

Transport Information:

N/P

Section 15 - Regulatory Information**DIESEL FUEL NO. 2**

SARA Title III Information:

N/P

Federal Regulatory Information:

N/P

State Regulatory Information:

N/P

Section 16 - Other Information**DIESEL FUEL NO. 2**

Other Information:

N/P

HMIS Transportation Information

Product Identification: DIESEL FUEL NO. 2

Transportation ID Number: 66816

Responsible Party CAGE: 0KB31

Date MSDS Prepared: 03/10/1992

Date MSDS Reviewed: 11/24/1992

MFN: 11/24/1992

Submitter: D DG

Status Code: C

Container Information

Unit of Issue: GL

Container Quantity: X

Type of Container: BULK

Net Unit Weight: UNKNOWN

Article without MSDS: N

Technical Entry NOS Shipping Number: PETROLEUM DISTILLATE, DIESEL

Radioactivity: N/R

Form:

Net Explosive Weight: N/R

Coast Guard Ammunition Code: N/R

Magnetism: N/P

AF MMAC Code:

DOD Exemption Number: N/R
Limited Quantity Indicator:
Multiple Kit Number: 0
Kit Indicator: N
Kit Part Indicator: N
Review Indicator: Y
Additional Data:

Department of Transportation Information

DOT Proper Shipping Name: GAS OIL OR DIESEL FUEL OR HEATING OIL, LIGHT
DOT PSN Code: GTF
Symbols:
DOT PSN Modifier:
Hazard Class: 3
UN ID Number: UN1202
DOT Packaging Group: III
Label: FLAMMABLE LIQUID
Special Provision(s): B1,T7,T30
Packaging Exception: 150
Non Bulk Packaging: 203
Bulk Packaging: 242
Maximum Quantity in Passenger Area: 60 L
Maximum Quantity in Cargo Area: 220 L
Stow in Vessel Requirements: A
Requirements Water/Sp/Other:

IMO Detail Information

IMO Proper Shipping Name: FUEL OIL NO. 1
IMO PSN Code: HNZ
IMO PSN Modifier:
IMDG Page Number: SEE 3375
UN Number: 1223
UN Hazard Class: 3.3
IMO Packaging Group: III
Subsidiary Risk Label: -
EMS Number: 3-07
Medical First Aid Guide Number: 311

IATA Detail Information

IATA Proper Shipping Name: GAS OIL
IATA PSN Code: MTX
IATA PSN Modifier:
IATA UN Id Number: 1202
IATA UN Class: 3
Subsidiary Risk Class:
UN Packaging Group: III
IATA Label: FLAMMABLE LIQUID
Packaging Note for Passengers: 309
Maximum Quantity for Passengers: 60L
Packaging Note for Cargo: 310
Maximum Quantity for Cargo: 220L
Exceptions: A3

AFI Detail Information**AFI Proper Shipping Name:** GAS OIL OR DIESEL FUEL OR HEATING OIL, LIGHT**AFI Symbols:****AFI PSN Code:** MTX**AFI PSN Modifier:****AFI UN Id Number:** UN1202**AFI Hazard Class:** 3**AFI Packing Group:** III**AFI Label:****Special Provisions:** P5**Back Pack Reference:** A7.3**HAZCOM Label Information****Product Identification:** DIESEL FUEL NO. 2**CAGE:** 0KB31**Assigned Individual:** N**Company Name:** JACE OIL CO**Company PO Box:****Company Street Address1:** 180 E OCEAN BLVD SUITE 902**Company Street Address2:** LONG BEACH, CA 90802 US**Health Emergency Telephone:** 213-495-3342**Label Required Indicator:** Y**Date Label Reviewed:** 11/24/1992**Status Code:** C**Manufacturer's Label Number:****Date of Label:** 11/24/1992**Year Procured:** N/K**Organization Code:** F**Chronic Hazard Indicator:** N/P**Eye Protection Indicator:** YES**Skin Protection Indicator:** YES**Respiratory Protection Indicator:** YES**Signal Word:** WARNING**Health Hazard:** Moderate**Contact Hazard:** Moderate**Fire Hazard:** Moderate**Reactivity Hazard:** None

8/7/2002 10:18:17 PM

CARBON ACTIVATED -- ACTIVATED CARBON

=====

MSDS Safety Information

=====

FSC: 6810
MSDS Date: 12/23/1994
MSDS Num: BWVNM
LIIN: 00F038685
Product ID: ACTIVATED CARBON
MFN: 01
Responsible Party
Cage: CARBO
Name: CARBON ACTIVATED
Address: 1442 W 135TH ST
City: GARDENA CA 90249-5000
Info Phone Number: 310-323-8132
Emergency Phone Number: 310-323-8132
Preparer's Name: LIONEL M PERERA
Review Ind: Y
Published: Y

=====

Preparer Co. when other than Responsible Party Co.

=====

Cage: CARBO
Assigned Ind: Y
Name: CARBON ACTIVATED CORP
Address: 1442 W 135TH ST
City: GARDENA CA 90249-5000

=====

Contractor Summary

=====

Cage: CARBO
Name: CARBON ACTIVATED CORP
Address: 1442 W 135TH ST
City: GARDENA CA 90249-5000
Phone: 310-323-8132

=====

Ingredients

=====

Cas: 7440-44-0
RTECS #: FF5250100
Name: CARBON, ACTIVATED CARBON, GRAPHITE
OSHA PEL: 10 MG/CUM
ACGIH TLV: 10 MG/CUM

=====

Health Hazards Data

=====

LD50 LC50 Mixture: ORAL LD50(RAT): >10 G/KG
Route Of Entry Inds - Inhalation: YES
Skin: NO
Ingestion: NO
Carcinogenicity Inds - NTP: NO
IARC: NO
OSHA: NO
Effects of Exposure: INHALATION: IRRITATION TO THE RESPIRATORY SYSTEM. EYES:
IRRITATION.
Explanation Of Carcinogenicity: NONE
Signs And Symptions Of Overexposure: IRRITATION
First Aid: EYES: FLUSH W/WATER FOR 15 MINS. OBTAIN MEDICAL ATTENTION IN ALL
CASES.

=====
 Handling and Disposal
 =====

Spill Release Procedures: UNUSED PRODUCT SHOULD BE SWEEPED UP &
 DISCARD/REPACKAGED.

Waste Disposal Methods: UNUSED CARBON MAY BE DISPOSED OF BY ANY APPROPRIATE
 MEANS. USED PRODUCTS MAY CONTAIN HAZARDOUS CHEMICALS/EXHIBIT HAZARDOUS
 PROPERTIES THAT MAY HAVE TO BE EXAMINED TO DETERMINE APPROPRIATE DISPOSAL MET
 HOD. (SEE SUPP)

Handling And Storage Precautions: WET ACTIVATED CARBON REMOVES OXYGEN FROM THE
 AIR CAUSING A SEVERE HAZARD TO WORKERS IN REQUIRED SPACE.

Other Precautions: SAMPLING & WORK PROCEDURES FOR LOW OXYGEN LEVELS SHOULD
 BE TAKEN WHENEVER WORKERS MAY BE ENTERING CARBON VESSELS ENCLOSED/CONFINED
 SPACE. SAFE HANDLING ON A LONG TERM BASIS SHOULD EMPHASIZE PROTECTION
 AGAINST EXPOSURE TO CARBON DUST.

=====
 Fire and Explosion Hazard Information
 =====

Extinguishing Media: WATER, FOAM, CO2/DRY CHEMICAL

Fire Fighting Procedures: NONE

Unusual Fire/Explosion Hazard: CONTACT W/STRONG OXIDIZERS MAY RESULT IN FIRE.

=====
 Control Measures
 =====

Respiratory Protection: A HIGH EFFICIENCY PARTICULATE FILTER IS RECOMMENDED
 WHENEVER EXCESSIVE DUST MAY BE GENERATED.

Ventilation: LOCAL EXHAUST IS RECOMMENDED SUFFICIENT TO CONTROL DUST.

Protective Gloves: RECOMMENDED

Eye Protection: SAFETY GLASSES/GOGGLES

Other Protective Equipment: NONE REQUIRED

Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.

Supplemental Safety and Health: WASTE DISPOSAL METHOD CONT'D: DISPOSE OF
 IAW/LOCAL, STATE & FEDERAL REGULATIONS.

=====
 Physical/Chemical Properties
 =====

B.P. Text: 7592F

M.P/F.P Text: 6656F

Solubility in Water: INSOLUBLE

Appearance and Odor: ODORLESS BLACK GRANULAR, MAY BE IN PALLETS

=====
 Reactivity Data
 =====

Stability Indicator: YES

Stability Condition To Avoid: NONE

Materials To Avoid: STRONG OXIDIZERS

Hazardous Decomposition Products: CO

Hazardous Polymerization Indicator: NO

=====
 Toxicological Information
 =====

=====
 Ecological Information
 =====

=====
 MSDS Transport Information
 =====

=====
 Regulatory Information
 =====

=====
Other Information
==========
HAZCOM Label
=====

Product ID: ACTIVATED CARBON
Cage: CARBO
Assigned IND: Y
Company Name: CARBON ACTIVATED CORP
Street: 1442 W 135TH ST
City: GARDENA CA
Zipcode: 90249-5000
Health Emergency Phone: 310-323-8132
Label Required IND: Y
Date Of Label Review: 12/16/1998
Status Code: C
Label Date: 12/16/1998
Origination Code: G
Hazard And Precautions: INHALATION: IRRITATION TO THE RESPIRATORY SYSTEM. EYES:
IRRITATION.
IRRITATION

=====
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MSDS - GASOLINE
CHEVRON / REGULAR GASOLINE / 10/01/1982
REGULAR GASOLINE Revised: 10/01/1982

MSDS Contents
TYPICAL COMPOSITION
EXPOSURE STANDARD
PHYSIOLOGICAL AND HEALTH EFFECTS
ADDITIONAL HEALTH DATA
EMERGENCY AND FIRST AID PROCEDURES
SPECIAL PROTECTIVE INFORMATION
FIRE PROTECTION
SPECIAL PRECAUTIONS
ENVIRONMENTAL PROTECTION
REACTIVITY DATA
PHYSICAL PROPERTIES

MATERIAL INFORMATION BULLETIN

(APPROVED - "ESSENTIALLY SIMILAR" TO FORM OSHA 20, MATERIAL SAFETY DATA SHEET

CPS 201305
NO. 363
REV. 1082

DEAR CUSTOMER: THIS BULLETIN CONTAINS IMPORTANT ENVIRONMENTAL HEALTH AND TOXICOLOGY INFORMATION FOR YOUR EMPLOYEES WHO RECENTLY ORDERED THIS PRODUCT. PLEASE MAKE SURE THIS INFORMATION IS GIVEN TO THEM. IF YOU RESELL THIS PRODUCT, THIS BULLETIN SHOULD BE GIVEN TO THE BUYER. THIS FORM MAY BE REPRODUCED WITHOUT PERMISSION. CHEVRON U.S.A. INC.

CHEVRON ENVIRONMENTAL HEALTH CENTER INC.
P.O. BOX 4054
RICHMOND, CA 94804

EMERGENCY PHONE NUMBER (415)233-3737

CHEVRON REGULAR GASOLINE

DANGER!
HARMFUL OR FATAL IF SWALLOWED
VAPOR HARMFUL
MAY CAUSE EYE AND SKIN IRRITATION
EXTREMELY FLAMMABLE
KEEP OUT OF REACH OF CHILDREN

TYPICAL COMPOSITION

VARIABLE BLEND OF PARAFFINS, NAPHTHENES, AROMATICS AND OLEFINS INCLUDING BENZENE (105%), N-HEXANE (1-5%), AND TOLUENE PLUS XYLENE (5-15%) >99% PRC* OR F310** OTHER ADDITIVES AND DYE < 0.5%
LEAD <3.2 G/GAL.

*TRADEMARK FOR POLYETHER AMINE GASOLINE ADDITIVE
**REGISTERED TRADEMARK OR POLYBUTENE AMINE GASOLINE ADDITIVE.

EXPOSURE STANDARD

MSDS - GASOLINE

THE THRESHOLD LIMIT VALUE (1982) FOR GASOLINE IS 300 PPM (PARTS OF VAPOR PER MISSION PARTS OF AIR) FOR A DAILY 8-HOUR EXPOSURE. THERE IS NO OSHA EXPOSURE STANDARD.

PHYSIOLOGICAL AND HEALTH EFFECTS

EYES

EYE IRRITATION MAY RESULT FROM CONTACT WIT THE LIQUID OR EXPOSURE TO THE VAPOR. THE SCIENTIFIC LITERATURE WARNS THAT VAPOR CONCENTRATIONS ABOVE 500 PPM ARE IRRITATING.

SKIN

PROLONGED OR FREQUENTLY REPEATED CONTACT MAY CAUSE SKIN IRRITATION OR MAY CAUSE THE SKIN TO BECOME CRACKED OR DRY FROM THE DEFATTING ACTION OF THE MATERIAL.

INHALATION

BREATHING THE VAPORS AT CONCENTRATIONS ABOVE THE EXPOSURE STANDARD CAN CAUSE SYMPTOMS OF CENTRAL NERVOUS SYSTEM DEPRESSION AS DESCRIBED IN ADDITIONAL HEALTH DATA. AFFECTED PERSONS USUALLY EXPERIENCE COMPLETE RECOVERY WHEN REMOVED FROM THE EXPOSURE AREA. EXPOSURES TO VAPOR CONCENTRATIONS EXCEEDING 5000 PPM MAY CAUSE LOSS OF CONSCIOUSNESS, COMA AND DEATH.

INGESTION

THIS MATERIAL IS EXPECTED TO HAVE SLIGHT ACUTE TOXICITY BY INGESTION. NOTE TO PHYSICIAN: INGESTION OF THIS PRODUCT OR SUBSEQUENT VOMITING CAN RESULT IN ASPIRATION OF LIGHT HYDROCARBON LIQUID WHICH CAN CAUSE PNEUMONITIS. SEE ADDITIONAL HEALTH DATA.

ADDITIONAL HEALTH DATA

INGESTION OF GASOLINE OR INHALATION OF VAPORS IN GASOLINE TRANSFER OR NORMAL WORK SITUATIONS MAY CAUSE SIGNS AND SYMPTOMS OF CENTRAL NERVOUS SYSTEM DEPRESSION SUCH AS HEADACHE, DIZZINESS, LOSS OF APPETITE, WEAKNESS AND LOSS OF COORDINATION.

LEADED GASOLINES HAVE OCCASIONALLY BEEN USED AS DRUGS OF ABUSE. WHEN THE VAPORS ARE INHALED IN EXCESSIVELY HIGH CONCENTRATIONS DURING THIS TYPE OF ABUSE, EFFECTS ON THE CENTRAL NERVOUS SYSTEM CAN RESULT WITH CLINICAL MANIFESTATIONS THAT MAY INCLUDE CONVULSIONS, DELIRIUM, HALLUCINATIONS AND OTHER SYMPTOMS OF LEAD POISONING. THESE MANIFESTATIONS ARE NOT KNOWN TO OCCUR FOLLOWING ACCIDENTLY INHALATION OF VAPOR OR SKIN CONTACT WITH LEADED GASOLINES DURING NORMAL OPERATIONS.

THE AMERICAN PETROLEUM INSTITUTE (API) RECENTLY (1982) SPONSORED A STUDY WHERE LABORATORY ANIMALS WERE EXPOSED TO 67, 292 AND 2056 PPM UNLEADED GASOLINE VAPORS SIX HOURS/DAY, FIVE DAYS/WEEK FOR APPROXIMATELY TWO YEARS. EACH EXPOSURE GROUP CONSISTED OF 200 RATS AND 200 MICE. AN APPARENT DOSE-RELATED INCIDENCE OF MICROSCOPIC KIDNEY TUMORS WAS DETECTED, BUT ONLY IN THE MALE RATS. TWO TUMORS WERE FOUND IN THE LOW EXPOSURE GROUP, AND FIVE WERE FOUND IN THE HIGH EXPOSURE GROUP. THESE KIDNEY TUMORS WERE PRIMARILY FOUND AT THE 24-MONTH SACRIFICE. FURTHERMORE, THE SIZE OF THE TUMORS WAS UNRELATED TO THE DOSE SINCE ALL WERE THE SAME MICROSCOPIC SIZE AND NOT CONSIDERED TO BE LIFE THREATENING.

AS A BASIS OF COMPARISON, THE NORMAL LIFE SPAN OF A RAT IS APPROXIMATELY TWO YEARS. IT IS INTERESTING TO NOTE THAT THE ANIMALS THAT WERE EXPOSED TO GASOLINE VAPORS LIVED LONGER. CONSEQUENTLY THE SIGNIFICANCE OF THIS FINDING REMAINS OBSCURE.

MSDS - GASOLINE

EMERGENCY AND FIRST AID PROCEDURES

EYES

WASH EYES WITH FRESH WATER FOR AT LEAST 15 MINUTES. IF IRRITATION PERSISTS, SEE A DOCTOR.

SKIN

WASH SKIN THOROUGHLY WITH SOAP AND WATER. SEE A DOCTOR IF ANY OF THE SIGNS AND SYMPTOMS DESCRIBED IN THIS BULLETIN DEVELOP OR IF ANY SKIN IRRITATION OCCURS. LAUNDER CONTAMINATED CLOTHING.

INHALATION

IF THERE ARE SIGNS OR SYMPTOMS AS DESCRIBED IN THIS BULLETIN DUE TO BREATHING THIS MATERIAL, MOVE THE PERSON TO FRESH AIR. IF BREATHING HAS STOPPED, APPLY ARTIFICIAL RESPIRATION. CALL A DOCTOR IMMEDIATELY.

INGESTION

IF SWALLOWED, DO NOT MAKE PERSON VOMIT. CALL A DOCTOR IMMEDIATELY.

SPECIAL PROTECTIVE INFORMATION

EYE PROTECTION:

AVOID CONTACT WITH EYES. EYE CONTACT CAN BE AVOIDED BY WEARING CHEMICAL SAFETY GOGGLES.

SKIN PROTECTION:

AVOID PROLONGED OR FREQUENTLY REPEATED SKIN CONTACT WITH THIS MATERIAL. SKIN CONTACT CAN BE MINIMIZED BY WEARING IMPERVIOUS PROTECTIVE CLOTHING INCLUDING RUBBER GLOVES.

RESPIRATORY PROTECTION:

NO SPECIAL RESPIRATORY PROTECTION IS NORMALLY REQUIRED. HOWEVER, IF OPERATING CONDITIONS CREATE HIGH AIRBORNE CONCENTRATIONS, THE USE OF APPROVED RESPIRATOR IS RECOMMENDED.

VENTILATION:

USE THIS MATERIAL ONLY IN WELL VENTILATED AREAS.

OTHER:

IF EYE OR SKIN CONTACT CAN OCCUR, WASHING FACILITIES FOR EYES AND SKIN SHOULD BE AVAILABLE NEARBY.

FIRE PROTECTION

THIS PRODUCT PRESENTS AN EXTREME FIRE HAZARD. LIQUID VERY QUICKLY EVAPORATES, EVEN AT LOW TEMPERATURES, AND FORMS VAPOR (FUMES) WHICH CAN CATCH FIRE AND BURN WITH EXPLOSIVE VIOLENCE. INVISIBLE VAPOR SPREADS EASILY AND CAN BE SET ON FIRE BY MANY SOURCES SUCH AS PILOT LIGHTS, WELDING EQUIPMENT, AND ELECTRICAL MOTORS AND SWITCHES.

FLASH POINT:

(P-M) <-45 C

AUTOIGNITION TEMP:

MSDS - GASOLINE

NDA

FLAMMABILITY LIMITS:
1.4-7.6%

EXTINGUISHING MEDIA:
CO2, DRY CHEMICAL, FOAM, WATER SPRAY

SPECIAL FIRE FIGHTING PROCEDURES:
FOR FIRES INVOLVING THIS MATERIAL, DO NOT ENTER ANY ENCLOSED OR CONFINED FIRE SPACE WITHOUT PROPER PROTECTIVE EQUIPMENT. THIS MAY INCLUDE SELF-CONTAINED BREATHING APPARATS TO PROTECT AGAINST THE HAZARDOUS EFFECTS OF NORMAL PRODUCTS OF COMBUSTION OR OXYGEN DEFICIENCY. READ THE ENTIRE BULLETIN.

SPECIAL PRECAUTIONS

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

CONTAINS PETROLEUM NAPHTHA AND MAY CONTAIN TRACES OF LEAD.
USE ONLY AS A MOTOR FUEL. DO NOT USE FOR CLEANING, PRESSURE APPLIANCE FUEL, OR ANY OTHER SUCH USE.

DO NOT USE OR STORE NEAR FLAME, SPARKS OR HOT SURFACES. USE AND STORE ONLY IN COOL, WELL VENTILATED AREA.
KEEP CONTAINER CLOSED.
DO NOT TRANSFER LIQUID TO AN UNLABELED CONTAINER.
DO NOT WELD, HEAT OR DRILL CONTAINER.
REPLACE CAP OR BUNG. EMPTIED CONTAINER STILL CONTAINS HAZARDOUS OR EXPLOSIVE VAPOR OR LIQUID.

CAUTION! DO NOT USE PRESSURE TO EMPTY DRUM OF EXPLOSION MAY RESULT.

ENVIRONMENTAL PROTECTION

ENVIRONMENTAL IMPACT:
CERTAIN GEOGRAPHICAL AREAS HAVE AIR POLLUTION RESTRICTIONS CONCERNING THE USE OF MATERIALS IN WORK SITUATIONS WHICH MAY RELEASE VOLATILE COMPONENTS TO THE ATMOSPHERE. AIR POLLUTION REGULATIONS SHOULD BE STUDIED TO DETERMINE IF THIS MATERIAL IS REGULATED IN THE AREA WHERE IT IS TO BE USED.

PRECAUTIONS IF MATERIAL IS RELEASED OR SPILLED:
ELIMINATE ALL SOURCES OF IGNITION IN VICINITY OF SPILL OR RELEASED VAPOR.
CLEAN UP RELEASES AS SOON AS POSSIBLE, OBSERVING PRECAUTIONS IN SPECIAL PROTECTIVE INFORMATION AND ON PRODUCT LABEL. ABSORB LARGE SPILLS WITH ABSORBENT CLAY, DIATOMACEOUS EARTH, OR OTHER SUITABLE MATERIAL. A FIRE OR VAPOR HAZARD MAY EXIST SINCE THESE CLEANUP MATERIALS WILL ONLY ABSORB LIQUID, THEY WILL NOT ABSORB VAPOR.

WASTE DISPOSAL METHODS
PLACE CONTAMINATED MATERIALS IN DISPOSABLE CONTAINERS AND DISPOSE OF IN AN APPROVED DUMPING AREA.

REACTIVITY DATA

MSDS - GASOLINE

STABILITY (THERMAL, LIGHT, ETC.):
STABLE

INCOMPATIBILITY (MATERIALS TO AVOID)
MAY REACT WITH STRONG OXIDIZING MATERIALS.

HAZARDOUS DECOMPOSITION PRODUCTS
NORMAL COMBUSTION FORMS CARBON DIOXIDE AND WATER VAPOR; INCOMPLETE COMBUSTION
CAN PRODUCE CARBON MONOXIDE.

HAZARDOUS POLYMERIZATION
WILL NOT OCCUR

PHYSICAL PROPERTIES

SOLUBILITY
SOLUBLE IN HYDROCARBONS; INSOLUBLE IN WATER.

APPEARANCE (COLOR, ODOR, ETC.):
ORANGE TO BRONZE LIQUID.

BOILING POINT
25-225 C (VARIABLE WITH SEASON, LOCATION)

MELTING POINT
n/a

SPECIFIC GRAVITY
APX. 0.8

VAPOR PRESSURE (MM HG AND TEMP)
9-15 PSIA (MAX) AT 100 F (VARIABLE WITH SEASON, LOCATION)

VAPOR DENSITY (AIR = 1)
3-4

PERCENT VOLATILE BY VOLUME (%)
99+%

EVAPORATION:
(= 1) NDA

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NO. 363



[Division of Facilities Services](#)

DOD Hazardous Material Information (ANSI Format) For Cornell University Convenience Only

HMX, GRADE B

Section 1 - Product and Company Identification	Section 9 - Physical & Chemical Properties
Section 2 - Compositon/Information on Ingredients	Section 10 - Stability & Reactivity Data
Section 3 - Hazards Identification Including Emergency Overview	Section 11 - Toxicological Information
Section 4 - First Aid Measures	Section 12 - Ecological Information
Section 5 - Fire Fighting Measures	Section 13 - Disposal Considerations
Section 6 - Accidental Release Measures	Section 14 - MSDS Transport Information
Section 7 - Handling and Storage	Section 15 - Regulatory Information
Section 8 - Exposure Controls & Personal Protection	Section 16 - Other Information

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Section 1 - Product and Company Identification HMX, GRADE B

Product Identification: HMX, GRADE B
Date of MSDS: 05/24/1986 **Technical Review Date:** 08/06/1992
FSC: 6850 **NIIN:** LIIN: 00N033081
Submitter: N EN
Status Code: C
MFN: 01
Article: N
Kit Part: N

Manufacturer's Information

Manufacturer's Name: HOLSTON DEFENSE CORP
Manufacturer's Address1: WEST STONE DRIVE
Manufacturer's Address2: KINGSPORT, TN 37660
Manufacturer's Country: US
General Information Telephone: 615-247-9111
Emergency Telephone: 615-247-9111
Emergency Telephone: 615-247-9111
MSDS Preparer's Name: N/P
Proprietary: N
Reviewed: N
Published: Y
CAGE: 1D893
Special Project Code: N

Contractor Information

Contractor's Name: HOLSTON DEFENSE CORPORATION
Contractor's Address1: WEST STONE DRIVE
Contractor's Address2: KINGSPORT, TN 37660
Contractor's Telephone: 615-247-9111
Contractor's CAGE: 1D893

**Section 2 - Compositon/Information on Ingredients
 HMX, GRADE B**

Ingredient Name: 1,3,5,7-TETRAZOCLINE, OCTAHYDRO-1,3,5,7-TETRANITRO-;
 (CYCLOTETRAMETHYLENETETTRANITRAMINE) (HMx)
Ingredient CAS Number: 2691-41-0 **Ingredient CAS Code:** M
RTECS Number: XF7450000 **RTECS Code:** M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: 98-100
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M
OSHA STEL: OSHA STEL **Code:**
ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical: N

Ingredient Name: CONDTNS TO AVOID:EXPOS TO SUFFICIENT ENERGY LEVEL.

Ingredient CAS Number: Ingredient CAS Code: X

RTECS Number: 9999999ZZ RTECS Code: M

=WT: =WT Code:

=Volume: =Volume Code:

>WT: >WT Code:

>Volume: >Volume Code:

<WT: <WT Code:

<Volume: <Volume Code:

% Low WT: % Low WT Code:

% High WT: % High WT Code:

% Low Volume: % Low Volume Code:

% High Volume: % High Volume Code:

% Text: N/K

% Enviromental Weight:

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE OSHA PEL Code: M

OSHA STEL: OSHA STEL Code:

ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M

ACGIH STEL: N/P ACGIH STEL Code:

EPA Reporting Quantity:

DOT Reporting Quantity:

Ozone Depleting Chemical:

Ingredient Name: DISP METH:EXPLOS SHOULD BE IGNIT REMOTELY. PERS SHLD WEAR FLAME RESISTANT CLTHG. DISP OF EXPLOS SHLD COMPLY W/(ING 12)

Ingredient CAS Number: Ingredient CAS Code: X

RTECS Number: 9999999ZZ RTECS Code: M

=WT: =WT Code:

=Volume: =Volume Code:

>WT: >WT Code:

>Volume: >Volume Code:

<WT: <WT Code:

<Volume: <Volume Code:

% Low WT: % Low WT Code:

% High WT: % High WT Code:

% Low Volume: % Low Volume Code:

% High Volume: % High Volume Code:

% Text: N/K

% Enviromental Weight:

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE OSHA PEL Code: M

OSHA STEL: OSHA STEL Code:

ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M

ACGIH STEL: N/P ACGIH STEL Code:

EPA Reporting Quantity:

DOT Reporting Quantity:

Ozone Depleting Chemical:

Ingredient Name: EXPLOS HAZ:BE SUBJECTED TO HEAT, SPARKS/FLAME. DETONATION

CAN OCCUR.THERM DECONTAM UNDER CONTROLLED CNDTNS IS REC(ING 3)

Ingredient CAS Number: Ingredient CAS Code: X

RTECS Number: 9999999ZZ RTECS Code: M

=WT: =WT Code:

=Volume: =Volume Code:

>WT: >WT Code:

>Volume: >Volume Code:

<WT: <WT Code:

<Volume: <Volume Code:

% Low WT: % Low WT Code:

% High WT: % High WT Code:

% Low Volume: % Low Volume Code:

% High Volume: % High Volume Code:

% Text: N/K

% Enviromental Weight:

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE OSHA PEL Code: M

OSHA STEL: OSHA STEL Code:

ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M

ACGIH STEL: N/P ACGIH STEL Code:

EPA Reporting Quantity:

DOT Reporting Quantity:

Ozone Depleting Chemical:

Ingredient Name: FIRST AID PROC:TOUCHING BACK OF THROAT W/FINGER/BY GIVING SYRUP OF IPECAC. NEVER GIVE ANYTHING BY MOUTH TO AN (ING 7)

Ingredient CAS Number: Ingredient CAS Code: X

RTECS Number: 9999999ZZ RTECS Code: M

=WT: =WT Code:

=Volume: =Volume Code:

>WT: >WT Code:

>Volume: >Volume Code:

<WT: <WT Code:

<Volume: <Volume Code:

% Low WT: % Low WT Code:

% High WT: % High WT Code:

% Low Volume: % Low Volume Code:

% High Volume: % High Volume Code:

% Text: N/K

% Enviromental Weight:

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE OSHA PEL Code: M

OSHA STEL: OSHA STEL Code:

ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M

ACGIH STEL: N/P ACGIH STEL Code:

EPA Reporting Quantity:

DOT Reporting Quantity:

Ozone Depleting Chemical:

Ingredient Name: ING 11:ALL APPLIC FED/STATE/LOC REGS. STORE & HNDL WASTE AS CLASS A EXPLOS. OBTAIN APPROVAL FROM APPROP SAFETY (ING 13)

Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: 9999999ZZ RTECS Code: M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: ING 12:AGENCY BEFORE DISPOSAL.

Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: 9999999ZZ RTECS Code: M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: ING 14:OR GREATER. DUST GEN BY HNDLG MUST BE CLEANED UP ON A CONTINUOUS BASIS. CAUTION:EXPLOS MUST BE TESTED FOR(ING 16)

Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: 9999999ZZ RTECS Code: M

=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: ING 15:COMPAT W/ANY MATLS WHICH THEY CONT. (INCL OTHER EXPLOS, SOLV, ADHESIVES, METALS, PLASTICS, PAINTS, (ING 17)

Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: 9999999ZZ RTECS Code: M

=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: ING 16:CLEANING COMPOUNDS, FLOOR & TABLE COVERINGS, PACKING MATLS). KEEP CONTR CLSD. EXTREME CARE SHLD BE (ING 18)

Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: 9999999ZZ RTECS Code: M
=WT: =WT Code:

=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: ING 17:EXERCISED DURING MAINT OF EXPLOS CONTAM EQUIP. DECONTAM PROC INCLUDE WASHING/STEAMING, CHEM DECONTAM, & (ING 19)

Ingredient CAS Number: Ingredient CAS Code: X

RTECS Number: 9999999ZZ RTECS Code: M

=WT: =WT Code:

=Volume: =Volume Code:

>WT: >WT Code:

>Volume: >Volume Code:

<WT: <WT Code:

<Volume: <Volume Code:

% Low WT: % Low WT Code:

% High WT: % High WT Code:

% Low Volume: % Low Volume Code:

% High Volume: % High Volume Code:

% Text: N/K

% Enviromental Weight:

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE OSHA PEL Code: M

OSHA STEL: OSHA STEL Code:

ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M

ACGIH STEL: N/P ACGIH STEL Code:

EPA Reporting Quantity:

DOT Reporting Quantity:

Ozone Depleting Chemical:

Ingredient Name: ING 18:THERM DECONTAM. DECONTAM SHLD BE PERFORMED PRIOR TO WELDING, CUTTING/GRINDING METAL PARTS. PENETRATING (ING 20)

Ingredient CAS Number: Ingredient CAS Code: X

RTECS Number: 9999999ZZ RTECS Code: M

=WT: =WT Code:

=Volume: =Volume Code:

>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: ING 19:OIL SHLD BE USED LIBERALLY ON NUTS, BOLTS & ALL THREADED CONNECTIONS TO AID IN DENSENSIT HIDDEN EXPLOS (ING 21)

Ingredient CAS Number: Ingredient CAS Code: X

RTECS Number: 9999999ZZ RTECS Code: M

=WT: =WT Code:

=Volume: =Volume Code:

>WT: >WT Code:

>Volume: >Volume Code:

<WT: <WT Code:

<Volume: <Volume Code:

% Low WT: % Low WT Code:

% High WT: % High WT Code:

% Low Volume: % Low Volume Code:

% High Volume: % High Volume Code:

% Text: N/K

% Enviromental Weight:

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE OSHA PEL Code: M

OSHA STEL: OSHA STEL Code:

ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M

ACGIH STEL: N/P ACGIH STEL Code:

EPA Reporting Quantity:

DOT Reporting Quantity:

Ozone Depleting Chemical:

Ingredient Name: ING 2:METHOD FOR COMPLETE DECONTAM. THERM DECONTAM MUST BE PRECEDED BY WASHING/STEAMING & CHEM NEUT/DISSOLUTION.(ING 4)

Ingredient CAS Number: Ingredient CAS Code: X

RTECS Number: 9999999ZZ RTECS Code: M

=WT: =WT Code:

=Volume: =Volume Code:

>WT: >WT Code:

>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: ING 20:PRIOR TO DISASSEMBLY. TRANSPORT I/A/W DEPARTMENT OF (ING 22)

Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: 9999999ZZ RTECS Code: M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: ING 21:TRANSPORTATION REGS FOR CLASS A EXPLOS.

Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: 9999999ZZ RTECS Code: M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:

<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: ING 23:BE AVAILBLE.
Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: 9999999ZZ RTECS Code: M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: ING 3:CONTAM PROPERTY MUST NOT BE BURIED.
Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: 9999999ZZ RTECS Code: M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:

% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: ING 6:UNCONSCIOUS PERSON. GET MD ATTENTION.

Ingredient CAS Number: Ingredient CAS Code: X

RTECS Number: 9999999ZZ RTECS Code: M

=WT: =WT Code:

=Volume: =Volume Code:

>WT: >WT Code:

>Volume: >Volume Code:

<WT: <WT Code:

<Volume: <Volume Code:

% Low WT: % Low WT Code:

% High WT: % High WT Code:

% Low Volume: % Low Volume Code:

% High Volume: % High Volume Code:

% Text: N/K

% Enviromental Weight:

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE OSHA PEL Code: M

OSHA STEL: OSHA STEL Code:

ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M

ACGIH STEL: N/P ACGIH STEL Code:

EPA Reporting Quantity:

DOT Reporting Quantity:

Ozone Depleting Chemical:

Ingredient Name: ING 8:MAY INITIATE EXPLOS. AVOID SAND, GLASS, GRIT & METAL FRAGMENTS WHICH MAY SENSIT MATL TO IMPACT AND/OR (ING 10)

Ingredient CAS Number: Ingredient CAS Code: X

RTECS Number: 9999999ZZ RTECS Code: M

=WT: =WT Code:

=Volume: =Volume Code:

>WT: >WT Code:

>Volume: >Volume Code:

<WT: <WT Code:

<Volume: <Volume Code:

% Low WT: % Low WT Code:

% High WT: % High WT Code:

% Low Volume: % Low Volume Code:

% High Volume: % High Volume Code:

% Text: N/K
% Environmental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M
OSHA STEL: **OSHA STEL Code:**
ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: ING 9: FRICTION. WET WITH WATER TO DESENSITIZE.

Ingredient CAS Number: **Ingredient CAS Code:** X

RTECS Number: 9999999ZZ **RTECS Code:** M

=WT: **=WT Code:**

=Volume: **=Volume Code:**

>WT: **>WT Code:**

>Volume: **>Volume Code:**

<WT: **<WT Code:**

<Volume: **<Volume Code:**

% Low WT: **% Low WT Code:**

% High WT: **% High WT Code:**

% Low Volume: **% Low Volume Code:**

% High Volume: **% High Volume Code:**

% Text: N/K

% Environmental Weight:

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M

OSHA STEL: **OSHA STEL Code:**

ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M

ACGIH STEL: N/P **ACGIH STEL Code:**

EPA Reporting Quantity:

DOT Reporting Quantity:

Ozone Depleting Chemical:

Ingredient Name: OTHER PREC: EXPLOS W/SPARK ENERGIES FOR INITIATION <0.02 JOULES ARE HNDLED, RELATIVE HUMITITY SHOULD BE 50% (ING 15)

Ingredient CAS Number: **Ingredient CAS Code:** X

RTECS Number: 9999999ZZ **RTECS Code:** M

=WT: **=WT Code:**

=Volume: **=Volume Code:**

>WT: **>WT Code:**

>Volume: **>Volume Code:**

<WT: **<WT Code:**

<Volume: **<Volume Code:**

% Low WT: **% Low WT Code:**

% High WT: **% High WT Code:**

% Low Volume: **% Low Volume Code:**

% High Volume: **% High Volume Code:**

% Text: N/K

% Environmental Weight:

Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M
OSHA STEL: **OSHA STEL Code:**
ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: OTHER PROT EQUIP:SHOES ARE REC TO AVOID HUMAN STATIC DISCHARGE. A SAFETY SHOWER, EYE BATH & WASH FACILITY SHLD (ING 24)

Ingredient CAS Number: **Ingredient CAS Code:** X

RTECS Number: 9999999ZZ **RTECS Code:** M

=WT: **=WT Code:**

=Volume: **=Volume Code:**

>WT: **>WT Code:**

>Volume: **>Volume Code:**

<WT: **<WT Code:**

<Volume: **<Volume Code:**

% Low WT: **% Low WT Code:**

% High WT: **% High WT Code:**

% Low Volume: **% Low Volume Code:**

% High Volume: **% High Volume Code:**

% Text: N/K

% Enviromental Weight:

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M

OSHA STEL: **OSHA STEL Code:**

ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M

ACGIH STEL: N/P **ACGIH STEL Code:**

EPA Reporting Quantity:

DOT Reporting Quantity:

Ozone Depleting Chemical:

Ingredient Name: SPILL PROC:AVOID PINCHING MATL, METAL TO METAL CONT, IMPACT W/SHARP OBJECTS, FRICTION/OTHER SITUATIONS WHICH (ING 9)

Ingredient CAS Number: **Ingredient CAS Code:** X

RTECS Number: 9999999ZZ **RTECS Code:** M

=WT: **=WT Code:**

=Volume: **=Volume Code:**

>WT: **>WT Code:**

>Volume: **>Volume Code:**

<WT: **<WT Code:**

<Volume: **<Volume Code:**

% Low WT: **% Low WT Code:**

% High WT: **% High WT Code:**

% Low Volume: **% Low Volume Code:**

% High Volume: **% High Volume Code:**

% Text: N/K

% Enviromental Weight:

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M
OSHA STEL: **OSHA STEL Code:**
ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Section 3 - Hazards Identification, Including Emergency Overview HMX, GRADE B

Health Hazards Acute & Chronic: SKIN:AVOID PROLONGED CONTACT WITH SKIN. CAN CAUSE ALLERGIC SKIN REACTION. EYES:AVOID CONTACT WITH EYES. CAN CAUSE IRRITATION. INHAL/INGEST:CHRONIC EXPOSURE TO RDX DUST HAS BEEN REPORTED TO CAUSE CONVULSIONS OR UNCONSCIOUSNESS. CHRONIC LOCAL AND SYSTEMIC EFFECTS ARE NOT FULLY KNOWN. INHALATION AND (EFTS OF OVEREXPOS)

Signs & Symptoms of Overexposure:

HLTH HAZ:INGESTION CAN RESULT IN SYSTEMIC POISONING, USUALLY AFFECTING BONE MARROW (BLOOD-CELL PRODUCING SYSTEM) AND LIVER. AVOID INHALATION AND INGESTION OF DUST.

Medical Conditions Aggravated by Exposure:

NONE SPECIFIED BY MANUFACTURER.

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.

Route of Entry Indicators:

Inhalation: YES

Skin: NO

Ingestion: YES

Carcinogenicity Indicators

NTP: NO

IARC: NO

OSHA: NO

Carcinogenicity Explanation: NOT RELEVANT

Section 4 - First Aid Measures HMX, GRADE B

First Aid:

EYES:FLUSH THORO W/LRG AMTS OF LOW PRESS WATER FOR AT LEAST 15 MIN. REMOVE CONTACT LENSES. GET MD. SKIN:WASH W/SOAP & WARM WATER. CLEAN CLTHG THORO & DISP OF SHOES CONTAM W/EXPLOS I/A/W EXPLOS DISP PR OC. GET MD FOR RASH/IRRIT. INHAL:REMOVETO FRESH AIR, TREAT ANY IRRIT SYMPTOMATICALLY. IF BRTHG IS DFCLT, GIVE O*2. GET MD. INGEST:IF CON, INDUCE VOMIT IMMED BY GIVING 1-2 GLASSES OF WATER & (ING 6)

Section 5 - Fire Fighting Measures HMX, GRADE B

Fire Fighting Procedures:

DO NOT ATTEMPT TO MANUALLY EXTINGUISH FIRES. BURNING EXPLOS MAY ACCELERATE TO A DETONATION AT ANY TIME WHEN SUBJECTED TO CONFINEMENT, SHOCK/SUFFICIENT (SUPDAT)

Unusual Fire or Explosion Hazard:

MUST NOT BE CONFINED IF BURNING. EXPLOS MAY BE RETAINED IN FISSURES, CRACKS & CREVICES OF STRUCTURES, EQUIP & CONTRS. PROPERTY CONTAM BY EXPLOS MUST NOT (ING 2)

Extinguishing Media:

WATER SPRINKLER/DELUGE SYSTEM RECOMMENDED.

Flash Point: **Flash Point Text:** NOT APPLICABLE

Autoignition Temperature:

Autoignition Temperature Text: N/A

Lower Limit(s): N/A

Upper Limit(s): N/A

Section 6 - Accidental Release Measures HMX, GRADE B

Spill Release Procedures:

CLEAN UP SPILLS IMMEDIATELY USING A SOFT BRISTLE BRUSH & A CONDUCTIVE RUBBER PAN/RUBBER SHOVEL. USE CONDUCTIVE CONTR & GROUND ALL CONTRS BEFORE TRANSFERRING EXPLOS BETWEEN CONTRS. TREAT LIKE A FLAMM SOLV W/ REGARD TO ELECTROSTATIC DISCHARGE. (ING8)

Section 7 - Handling and Storage HMX, GRADE B

Handling and Storage Precautions:**Other Precautions:**

Section 8 - Exposure Controls & Personal Protection HMX, GRADE B

Respiratory Protection:

USE NIOSH/MSHA APPROVED RESPIRATOR FOR DUST AND PARTICULATES IF EXPOSED TO DUSTING.

Ventilation:

LOC EXHAUST:HOODS FOR DUSTY OPERATIONS ARE REQ. MECH:GENERAL, MODERATE. SPECIAL:DUST COLLECTION EQUIP REQ.

Protective Gloves:

IMPERVIOUS GLOVES.

Eye Protection: CHEMICAL WORKERS GOGGLES (FP N).

Other Protective Equipment: FOR EXPLOS-HNDLG WORKERS, CAPS & COVERALLS FOR

FULL BODY PROT ARE REC. COTTON UNDERWEAR, SOCKS, & CONDUCTIVE (ING 23)
Work Hygenic Practices: CHANGE CLOTHING DAILY. BATHE AT END OF WORK PERIOD.
WASH HANDS THORO AFTER HNDLG. WASH CONTAM CLTHG BEFORE REUSE.

Supplemental Health & Safety Information: VP:3 X 10(-9) @ 100C. FIRE FIGHT
PROC:INITIATION SOURCE. NO ATTEMPT TO FIGHT FIRES INVOLVING EXPLOS SHOULD
BE MADE EXCEPT FOR MANUAL ACTIVATION OF INSTALLED FIRE EXTING EQUIP.
PERSONNEL SHOULD LEAVE B LDG IMMED USING AS MUCH PROT COVER AS POSS &
ACTIVATING DELUGE SYS & FIRE ALARM EQUIPMENT WHILE ESCAPING.

Section 9 - Physical & Chemical Properties HMX, GRADE B

HCC:

NRC/State License Number:

Net Property Weight for Ammo:

Boiling Point: Boiling Point Text: N/A

Melting/Freezing Point: Melting/Freezing Text: 536F,280C

Decomposition Point: Decomposition Text: N/K

Vapor Pressure: SUPDAT Vapor Density: N/A

Percent Volatile Organic Content:

Specific Gravity: 1.9 (H*2O = 1)

Volatile Organic Content Pounds per Gallon:

pH: N/K

Volatile Organic Content Grams per Liter:

Viscosity: N/P

Evaporation Weight and Reference: NOT APPLICABLE

Solubility in Water: INSOLUBLE

Appearance and Odor: WHITE, CRYSTALLINE, ODORLESS SOLID.

Percent Volatiles by Volume: N/A

Corrosion Rate: N/K

Section 10 - Stability & Reactivity Data HMX, GRADE B

Stability Indicator: NO

Materials to Avoid:

AVOID ALKALIS, PARTICULARLY AT ELEVATED TEMPS, STRONG ACIDS & PHYSICAL
SENSIT SUCH AS GLASS, SAND & METAL FRAGMENTS.

Stability Condition to Avoid:

AVOID SHOCK, HEAT, ELECTROSTATIC DISCHARGE, IMPACT, IMPINGEMENT &
FRICTION. HIGH EXPLOS WILL DETONATE WHEN (ING 5)

Hazardous Decomposition Products:

DURING DECOMPOSITION TOXIC VAPORS ARE EMITTED.

Hazardous Polymerization Indicator: NO

Conditions to Avoid Polymerization:

NOT RELEVANT

Section 11 - Toxicological Information HMX, GRADE B

Toxicological Information:

N/P

Section 12 - Ecological Information
HMX, GRADE B

Ecological Information:
N/P

Section 13 - Disposal Considerations
HMX, GRADE B

Waste Disposal Methods:
EXPLOS SHOULD BE DESTROYED BY OPEN BURNING, BY BURNING IN AN APPRVD INCIN/BY CHEM TREATMENT W/CAUSTICS. DISP SITE SHOULD BE LOC TO PROVIDE ADEQ QUALITY-DISTANCE PROT FOR ADJACENT FACILITIES & PERSONNE L. EXPLOS SHOULD NOT BE BURNED IN CONTRS.(ING 11)

Section 14 - MSDS Transport Information
HMX, GRADE B

Transport Information:
N/P

Section 15 - Regulatory Information
HMX, GRADE B

SARA Title III Information:
N/P
Federal Regulatory Information:
N/P
State Regulatory Information:
N/P

Section 16 - Other Information
HMX, GRADE B

Other Information:
N/P

HMIS Transportation Information

Product Identification: HMX, GRADE B
Transporation ID Number: 37637
Responsible Party CAGE: 1D893
Date MSDS Prepared: 05/24/1986
Date MSDS Reviewed: 10/07/1992
MFN: 10/07/1992
Submitter: N TN
Status Code: C

Container Information

Unit of Issue: NK
Container Quantity: NK
Type of Container:
Net Unit Weight:

Article without MSDS: N
Technical Entry NOS Shipping Number:
Radioactivity:
Form:
Net Explosive Weight:
Coast Guard Ammunition Code:
Magnetism: N/P
AF MMAC Code:
DOD Exemption Number:
Limited Quantity Indicator:
Multiple Kit Number: 0
Kit Indicator: N
Kit Part Indicator: N
Review Indicator: Y
Additional Data:

Department of Transportation Information

DOT Proper Shipping Name: CYCLOTETRAMETHYLENETETRANITRAMINE, WETTED OR HMX, WETTED OR OCTOGEN, WETTED
DOT PSN Code: EEL
Symbols:
DOT PSN Modifier: WITH NOT LESS THAN 15 PER CENT WATER, BY MASS
Hazard Class: 1.1D
UN ID Number: UN0226
DOT Packaging Group: II
Label: EXPLOSIVE 1.1D
Special Provision(s):
Packaging Exception:
Non Bulk Packaging: 62
Bulk Packaging: NONE
Maximum Quantity in Passenger Area: FORBIDDEN
Maximum Quantity in Cargo Area: FORBIDDEN
Stow in Vessel Requirements: B
Requirements Water/Sp/Other: 1E,5E

IMO Detail Information

IMO Proper Shipping Name: CYCLOTETRAMETHYLENETETRANITRAMINE, WETTED
IMO PSN Code: EZR
IMO PSN Modifier: WITH NOT LESS THAN 15% WATER, BY MASS
IMDG Page Number: 1106
UN Number: 0226
UN Hazard Class: 1.1 D
IMO Packaging Group: -
Subsidiary Risk Label: -
EMS Number: 1-01
Medical First Aid Guide Number: 235

IATA Detail Information

IATA Proper Shipping Name: N/A
IATA PSN Code: IBF
IATA PSN Modifier: CYCLOTETRAMETHYLENETETRANITRAMINE, WETTED WITH 15% OR MORE WATER, BY WEIGHT

IATA UN Id Number: 0226
IATA UN Class: 1.1D
Subsidiary Risk Class:
UN Packaging Group:
IATA Label:
Packaging Note for Passengers: FORB
Maximum Quantity for Passengers: FORB
Packaging Note for Cargo: FORB
Maximum Quantity for Cargo: FORB
Exceptions:

AFI Detail Information

AFI Proper Shipping Name: CYCLOTETRAMETHYLENETETRANITRAMINE, HMX, OR OCTOGEN, WETTED
AFI Symbols:
AFI PSN Code: IBF
AFI PSN Modifier: , WITH NOT LESS THAN 15% WATER, BY MASS
AFI UN Id Number: UN0226
AFI Hazard Class: 1.1D
AFI Packing Group: II
AFI Label:
Special Provisions: P4
Back Pack Reference: A5.37

HAZCOM Label Information

Product Identification: HMX, GRADE B
CAGE: 1D893
Assigned Individual: N
Company Name: HOLSTON DEFENSE CORPORATION
Company PO Box:
Company Street Address1: WEST STONE DRIVE
Company Street Address2: KINGSPORT, TN 37660 US
Health Emergency Telephone: 615-247-9111
Label Required Indicator: Y
Date Label Reviewed: 07/31/1992
Status Code: C
Manufacturer's Label Number:
Date of Label: 07/31/1992
Year Procured: N/K
Organization Code: G
Chronic Hazard Indicator: Y
Eye Protection Indicator: YES
Skin Protection Indicator: YES
Respiratory Protection Indicator: YES
Signal Word: DANGER
Health Hazard: Slight
Contact Hazard: Slight
Fire Hazard: None
Reactivity Hazard: Severe

8/8/2002 7:01:52 PM

CAIROX POTASSIUM PERMANGANATE, KMNO4

Revised: 04/01/1997

MSDS Contents

SECTION I PRODUCT IDENTIFICATION
 SECTION II FIRE AND EXPLOSION HAZARD DATA
 SECTION III HEALTH HAZARD DATA
 SECTION IV HAZARDOUS INGREDIENTS
 SECTION V PHYSICAL DATA
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 SECTION VII SPILL OR LEAK PROCEDURES
 SECTION VIII PROTECTIVE EQUIPMENT TO BE USED
 SECTION IX SPECIAL PRECAUTIONS AND OTHER COMMENTS

MATERIAL SAFETY DATA SHEET

CAIROX (R*)
 POTASSIUM PERMANGANATE

NFPA* HAZARD SIGNAL

HEALTH HAZARD 1 = MATERIALS WHICH UNDER FIRE CONDITIONS WOULD GIVE
 OFF IRRITATING COMBUSTION PRODUCTS.
 (LESS THAN 1 HOUR EXPOSURE)
 MATERIALS WHICH ON THE SKIN COULD CAUSE IRRITATION.

FLAMMABILITY HAZARD 0 = MATERIALS THAT WILL NOT BURN.

REACTIVITY HAZARD 0 = MATERIALS WHICH IN THEMSELVES ARE NORMALLY
 STABLE, EVEN UNDER FIRE EXPOSURE CONDITIONS,
 AND WHICH ARE NOT REACTIVE WITH WATER.

SPECIAL HAZARD OX = OXIDIZER

*NATIONAL FIRE PROTECTION ASSOCIATION 704

FIRST RESPONDERS:

WEAR PROTECTIVE GLOVES, BOOTS, GOGGLES, AND RESPIRATOR. IN CASE OF FIRE,
 WEAR POSITIVE PRESSURE BREATHING APPARATUS. APPROACH INCIDENT WITH CAUTION.
 USE EMERGENCY RESPONSE GUIDE BOOK NAERG 96(RSPA P5800.7). GUIDE NO. 140

SECTION I PRODUCT IDENTIFICATION

MANUFACTURER'S NAME: CARUS CHEMICAL COMPANY

TELEPHONE NUMBER FOR INFORMATION: 1 815-223-1500

MANUFACTURING FACILITY: CARUS CHEMICAL COMPANY
 1500 EIGHTH STREET
 LASALLE, IL 61301

EMERGENCY TELEPHONE NO.: 1 800-435-6856

CHEMTREC TELEPHONE NO.: 1 800-424-9300

PRODUCT NAME: CAIROX(R*) POTASSIUM PERMANGANATE, KMNO4,

TRADE NAME: CAIROX(R*) POTASSIUM PERMANGANATE

SYNONYMS: PERMANGANIC ACID POTASSIUM SALT

CHAMELEON MINERAL
CONDY'S CRYSTALS
PERMANGANATE OF POTASH

SECTION II FIRE AND EXPLOSION HAZARD DATA

THE MATERIAL ITSELF IS NONCOMBUSTIBLE BUT WILL ACCELERATE THE BURNING OF COMBUSTIBLE MATERIAL.

FLASHPOINT: NONE

FLAMMABLE OR EXPLOSIVE LIMITS: LOWER: NONFLAMMABLE UPPER: NONFLAMMABLE

EXTINGUISHING MEDIA:

USE LARGE QUANTITIES OF WATER. WATER WILL TURN PINK TO PURPLE IF IN CONTACT WITH POTASSIUM PERMANGANATE. DIKE TO CONTAIN.

SPECIAL FIREFIGHTING PROCEDURES:

WATCH FOR RAPID BURNING AND BE PREPARED TO RETREAT TO A SAFE DISTANCE. IF YELLOW, WHITE OR BROWN FUMES ARE PRESENT, WEAR POSITIVE PRESSURE BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

POWERFUL OXIDIZING MATERIAL. MAY DECOMPOSE SPONTANEOUSLY IF EXPOSED TO INTENSE HEAT (150 DEG. C/302 DEG. F). MAY BE EXPLOSIVE IN CONTACT WITH SOME OTHER CHEMICALS. MAY REACT VIOLENTLY WITH FINELY DIVIDED AND READILY OXIDIZABLE SUBSTANCE. INCREASES FLAMMABILITY OF COMBUSTIBLE MATERIALS.

SECTION III HEALTH HAZARD DATA

POTASSIUM PERMANGANATE:

ACUTE ORAL LD50(RAT) = 780 MG/KG MALE (14 DAYS) 525 MG/KG FEMALE (14 DAYS) THE FATAL ADULT HUMAN DOSE BY INGESTIONS ESTIMATED TO BE 10 GRAMS OR 0.35 OUNCES. (REF. HANDBOOK OR POISONING: PREVENTION, DIAGNOSIS & TREATMENT, TWELFTH EDITION)

ROUTES OF EXPOSURE

1. INHALATION:

ACUTE INHALATION TOXICITY DATA ARE NOT AVAILABLE; HOWEVER, AIRBORNE POTASSIUM PERMANGANATE IN THE FORM OF DUST, MIST, OR SPRAY MAY IRRITATE AND CAUSE DAMAGE TO THE RESPIRATORY TRACT.

2. SKIN CONTACT:

PROLONGED CONTACT OF SOLUTIONS AT ROOM TEMPERATURE MAY BE IRRITATING TO THE SKIN, LEAVING BROWN STAINS ON THE SKIN. CONCENTRATED SOLUTIONS AT ELEVATED TEMPERATURE AND CRYSTALS ARE DAMAGING TO THE SKIN.

3. EYE CONTACT:

POTASSIUM PERMANGANATE IS DAMAGING TO EYE TISSUE ON CONTACT. IF MAY CAUSE SEVERE BURNS THAT RESULT IN DAMAGE TO THE EYE.

4. INGESTION:

POTASSIUM PERMANGANATE, IF SWALLOWED, MAY CAUSE SEVERE BURNS TO MUCOUS MEMBRANES OF THE MOUTH, THROAT, ESOPHAGUS, AND STOMACH.

REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES

RTECS #SD6475000

EFFECTS OF OVEREXPOSURE

1. ACUTE OVEREXPOSURE: IRRITATING OR DAMAGING TO BODY TISSUE ON CONTACT
2. CHRONIC OVEREXPOSURE:
PROLONGED EXPOSURE, USUALLY MANY YEARS, TO HEAVY CONCENTRATIONS OF DUST AND FUMES ABOVE THE PERMISSIBLE EXPOSURE LIMIT (PEL), MAINLY IN THE FORM OF MANGANESE OXIDES, MAY LEAD TO LUNG IRRITATION AND CENTRAL NERVOUS SYSTEM DISORDER. THE SYMPTOMS MAY SIMULATE PARKINSON'S DISEASE. NO KNOWN CASES OF CENTRAL NERVOUS SYSTEM DISORDERS DUE TO EXPOSURE TO KMNO4 HAVE BEEN REPORTED.
3. CARCINOGENICITY:
POTASSIUM PERMANGANATE HAS BEEN CLASSIFIED AS A CARCINOGEN BY OSHA, NTP, IARC.
4. MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
POTASSIUM PERMANGANATE WILL CAUSE FURTHER IRRITATION OF TISSUE OR OPEN WOUNDS, BURNS AND MUCOUS MEMBRANES.

EMERGENCY AND FIRST AID PROCEDURES

1. EYES:
IMMEDIATELY FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES HOLDING EYELIDS APART TO ENSURE FLUSHING OF THE ENTIRE SURFACE. DO NOT ATTEMPT TO USE A CHEMICAL ANTIDOTE. SEEK MEDICAL ATTENTION IMMEDIATELY. NOTE TO PHYSICIAN: DECOMPOSITION PRODUCTS ARE ALKALINE.
2. SKIN:
IMMEDIATELY WASH CONTAMINATED AREAS WITH WATER. REMOVE CONTAMINATED CLOTHING AND FOOTWEAR. WASH CLOTHING AND DECONTAMINATE FOOTWEAR BEFORE USE. SEEK MEDICAL ATTENTION IMMEDIATELY IF IRRITATION IS SEVERE.
3. INHALATION:
REMOVE PERSON FROM CONTAMINATED AREA TO FRESH AIR. IF BREATHING HAS STOPPED, RESUSCITATE AND ADMINISTER OXYGEN IF READILY AVAILABLE. SEEK MEDICAL ATTENTION IMMEDIATELY.
4. INGESTION:
NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON. IF CONSCIOUS, GIVE LARGE QUANTITIES OF WATER. SEEK MEDICAL ATTENTION IMMEDIATELY.

SECTION IV HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	CAS NO.*	%	HAZARD DATA
POTASSIUM PERMANGANATE	7722-64-7	97%MIN. KMNO4	PEL** C*** 5 MG MN PER CUBIC METER OF AIR (5 MG MN PER CUBIC METER OF AIR, IS EQUIVALENT TO 0.0046 OUNCES PER 1000 CUBIC FEET OF AIR.) TLV-TWA**** 0.2 MG MN PER CUBIC METER OF AIR

* CHEMICAL ABSTRACT SERVICE REGISTRATION NUMBER

MSDS - KMNO4

** OSHA PERMISSIBLE EXPOSURE LIMIT, MANGANESE COMPOUNDS (EXPRESSED AS MN)
29CFR1910.1000 TABLE Z1.

*** CEILING EXPOSURE LIMIT OR MAXIMUM EXPOSURE CONCENTRATION NOT TO BE EXCEEDED
UNDER ANY CIRCUMSTANCES.

**** AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)
1995/1996, FOR MANGANESE DUST AND COMPOUNDS, EXPRESSED AS MN. TLV-TWA = THE TIME
WEIGHTED AVERAGE CONCENTRATION FOR A NORMAL 8 HOUR WORKDAY AND A 40 HOUR
WORKWEEK, TO WHICH NEARLY ALL WORKERS MAY BE REPEATEDLY EXPOSED, DAY AFTER DAY,
WITHOUT ADVERSE EFFECT.

SECTION V PHYSICAL DATA

BOILING POINT, 760 MM HG: NOT APPLICABLE

SPECIFIC GRAVITY: 2.7 G/CM³ 20 DEG. C (68 DEG. F)

VAPOR PRESSURE (MM HG): NOT APPLICABLE

VAPOR DENSITY (AIR = 1): NOT APPLICABLE

SOLUBILITY IN WATER % BY SOLUTION: 6.0% AT 20 DEG. C (68 DEG. F); AND 20%
AT 65 DEG. C (149 DEG. F)

PERCENT VOLATILE BY VOLUME: NOT VOLATILE

EVAPORATION RATE (BUTYL ACETATE = 1): NOT APPLICABLE

MELTING POINT:

STARTS TO DECOMPOSE WITH EVOLUTION OF OXYGEN (O₂) AT TEMPERATURES ABOVE 150 DEG.
C (302 DEG. F)

APPEARANCE AND ODOR: DARK PURPLE SOLID WITH A METALLIC LUSTER, ODORLESS

SECTION VI REACTIVITY DATA

STABILITY: UNDER NORMAL CONDITIONS, THE MATERIAL IS STABLE.

CONDITIONS TO AVOID: CONTACT WITH INCOMPATIBLE MATERIALS OR HEAT (>150 DEG.
C/302 DEG. F)

INCOMPATIBLE MATERIALS:

ACIDS, PEROXIDES, FORMALDEHYDE, ANTIFREEZE, HYDRAULIC FLUIDS, AND ALL
COMBUSTIBLE ORGANIC OR READILY OXIDIZABLE INORGANIC MATERIALS INCLUDING METAL
POWDERS. WITH HYDROCHLORIC ACID, TOXIC CHLORINE GAS IS LIBERATED.

HAZARDOUS DECOMPOSITION PRODUCTS:

WHEN INVOLVED IN A FIRE, POTASSIUM PERMANGANATE MAY FORM CORROSIVE FUMES.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION:

MATERIAL IS NOT KNOWN TO POLYMERIZE.

SECTION VII SPILL OR LEAK PROCEDURES

MSDS - KMNO4

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:
CLEAN UP SPILLS IMMEDIATELY BY SWEEPING OR SHOVELING UP THE MATERIAL; DO NOT RETURN SPILLED MATERIAL TO ORIGINAL CONTAINER. TRANSFER TO A CLEAN METAL DRUM. EPA BANNED THE LAND DISPOSAL OF D001 IGNITABLE WASTE OXIDIZERS. THESE WASTES HAVE TO BE DEACTIVATED BY REDUCTION (SEE BELOW). TO CLEAN FLOORS FLUSH WITH ABUNDANT QUANTITIES OF WATER INTO SEWER, IF PERMITTED BY FEDERAL, STATE, AND LOCAL REGULATIONS. IF NOT, PERMITTED, COLLECT WATER AND TREAT CHEMICALLY (SEE BELOW).

DEACTIVATION OF D001 IGNITABLE WASTE OXIDIZERS BY CHEMICAL REDUCTION:
REDUCE POTASSIUM PERMANGANATE IN AQUEOUS SOLUTIONS WITH SODIUM THIOSULFATE (HYPO), A BISULFITE OR FERROUS SALT SOLUTION. THE BISULFITE OR FERROUS SALT MAY REQUIRE SOME DILUTE SULFURIC ACID TO PROMOTE RAPID REDUCTION. IF ACID WAS USED, NEUTRALIZE WITH SODIUM BICARBONATE TO NEUTRAL PH. DECANT OR FILTER, AND MIX THE SLUDGE WITH SODIUM CARBONATE AND DEPOSIT IN AN APPROVED LANDFILL. WHERE PERMITTED, THE SLUDGE CAN BE DRAINED INTO SEWER WITH LARGE QUANTITIES OF WATER. USE CAUTION WHEN REACTING CHEMICALS. CONTACT CARUS CHEMICAL FOR ADDITIONAL RECOMMENDATION.

SECTION VIII PROTECTIVE EQUIPMENT TO BE USED

VENTILATION REQUIREMENTS:
PROVIDE SUFFICIENT MECHANICAL AND/OR LOCAL EXHAUST TO MAINTAIN EXPOSURE BELOW THE PERMISSIBLE EXPOSURE LIMIT. (PEL)

RESPIRATORY PROTECTION:
IN THE CASE WHERE OVEREXPOSURE MAY EXIST, THE USE OF AN APPROVED NIOSH-MSHA DUST AND MIST RESPIRATOR OR AN AIR SUPPLIED RESPIRATOR IS ADVISED. ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO CONTROL DUST.

EYE: FACE SHIELD, GOGGLES, OR SAFETY GLASSES WITH SIDE SHIELDS SHOULD BE WORN.

GLOVES: RUBBER OR PLASTIC GLOVES SHOULD BE WORN.

OTHER PROTECTIVE EQUIPMENT:
NORMAL WORK CLOTHING COVERING ARMS AND LEGS, AND RUBBER, OR PLASTIC APRON SHOULD BE WORN.

WORK/HYGIENIC PRACTICES:
WASH HANDS THOROUGHLY WITH SOAP AND WATER, AFTER HANDLING POTASSIUM PERMANGANATE AND BEFORE EATING OR SMOKING.

SECTION IX SPECIAL PRECAUTIONS AND OTHER COMMENTS

PROTECT CONTAINERS FROM PHYSICAL DAMAGE. STORE IN A COOL, DRY AREA IN CLOSED CONTAINERS. SEGREGATE FROM ACIDS, PEROXIDES, FORMALDEHYDE, AND ALL COMBUSTIBLE, ORGANIC OR EASILY OXIDIZABLE MATERIALS INCLUDING ANTI-FREEZE AND HYDRAULIC FLUIDS.

DEPARTMENT OF TRANSPORTATION INFORMATION:
PROPER SHIPPING NAME: 49CFR172.101: POTASSIUM PERMANGANATE
ID NUMBER: 49CFR172.101: UN 1490
HAZARD CLASS: 49CFR172.101: OXIDIZER
HAZARDOUS SUBSTANCE:
REPORTABLE QUANTITY: 40CFR116.4; 40CFR302.4: RQ-100 LB.

MSDS - KMNO4

RCRA:
OXIDIZERS SUCH AS POTASSIUM PERMANGANATE MEET THE CRITERIA OF IGNITABLE WASTE.
40 CFR261.21.

SARA TITLE III INFORMATION:
CAIROX(R*) POTASSIUM PERMANGANATE CONTAINS 33-35% MANGANESE AS PART OF THE
CHEMICAL INFRASTRUCTURE (MANGANESE COMPOUNDS CAS REG. NO. N/A) AND IS SUBJECT TO
THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III, SUPERFUND AMENDMENTS AND
REAUTHORIZATION ACT 1986 AND 40 CFR 372.

NAME: KENNETH KROGULSKI

SIGNATURE:
REVISION DATE: APRIL 1997

THE INFORMATION CONTAINED IS ACCURATE TO THE BEST OF OUR KNOWLEDGE.
HOWEVER, DATA, SAFETY STANDARDS AND GOVERNMENTAL REGULATIONS ARE SUBJECT TO
CHANGE: AND THE CONDITIONS OF HANDLING, USE OR MISUSE OF THE PRODUCT ARE BEYOND
OUR CONTROL. CARUS CHEMICAL COMPANY MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED
INCLUDING ANY WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. CARUS ALSO DISCLAIMS ALL LIABILITY FOR RELIANCE ON THE COMPLETENESS OR
CONFORMING ACCURACY OF ANY INFORMATION INCLUDED HEREIN. USERS SHOULD SATISFY
THEMSELVES THAT THEY ARE AWARE OF ALL CURRENT DATA RELEVANT TO THEIR PARTICULAR
USES.

CARUS

CARUS CHEMICAL COMPANY
315 FIFTH STREET
P.O. BOX 599
PERU, IL 61354
TEL: (815) 233-1500
FAX: (815) 224-6697

FORM #: CX 1028

REV.: 4/97

CAIROX IS A REGISTERED TRADEMARK OF CARUS CHEMICAL COMPANY, A DIVISION OF CARUS
CORPORATION.

RESPONSIBLE CARE(R*) IS A SERVICE MARK OF THE CHEMICAL MANUFACTURERS
ASSOCIATION.

RESPONSIBLE CARE(R*)
A PUBLIC COMMITMENT

MSDS Number: L2347 * * * * * Effective Date: 11/02/01 * * * * * Supercedes: 11/17/99

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

LEAD METAL

1. Product Identification

Synonyms: Granular lead, pigment metal; C.I. 77575

CAS No.: 7439-92-1

Molecular Weight: 207.19

Chemical Formula: Pb

Product Codes:

J.T. Baker: 2256, 2266

Mallinckrodt: 5668

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Lead	7439-92-1	95 - 100%	Yes

3. Hazards Identification

Emergency Overview

POISON! DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. NEUROTOXIN. AFFECTS THE GUM TISSUE, CENTRAL NERVOUS SYSTEM, KIDNEYS, BLOOD AND REPRODUCTIVE SYSTEM. POSSIBLE CANCER HAZARD. MAY CAUSE CANCER BASED ON ANIMAL DATA. Risk of cancer depends on duration and level of exposure.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Life)

Flammability Rating: 0 - None

Reactivity Rating: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Blue (Health)

Potential Health Effects

Inhalation:

Lead can be absorbed through the respiratory system. Local irritation of bronchia and lungs can occur and, in cases of acute exposure, symptoms such as metallic taste, chest and abdominal pain, and increased lead blood levels may follow. See also Ingestion.

Ingestion:

POISON! The symptoms of lead poisoning include abdominal pain and spasms, nausea, vomiting, headache. Acute poisoning can lead to muscle weakness, "lead line" on the gums, metallic taste, definite loss of appetite, insomnia, dizziness, high lead levels in blood and urine with shock, coma and death in extreme cases.

Skin Contact:

Lead and lead compounds may be absorbed through the skin on prolonged exposure; the symptoms of lead poisoning described for ingestion exposure may occur. Contact over short periods may cause local irritation, redness and pain.

Eye Contact:

Absorption can occur through eye tissues but the more common hazards are local irritation or abrasion.

Chronic Exposure:

Lead is a cumulative poison and exposure even to small amounts can raise the body's content to toxic levels. The symptoms of chronic exposure are like those of ingestion poisoning; restlessness, irritability, visual disturbances, hypertension and gray facial color may also be noted.

Aggravation of Pre-existing Conditions:

Persons with pre-existing kidney, nerve or circulatory disorders or with skin or eye problems may be more susceptible to the effects of this substance.

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 soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard. Powder/dust is flammable when heated or exposed to flame.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire. Do not allow water runoff to enter sewers or waterways.

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. Can produce toxic lead fumes at elevated temperatures and also react with oxidizing materials.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. 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.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Areas in which exposure to lead

metal or lead compounds may occur should be identified by signs or appropriate means, and access to the area should be limited to authorized persons. 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.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

For lead, metal and inorganic dusts and fumes, as Pb:

-OSHA Permissible Exposure Limit (PEL): 0.05 mg/m³ (TWA)

For lead, elemental and inorganic compounds, as Pb:

-ACGIH Threshold Limit Value (TLV): 0.05 mg/m³ (TWA), A3 animal carcinogen

ACGIH Biological Exposure Indices (BEI): 30 ug/100ml, notation B (see actual Indices for more information).

For lead, inorganic:

-NIOSH Recommended Exposure Limit (REL): 0.1 mg/m³ (TWA)

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-face high efficiency particulate respirator (NIOSH type N100 filter) 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 high efficiency particulate respirator (NIOSH type N100 filter) 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 impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Other Control Measures:

Eating, drinking, and smoking should not be permitted in areas where solids or liquids containing lead compounds are handled, processed, or stored. See OSHA substance-specific standard for more information on personal protective equipment, engineering and work practice controls, medical surveillance, record keeping, and reporting requirements. (29 CFR 1910.1025).

9. Physical and Chemical Properties

Appearance:

Small, white to blue-gray metallic shot or granules.

Odor:

Odorless.

Solubility:

Insoluble in water.

Density:

11.34

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

1740C (3164F)

Melting Point:

327.5C (622F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

1.77 @ 1000C (1832F)

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Does not decompose but toxic lead or lead oxide fumes may form at elevated temperatures.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Ammonium nitrate, chlorine trifluoride, hydrogen peroxide, sodium azide, zirconium, disodium acetylide, sodium acetylide and oxidants.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Toxicological Data:

Investigated as a tumorigen, mutagen, reproductive effector.

Reproductive Toxicity:

Lead and other smelter emissions are human reproductive hazards. (Chemical Council on

Environmental Quality; Chemical Hazards to Human Reproduction, 1981).

Carcinogenicity:

EPA / IRIS classification: Group B2 - Probable human carcinogen, sufficient animal evidence.

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-----\Cancer Lists\-----
Ingredient                                ---NTP Carcinogen---
Known      Anticipated      IARC Category
-----
Lead (7439-92-1)                         No           No           2B
  
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12. Ecological Information

Environmental Fate:

When released into the soil, this material is not expected to leach into groundwater. This material may bioaccumulate to some extent.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. 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.

14. Transport Information

Not regulated.

15. Regulatory Information

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-----\Chemical Inventory Status - Part 1\-----
Ingredient                                TSCA  EC    Japan  Australia
-----
Lead (7439-92-1)                         Yes   Yes   Yes    Yes
  
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-----\Chemical Inventory Status - Part 2\-----
--Canada--
  
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Ingredient	Korea	DSL	NDSL	Phil.
Lead (7439-92-1)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Lead (7439-92-1)	No	No	Yes	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Lead (7439-92-1)	10	No	No

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)

WARNING:

THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

Australian Hazchem Code: None allocated.

Poison Schedule: S6

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.

16. Other Information

NFPA Ratings: Health: **3** Flammability: **1** Reactivity: **0**

Label Hazard Warning:

POISON! DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. NEUROTOXIN. AFFECTS THE GUM TISSUE, CENTRAL NERVOUS SYSTEM, KIDNEYS, BLOOD AND REPRODUCTIVE SYSTEM. POSSIBLE CANCER HAZARD. MAY CAUSE CANCER BASED ON ANIMAL DATA. Risk of cancer depends on duration and level of exposure.

Label Precautions:

Do not get in eyes, on skin, or on clothing.

Do not breathe dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not

breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)



**Material Safety
Data Sheets**

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**DOD Hazardous Material Information (ANSI Format)
For Cornell University Convenience Only**

MOTOR OIL

Section 1 - Product and Company Identification	Section 9 - Physical & Chemical Properties
Section 2 - Composition/Information on Ingredients	Section 10 - Stability & Reactivity Data
Section 3 - Hazards Identification Including Emergency Overview	Section 11 - Toxicological Information
Section 4 - First Aid Measures	Section 12 - Ecological Information
Section 5 - Fire Fighting Measures	Section 13 - Disposal Considerations
Section 6 - Accidental Release Measures	Section 14 - MSDS Transport Information
Section 7 - Handling and Storage	Section 15 - Regulatory Information
Section 8 - Exposure Controls & Personal Protection	Section 16 - Other Information

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Cornell University does not in any way warrant or imply the applicability, viability or use of this information to any person or for use in any situation.

**Section 1 - Product and Company Identification
MOTOR OIL**

Product Identification: MOTOR OIL

Date of MSDS: 11/02/1993 **Technical Review Date:** 08/21/1996

FSC: 9150 **NIIN:** LIIN: 00N072314

Submitter: N EN

Status Code: C

MFN: 01

Article: N

Kit Part: N

Manufacturer's Information

Manufacturer's Name: CASTROL NORTH AMERICAN
Manufacturer's Address1: 16715 VON KARMAN AVE SUITE 230
Manufacturer's Address2: IRVINE, CA 92714-4952
Manufacturer's Country: US
General Information Telephone: 714-660-9414
Emergency Telephone: 714-660-9414
Emergency Telephone: 714-660-9414
MSDS Preparer's Name: N/P
Proprietary: N
Reviewed: N
Published: Y
CAGE: 2R128
Special Project Code: N

Contractor Information

Contractor's Name: CASTROL INDUSTRIAL NORTH AMERICA INC SPECIALTY PRODUCTS
DIV
Contractor's Address1: 1001 WEST 31ST STREET
Contractor's Address2: DOWNERS GROVE, IL 60515-1280
Contractor's Telephone: 630-241-4000/800-621-2661
Contractor's CAGE: 2R128

Section 2 - Compositon/Information on Ingredients
MOTOR OIL

Ingredient Name: KEROSENE (PETROLEUM), HYDROTREATED; (LIGHT HYDROTREATED
DISTILLATE) LD50 (ORAL RAT): > 8 ML/KG
Ingredient CAS Number: 64742-47-8 **Ingredient CAS Code:** M
RTECS Number: OA5504000 **RTECS Code:** M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: 20-25
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: 5 MG/M3 (OIL MIST) **OSHA PEL Code:** M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: 5 MG/M3 (OIL MIST) **ACGIH TLV Code:** M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:

Ozone Depleting Chemical: N

Section 3 - Hazards Identification, Including Emergency Overview
MOTOR OIL

Health Hazards Acute & Chronic: ACUTE: CONT WILL CAUSE SKIN & EYE IRRIT. ELEVATED TEMPS/MECH ACTION MAY FORM VAPS, MISTS/FUMES WHICH MAY BE IRRITATING TO EYES, NOSE, THROAT & UPPER RESP TRACT. CHRONIC: MAY CAUSE DERM & DEFAT. INTENSIVE EXPOS MAY CAUSE CNS DEPRESS WHICH MAY LEAD TO LOSS OF COORD & IMPAIRED JUDGMENT. PRLNG EXPOS MAY RSLT IN UNCON.

Signs & Symptoms of Overexposure:
SEE HEALTH HAZARDS.

Medical Conditions Aggravated by Exposure:
NONE SPECIFIED BY MANUFACTURER.

LD50 LC50 Mixture: SEE INGREDIENT 1.

Route of Entry Indicators:

Inhalation: YES

Skin: YES

Ingestion: NO

Carcenogenicity Indicators

NTP: NO

IARC: NO

OSHA: NO

Carcinogenicity Explanation: NOT RELEVANT.

Section 4 - First Aid Measures
MOTOR OIL

First Aid:

EYES: FLUSH IMMEDIATELY WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. CONSULT MD IF IRRITATION DEVELOPS. SKIN: REMOVE CONTAMINATED CLOTHING IMMEDIATELY & WASH BEFORE REUSE. WASH AFFECTED AREAS IMMEDIATELY WITH SOAP & WATER. CONSULT MD IF IRRITATION DEVELOPS. INGEST: SEEK IMMEDIATE MEDICAL ATTENTION. DO NOT INDUCE VOMITING BECAUSE OF RISK OF ASPIRATION. INHAL: MOVE TO FRESH AIR. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CONSULT MD.

Section 5 - Fire Fighting Measures
MOTOR OIL

Fire Fighting Procedures:

WEAR NIOSH APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FPN). WATER MAY CAUSE FROTHING, ONLY USE TO COOL FIRE-EXPOSED SURFACES.

Unusual Fire or Explosion Hazard:

HAZARDOUS COMBUSTION PRODUCTS: OXIDES OF CARBON. PROTECT PERSONNEL,

AND/OR SUPPRESS EXPLOSIVE VAPORS.

Extinguishing Media:

CARBON DIOXIDE, DRY POWDER, SAND.

Flash Point: Flash Point Text: 194F,90C

Autoignition Temperature:

Autoignition Temperature Text: N/A

Lower Limit(s): N/K

Upper Limit(s): N/K

Section 6 - Accidental Release Measures
MOTOR OIL

Spill Release Procedures:

PREVENT ENTRY INTO WATER SOURCES. SOAK UP WITH A SUITABLE ABSORBENT SUCH AS SAND OR DIATOMACEOUS EARTH.

Section 7 - Handling and Storage
MOTOR OIL

Handling and Storage Precautions:

Other Precautions:

Section 8 - Exposure Controls & Personal Protection
MOTOR OIL

Respiratory Protection:

NONE REQUIRED UNDER NORMAL USE. USE NIOSH APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).

Ventilation:

GEN VENT & LOC EXHST REC. THIS IS A SOLV BASED PROD & AS SUCH PROPER VENT IS REQUIRED. BUILD UP OF FUMES/MISTS (SUP DAT)

Protective Gloves:

IMPERVIOUS PVC RECOMMENDED.

Eye Protection: ANSI APPRVD CHEM WORKERS GOGGS (FP N).

Other Protective Equipment: EMERGENCY EYEWASH & DELUGE SHOWER MEETING ANSI DESIGN CRITERIA (FP N).

Work Hygienic Practices: MAINTAIN HIGH STANDARD OF PERSONAL HYGIENE.

Supplemental Health & Safety Information: VENT: IN WORKING ATM MUST BE PREVENTED. ELEC & MECH EQUIP SHOULD BE SPARK-PROOF.

Section 9 - Physical & Chemical Properties
MOTOR OIL

HCC:

NRC/State License Number:

Net Property Weight for Ammo:

Boiling Point: Boiling Point Text: N/K

Melting/Freezing Point: Melting/Freezing Text: N/K

Decomposition Point: Decomposition Text: N/K
Vapor Pressure: N/K **Vapor Density:** N/K
Percent Volatile Organic Content:
Specific Gravity: 0.865
Volatile Organic Content Pounds per Gallon:
pH: N/K
Volatile Organic Content Grams per Liter:
Viscosity: N/P
Evaporation Weight and Reference: N/K
Solubility in Water: INSOLUBLE
Appearance and Odor: LIQUID BLUE OIL, WITH PETROLEUM ODOR
Percent Volatiles by Volume: 25
Corrosion Rate: N/K

Section 10 - Stability & Reactivity Data
MOTOR OIL

Stability Indicator: YES
Materials to Avoid:
MAY REACT WITH STRONG OXIDIZERS.
Stability Condition to Avoid:
NONE SPECIFIED BY MANUFACTURER.
Hazardous Decomposition Products:
FUMES, SMOKE, CARBON MONOXIDE AND CARBON DIOXIDE ARE PRODUCED ON COMBUSTION.
Hazardous Polymerization Indicator: NO
Conditions to Avoid Polymerization:
NOT RELEVANT.

Section 11 - Toxicological Information
MOTOR OIL

Toxicological Information:
N/P

Section 12 - Ecological Information
MOTOR OIL

Ecological Information:
N/P

Section 13 - Disposal Considerations
MOTOR OIL

Waste Disposal Methods:
DISPOSE OF IN APPROVED INCINERATOR OR USE LICENSED WASTE DISPOSAL FACILITY. DISPOSE OF IN ACCORDANCE W/LOCAL, STATE & FEDERAL REGULATIONS (FP N).

Section 14 - MSDS Transport Information
MOTOR OIL

Transport Information:

N/P

Section 15 - Regulatory Information
MOTOR OIL

SARA Title III Information:

N/P

Federal Regulatory Information:

N/P

State Regulatory Information:

N/P

Section 16 - Other Information
MOTOR OIL

Other Information:

N/P

HAZCOM Label Information**Product Identification:** MOTOR OIL**CAGE:** 2R128**Assigned Individual:** N**Company Name:** CASTROL INDUSTRIAL NORTH AMERICA INC SPECIALTY PRODUCTS DIV**Company PO Box:****Company Street Address1:** 1001 WEST 31ST STREET**Company Street Address2:** DOWNERS GROVE, IL 60515-1280 US**Health Emergency Telephone:** 714-660-9414**Label Required Indicator:** Y**Date Label Reviewed:** 08/21/1996**Status Code:** C**Manufacturer's Label Number:****Date of Label:** 08/21/1996**Year Procured:** N/K**Organization Code:** G**Chronic Hazard Indicator:** Y**Eye Protection Indicator:** YES**Skin Protection Indicator:** YES**Respiratory Protection Indicator:** YES**Signal Word:** WARNING**Health Hazard:** Slight**Contact Hazard:** Moderate**Fire Hazard:** Moderate**Reactivity Hazard:** None

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**DOD Hazardous Material Information (ANSI Format)
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MOTOR OIL

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**Section 1 - Product and Company Identification
MOTOR OIL**

Product Identification: MOTOR OIL

Date of MSDS: 11/02/1993 **Technical Review Date:** 08/21/1996

FSC: 9150 **NIIN:** LIIN: 00N072314

Submitter: N EN

Status Code: C

MFN: 01

Article: N

Kit Part: N

Manufacturer's Information

Manufacturer's Name: CASTROL NORTH AMERICAN
Manufacturer's Address1: 16715 VON KARMAN AVE SUITE 230
Manufacturer's Address2: IRVINE, CA 92714-4952
Manufacturer's Country: US
General Information Telephone: 714-660-9414
Emergency Telephone: 714-660-9414
Emergency Telephone: 714-660-9414
MSDS Preparer's Name: N/P
Proprietary: N
Reviewed: N
Published: Y
CAGE: 2R128
Special Project Code: N

Contractor Information

Contractor's Name: CASTROL INDUSTRIAL NORTH AMERICA INC SPECIALTY PRODUCTS
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Contractor's Address1: 1001 WEST 31ST STREET
Contractor's Address2: DOWNERS GROVE, IL 60515-1280
Contractor's Telephone: 630-241-4000/800-621-2661
Contractor's CAGE: 2R128

Section 2 - Compositon/Information on Ingredients

MOTOR OIL

Ingredient Name: KEROSENE (PETROLEUM), HYDROTREATED; (LIGHT HYDROTREATED
DISTILLATE) LD50 (ORAL RAT): > 8 ML/KG
Ingredient CAS Number: 64742-47-8 **Ingredient CAS Code:** M
RTECS Number: OA5504000 **RTECS Code:** M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: 20-25
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: 5 MG/M3 (OIL MIST) **OSHA PEL Code:** M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: 5 MG/M3 (OIL MIST) **ACGIH TLV Code:** M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:

Ozone Depleting Chemical: N

Section 3 - Hazards Identification, Including Emergency Overview
MOTOR OIL

Health Hazards Acute & Chronic: ACUTE: CONT WILL CAUSE SKIN & EYE IRRIT. ELEVATED TEMPS/MECH ACTION MAY FORM VAPS, MISTS/FUMES WHICH MAY BE IRRITATING TO EYES, NOSE, THROAT & UPPER RESP TRACT. CHRONIC: MAY CAUSE DERM & DEFAT. INTENSIVE EXPOS MAY CAUSE CNS DEPRESS WHICH MAY LEAD TO LOSS OF COORD & IMPAIRED JUDGMENT. PRLNG EXPOS MAY RSLT IN UNCON.

Signs & Symptoms of Overexposure:
SEE HEALTH HAZARDS.

Medical Conditions Aggravated by Exposure:
NONE SPECIFIED BY MANUFACTURER.

LD50 LC50 Mixture: SEE INGREDIENT 1.

Route of Entry Indicators:

Inhalation: YES

Skin: YES

Ingestion: NO

Carcenogenicity Indicators

NTP: NO

IARC: NO

OSHA: NO

Carcinogenicity Explanation: NOT RELEVANT.

Section 4 - First Aid Measures
MOTOR OIL

First Aid:

EYES: FLUSH IMMEDIATELY WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. CONSULT MD IF IRRITATION DEVELOPS. SKIN: REMOVE CONTAMINATED CLOTHING IMMEDIATELY & WASH BEFORE REUSE. WASH AFFECTED AREAS IMMEDIATELY WITH SOAP & WATER. CONSULT MD IF IRRITATION DEVELOPS. INGEST: SEEK IMMEDIATE MEDICAL ATTENTION. DO NOT INDUCE VOMITING BECAUSE OF RISK OF ASPIRATION. INHAL: MOVE TO FRESH AIR. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CONSULT MD.

Section 5 - Fire Fighting Measures
MOTOR OIL

Fire Fighting Procedures:

WEAR NIOSH APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FPN). WATER MAY CAUSE FROTHING, ONLY USE TO COOL FIRE-EXPOSED SURFACES.

Unusual Fire or Explosion Hazard:

HAZARDOUS COMBUSTION PRODUCTS: OXIDES OF CARBON. PROTECT PERSONNEL,

AND/OR SUPPRESS EXPLOSIVE VAPORS.

Extinguishing Media:

CARBON DIOXIDE, DRY POWDER, SAND.

Flash Point: Flash Point Text: 194F,90C

Autoignition Temperature:

Autoignition Temperature Text: N/A

Lower Limit(s): N/K

Upper Limit(s): N/K

Section 6 - Accidental Release Measures
MOTOR OIL

Spill Release Procedures:

PREVENT ENTRY INTO WATER SOURCES. SOAK UP WITH A SUITABLE ABSORBENT SUCH AS SAND OR DIATOMACEOUS EARTH.

Section 7 - Handling and Storage
MOTOR OIL

Handling and Storage Precautions:

Other Precautions:

Section 8 - Exposure Controls & Personal Protection
MOTOR OIL

Respiratory Protection:

NONE REQUIRED UNDER NORMAL USE. USE NIOSH APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).

Ventilation:

GEN VENT & LOC EXHST REC. THIS IS A SOLV BASED PROD & AS SUCH PROPER VENT IS REQUIRED. BUILD UP OF FUMES/MISTS (SUP DAT)

Protective Gloves:

IMPERVIOUS PVC RECOMMENDED.

Eye Protection: ANSI APPRVD CHEM WORKERS GOGGS (FP N).

Other Protective Equipment: EMERGENCY EYEWASH & DELUGE SHOWER MEETING ANSI DESIGN CRITERIA (FP N).

Work Hygienic Practices: MAINTAIN HIGH STANDARD OF PERSONAL HYGIENE.

Supplemental Health & Safety Information: VENT: IN WORKING ATM MUST BE PREVENTED. ELEC & MECH EQUIP SHOULD BE SPARK-PROOF.

Section 9 - Physical & Chemical Properties
MOTOR OIL

HCC:

NRC/State License Number:

Net Property Weight for Ammo:

Boiling Point: Boiling Point Text: N/K

Melting/Freezing Point: Melting/Freezing Text: N/K

Decomposition Point: Decomposition Text: N/K
Vapor Pressure: N/K **Vapor Density:** N/K
Percent Volatile Organic Content:
Specific Gravity: 0.865
Volatile Organic Content Pounds per Gallon:
pH: N/K
Volatile Organic Content Grams per Liter:
Viscosity: N/P
Evaporation Weight and Reference: N/K
Solubility in Water: INSOLUBLE
Appearance and Odor: LIQUID BLUE OIL, WITH PETROLEUM ODOR
Percent Volatiles by Volume: 25
Corrosion Rate: N/K

Section 10 - Stability & Reactivity Data
MOTOR OIL

Stability Indicator: YES
Materials to Avoid:
MAY REACT WITH STRONG OXIDIZERS.
Stability Condition to Avoid:
NONE SPECIFIED BY MANUFACTURER.
Hazardous Decomposition Products:
FUMES, SMOKE, CARBON MONOXIDE AND CARBON DIOXIDE ARE PRODUCED ON COMBUSTION.
Hazardous Polymerization Indicator: NO
Conditions to Avoid Polymerization:
NOT RELEVANT.

Section 11 - Toxicological Information
MOTOR OIL

Toxicological Information:
N/P

Section 12 - Ecological Information
MOTOR OIL

Ecological Information:
N/P

Section 13 - Disposal Considerations
MOTOR OIL

Waste Disposal Methods:
DISPOSE OF IN APPROVED INCINERATOR OR USE LICENSED WASTE DISPOSAL FACILITY. DISPOSE OF IN ACCORDANCE W/LOCAL, STATE & FEDERAL REGULATIONS (FP N).

Section 14 - MSDS Transport Information
MOTOR OIL

Transport Information:

N/P

Section 15 - Regulatory Information
MOTOR OIL

SARA Title III Information:

N/P

Federal Regulatory Information:

N/P

State Regulatory Information:

N/P

Section 16 - Other Information
MOTOR OIL

Other Information:

N/P

HAZCOM Label Information**Product Identification:** MOTOR OIL**CAGE:** 2R128**Assigned Individual:** N**Company Name:** CASTROL INDUSTRIAL NORTH AMERICA INC SPECIALTY PRODUCTS DIV**Company PO Box:****Company Street Address1:** 1001 WEST 31ST STREET**Company Street Address2:** DOWNERS GROVE, IL 60515-1280 US**Health Emergency Telephone:** 714-660-9414**Label Required Indicator:** Y**Date Label Reviewed:** 08/21/1996**Status Code:** C**Manufacturer's Label Number:****Date of Label:** 08/21/1996**Year Procured:** N/K**Organization Code:** G**Chronic Hazard Indicator:** Y**Eye Protection Indicator:** YES**Skin Protection Indicator:** YES**Respiratory Protection Indicator:** YES**Signal Word:** WARNING**Health Hazard:** Slight**Contact Hazard:** Moderate**Fire Hazard:** Moderate**Reactivity Hazard:** None

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**DOD Hazardous Material Information (ANSI Format)
For Cornell University Convenience Only**

DESENSITIZED RDX

Section 1 - Product and Company Identification	Section 9 - Physical & Chemical Properties
Section 2 - Composition/Information on Ingredients	Section 10 - Stability & Reactivity Data
Section 3 - Hazards Identification Including Emergency Overview	Section 11 - Toxicological Information
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**Section 1 - Product and Company Identification
DESENSITIZED RDX**

Product Identification: DESENSITIZED RDX

Date of MSDS: 12/18/1990 **Technical Review Date:** 07/12/1995

FSC: 6850 **NIIN:** LIIN: 00N019215

Submitter: N EN

Status Code: C

MFN: 01

Article: N

Kit Part: N

Manufacturer's Information

Manufacturer's Name: ENSIGN-BICKFORD COMPANY
Manufacturer's Address1: 660 HOPMEADOW STREET
Manufacturer's Address2: SIMSBURY, CT 06070
Manufacturer's Country: US
General Information Telephone: 203-658-4411
Emergency Telephone: 203-658-4411
Emergency Telephone: 203-658-4411
MSDS Preparer's Name: E L STEARNS
Proprietary: N
Reviewed: N
Published: Y
CAGE: 0B1W4
Special Project Code: N

Contractor Information

Contractor's Name: ENSIGN-BICKFORD CO
Contractor's Address1: 660 HOPMEADOW ST
Contractor's Address2: SIMSBURY, CT 06070
Contractor's Telephone: (203) 658-4411 OR (203) 843-22
Contractor's CAGE: 0B1W4

Contractor Information

Contractor's Name: THE ENSIGN-BICKFORD CO
Contractor's Address1: 660 HOPMEADOW ST
Contractor's Address2: SIMSBURY, CT 06070
Contractor's Telephone: (203) 658-4411
Contractor's CAGE: 0B2N1

Section 2 - Compositon/Information on Ingredients
DESENSITIZED RDX

Ingredient Name: CYCLONITE
Ingredient CAS Number: 121-82-4 **Ingredient CAS Code:** M
RTECS Number: XY9450000 **RTECS Code:** M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: 100
% Enviromental Weight:
Other REC Limits: N/K

OSHA PEL: S, 1.5 MG/M3 **OSHA PEL Code:** M
OSHA STEL: **OSHA STEL Code:**
ACGIH TLV: S, 1.5MG/M3; 9192 **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical: N

Section 3 - Hazards Identification, Including Emergency Overview
DESENSITIZED RDX

Health Hazards Acute & Chronic: EYE & SKIN: NONE. INHAL: RDX POISONING VIA THE RESPIRATORY SYSTEM CAN RESULT IN NERVOUS SYSTEM IRREGULARITY. INGEST: UNKNOWN.

Signs & Symptoms of Overexposure:
NONE SPECIFIED BY MANUFACTURER.

Medical Conditions Aggravated by Exposure:
NONE SPECIFIED BY MANUFACTURER.

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.

Route of Entry Indicators:

Inhalation: YES

Skin: NO

Ingestion: NO

Carcenogenicity Indicators

NTP: NO

IARC: NO

OSHA: NO

Carcinogenicity Explanation: NOT RELEVANT

Section 4 - First Aid Measures
DESENSITIZED RDX

First Aid:

EYES: FLUSH WITH WATER FOR AT LEAST 15 MINUTES. SKIN: WASH WITH SOAP AND WATER. INHAL: IF DETONATION FUMES ARE INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION, PREFERABLE M OUTH TO MOUTH. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CALL MD. INGEST: INDUCE VOMITING IMMEDIATELY BY GIVING TWO GLASSES OF WATER AND STICKING FINGER DOWN THROAT.

Section 5 - Fire Fighting Measures
DESENSITIZED RDX

Fire Fighting Procedures:

USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N). DO NOT FIGHT FIRES WHERE RDX IS PRESENT. ISOLATE AREA. EVACUATE PERSONNEL TO A SAFE AREA.

Unusual Fire or Explosion Hazard:

WILL DETONATE IF SUITABLY PRIMED WITH SEVERE IMPACT OR BY HEAT OR FLAME. HAZARDOUS GASES PRODUCED IN FIRE ARE NOX.

Extinguishing Media:

NONE. SEE SPECIAL FIRE PROCEDURES.

Flash Point: Flash Point Text: NOT APPLICABLE

Autoignition Temperature:

Autoignition Temperature Text: N/A

Lower Limit(s): N/K

Upper Limit(s): N/K

Section 6 - Accidental Release Measures
DESENSITIZED RDX

Spill Release Procedures:

REVIEW FIRE & EXPLOSION HAZARDS AND SAFETY PRECAUTIONS BEFORE PROCEEDING WITH CLEAN UP. USE APPROPRIATE PERSONAL PROTECTION DURING CLEAN UP. MOP UP WITH WATER.

Section 7 - Handling and Storage
DESENSITIZED RDX

Handling and Storage Precautions:

Other Precautions:

Section 8 - Exposure Controls & Personal Protection
DESENSITIZED RDX

Respiratory Protection:

FILTER RESPIRATOR: NIOSH/MSHA APPROVED DUST RESPIRATOR. AVOID DUSTING BY KEEPING WET WHEN POSSIBLE.

Ventilation:

NOT APPLICABLE.

Protective Gloves:

BUTYL GLOVES.

Eye Protection: CHEMICAL WORKERS GOGGLES (FP N).

Other Protective Equipment: NONE.

Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

Supplemental Health & Safety Information: APPEAR & ODOR: ON WAX AND/OR GRAPHITE CONTENT.

Section 9 - Physical & Chemical Properties
DESENSITIZED RDX

HCC: E1

NRC/State License Number:
Net Property Weight for Ammo:
Boiling Point: Boiling Point Text: N/A
Melting/Freezing Point: Melting/Freezing Text: 400F,204C
Decomposition Point: Decomposition Text: N/K
Vapor Pressure: N/A Vapor Density: N/A
Percent Volatile Organic Content:
Specific Gravity: 1.82
Volatile Organic Content Pounds per Gallon:
pH: N/K
Volatile Organic Content Grams per Liter:
Viscosity: N/P
Evaporation Weight and Reference: NOT APPLICABLE
Solubility in Water: INSOLUBLE
Appearance and Odor: ODORLESS CRYSTALLINE SOLID W/COLOR RANGING FROM WHITE TO GREY DEPEND (SUPP DATA)
Percent Volatiles by Volume: N/A
Corrosion Rate: N/K

Section 10 - Stability & Reactivity Data DESENSITIZED RDX

Stability Indicator: YES
Materials to Avoid:
NO KNOWN CHEMICAL INCOMPATIBILITIES.
Stability Condition to Avoid:
BECOMES UNSTABLE WITH EXPOSURE TO EXTREME HEAT, IMPACT, OR ELECTROSTATIC DISCHARGE.
Hazardous Decomposition Products:
HAZARDOUS FUMES PRODUCED ARE NOX.
Hazardous Polymerization Indicator: NO
Conditions to Avoid Polymerization:
NOT RELEVANT

Section 11 - Toxicological Information DESENSITIZED RDX

Toxicological Information:
N/P

Section 12 - Ecological Information DESENSITIZED RDX

Ecological Information:
N/P

Section 13 - Disposal Considerations DESENSITIZED RDX

Waste Disposal Methods:
CONSULT AN EXPLOSIVES MANUFACTURER FOR RECOMMENDED METHODS FOR DESTROYING EXPLOSIVE MATERIALS. COMPLY WITH APPLICABLE FEDERAL, STATE

AND LOCAL REGULATIONS.

Section 14 - MSDS Transport Information
DESENSITIZED RDX

Transport Information:

N/P

Section 15 - Regulatory Information
DESENSITIZED RDX

SARA Title III Information:

N/P

Federal Regulatory Information:

N/P

State Regulatory Information:

N/P

Section 16 - Other Information
DESENSITIZED RDX

Other Information:

N/P

HMIS Transportation Information

Product Identification: DESENSITIZED RDX

Transportation ID Number: 23915

Responsible Party CAGE: 0B1W4

Date MSDS Prepared: 12/18/1990

Date MSDS Reviewed: 11/13/1991

MFN: 11/13/1991

Submitter: N TN

Status Code: C

Container Information

Unit of Issue: NK

Container Quantity: NK

Type of Container:

Net Unit Weight:

Article without MSDS: N

Technical Entry NOS Shipping Number:

Radioactivity:

Form:

Net Explosive Weight:

Coast Guard Ammunition Code:

Magnetism: N/P

AF MMAC Code:

DOD Exemption Number:

Limited Quantity Indicator:

Multiple Kit Number: 0

Kit Indicator: N

Kit Part Indicator: N
Review Indicator: Y
Additional Data:

Department of Transportation Information

DOT Proper Shipping Name: CYCLOTETRAMETHYLENETETRANITRAMINE, WETTED OR HMX, WETTED OR OCTOGEN, WETTED

DOT PSN Code: EEL

Symbols:

DOT PSN Modifier: WITH NOT LESS THAN 15 PER CENT WATER, BY MASS

Hazard Class: 1.1D

UN ID Number: UN0226

DOT Packaging Group: II

Label: EXPLOSIVE 1.1D

Special Provision(s):

Packaging Exception:

Non Bulk Packaging: 62

Bulk Packaging: NONE

Maximum Quantity in Passenger Area: FORBIDDEN

Maximum Quantity in Cargo Area: FORBIDDEN

Stow in Vessel Requirements: B

Requirements Water/Sp/Other: 1E,5E

IMO Detail Information

IMO Proper Shipping Name: CYCLOTRIMETHYLENETRINITRAMINE, DESENSITIZED

IMO PSN Code: EZS

IMO PSN Modifier:

IMDG Page Number: 1106

UN Number: 0483

UN Hazard Class: 1.1 D

IMO Packaging Group: -

Subsidiary Risk Label: -

EMS Number: 1-01

Medical First Aid Guide Number: 235

IATA Detail Information

IATA Proper Shipping Name: N/A

IATA PSN Code: IBH

IATA PSN Modifier: CYCLOTRIMETHYLENETRINITRAMINE, DESENSITIZED

IATA UN Id Number: 0483

IATA UN Class: 1.1D

Subsidiary Risk Class:

UN Packaging Group:

IATA Label:

Packaging Note for Passengers: FORB

Maximum Quantity for Passengers: FORB

Packaging Note for Cargo: FORB

Maximum Quantity for Cargo: FORB

Exceptions:

AFI Detail Information

AFI Proper Shipping Name: CYCLOTRIMETHYLENETRINITRAMINE, CYCLONITE, HEXOGEN, OR RDX, DESENSITIZED

AFI Symbols:
AFI PSN Code: IBH
AFI PSN Modifier:
AFI UN Id Number: UN0483
AFI Hazard Class: 1.1D
AFI Packing Group: II
AFI Label:
Special Provisions: P4
Back Pack Reference: A5.37

HAZCOM Label Information

Product Identification: DESENSITIZED RDX
CAGE: 0B1W4
Assigned Individual: N
Company Name: ENSIGN-BICKFORD CO
Company PO Box:
Company Street Address1: 660 HOPMEADOW ST
Company Street Address2: SIMSBURY, CT 06070 US
Health Emergency Telephone: 203-658-4411
Label Required Indicator: Y
Date Label Reviewed: 10/01/1991
Status Code: C
Manufacturer's Label Number:
Date of Label: 10/01/1991
Year Procured: N/K
Organization Code: G
Chronic Hazard Indicator: Y
Eye Protection Indicator: YES
Skin Protection Indicator: YES
Respiratory Protection Indicator: YES
Signal Word: WARNING
Health Hazard: Moderate
Contact Hazard: None
Fire Hazard: None
Reactivity Hazard: Moderate

8/8/2002 6:14:04 PM

MSDS - SIMPLE GREEN

SUNSHINE MAKERS / SIMPLE GREEN / 11/12/1990 SUNSHINE MAKERS
 SIMPLE GREEN Revised: 11/12/1990

MSDS Contents

- SECTION ONE - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION
- SECTION TWO - FIRE AND EXPLOSION HAZARD DATA
- SECTION THREE - PHYSICAL/CHEMICAL CHARACTERISTICS
- SECTION FOUR - REACTIVITY AND STABILITY DATA
- SECTION FIVE - HEALTH HAZARD DATA
- SECTION SIX - PRECAUTIONS FOR SAFE HANDLING AND USE
- SECTION SEVEN - CONTROL MEASURES

BALKAMP, INCORPORATED MATERIAL SAFETY DATA SHEET
 "BLANK" SPACES ARE NOT PERMITTED. IF NEEDED TO COMPLETE ALL SPACES, USE THE CODING SYSTEM BELOW.

N/A = NOT APPLICABLE NK = NOT KNOWN NE = NOT ESTABLISHED NR = NOT REQUIRED

"QUICK" IDENTIFIER
 (PRODUCT NAME AS IT APPEARS ON LABEL OR ON THE PACKAGE.)

SIMPLE GREEN

BALKAMP PART NUMBER(S) 827-2570 - 67.6
 OUNCES
 AS IT OR THEY APPEAR 827-_____ - 5 GALLONS
 ON LABEL OR PACKAGE 827-2569 - 2.5 GALLONS

SUPPLIER TO NAPA OF THE ABOVE NAMED PRODUCT.

COMPANY NAME:	BALKAMP, INCORPORATED	PHONE: (317) 244-7241
STREET ADDRESS:	2601 S. HOLT ROAD	EMERGENCY
1-800-424-9300		
CITY, STATE, ZIP:	P.O. BOX 418277	CONTRACT (24 HRS)
(CHEMTREC)		
11-12-1990	INDIANAPOLIS, IN 46241	DATE MSDS WAS PREPARED:
		FAX NO.: (317) 244-2644

MANUFACTURER (OR, SUPPLIER) FROM WHOM BALKAMP PURCHASES THE ABOVE NAMED PRODUCT.

COMPANY NAME:	SUNSHINE MAKERS	PHONE NO.: (213)
592-2844		
STREET ADDRESS:	15922 PACIFIC COAST HIGHWAY	CONTACT (OPTIONAL)
CITY, STATE, ZIP:	HUNTINGTON HARBOR, CA 92649	

SECTION ONE - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

ALL HEALTH HAZARDS WHICH COMPRISES 1% OR GREATER OF THE COMPOSITION, AND ALL CARCINOGENS IF 0.1% OF THE COMPOSITION OR GREATER.

TECHNICAL (SPECIFIC) CHEMICAL NAME	CAS	OSHA	ACGIH	OTHER LIMITS
%	NO.	PEL	TWA	RECOMMENDED
(OPTIONAL)			(THRESHOLD LIMIT VALUE)	(OPTIONAL)
GLYCOL ETHER	NA	NA	NA	

<2.0

SECTION TWO - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (SHOW METHOD USED): NONE
FLAMMABLE LIMITS : LEL: NA UEL: NA
EXTINGUISHING MEDIA: WATER CAN BE USED WITHOUT COMPLICATION.
SPECIAL FIRE FIGHTING PROCEDURES: NONE
UNUSUAL FIRE & EXPLOSION HAZARDS: NONE
HAZARDOUS PRODUCTS FORMED BY FIRE OR THERMAL DECOMPOSITION: NONE

NFPA RATINGS (NATIONAL FIRE PROTECTION ASSOCIATION):
HEALTH: -
FLAMMABILITY: -
REACTIVITY: -
SPECIAL HAZARDS: -

SECTION THREE - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: 207 F
SPECIFIC GRAVITY (H2O = 1): 1.04
MELTING POINT: 25 F
VAPOR PRESSURE (mmHg): 30 mmHg
VAPOR DENSITY (AIR = 1): 1.3
EVAPORATION RATE (BUTYL ACETATE = 1): NK
SOLUBILITY IN WATER : INFINITELY MISCIBLE
% VOLATILE BY VOLUME : 56
OTHER (IF ANY): NA
APPEARANCE AND ODOR: GREEN LIQUID AT 77 F. SASSAFRAS ODOR.

SECTION FOUR - REACTIVITY AND STABILITY DATA

STABLE [X] UNSTABLE [] CONDITIONS TO AVOID: PRODUCT IS FREEZABLE AT 30 F
HAZARDOUS POLYMERIZATION MAY OCCUR [] WILL NOT OCCUR [X] CONDITIONS TO AVOID:
INCOMPATIBILITY (MATERIALS TO AVOID): ONLY MATERIALS INCOMPATIBLE WITH WATER.
HAZARDOUS "NON-THERMAL" OR "NON-FIRE" DECOMPOSITION OR BY-PRODUCTS: NONE

SECTION FIVE - HEALTH HAZARD DATA

HEALTH HAZARDS: ACUTE [X] CHRONIC []
NOTE: IF "CHRONIC" IS CHECKED, ELABORATE BELOW ON WHAT THE EFFECTS ARE.

ROUTES OF ENTRY:
MANNER YES NO SIGNS AND SYMPTOMS OF EXPOSURE
INHALATION X MINIMAL IRRITATION MAY OCCUR. - REPEATED
SKIN X
Page 2

MSDS - SIMPLE GREEN

DAILY CONTACT IRRITATION.		WITH POOR HYGIENE MAY LEAD TO
INGESTION	X	POSSIBLE STOMACH UPSET. IF THIS HAPPENS,
CONTACT A		PHYSICIAN.
EYES	X	IRRITANT.

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: ---
 SKIN: WASH OFF WITH WATER.
 INGESTION: DRINK WATER. IF STOMACH IS UPSET, CONTACT A PHYSICIAN.
 EYES: FLUSH WITH WATER. NO SPECIAL PROCEDURES REQUIRED.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
 CARCINOGENICITY?: NTP? NO IARC MONOGRAPHS? NO OSHA? NO

SECTION SIX - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO TAKE IN CASE THE MATERIAL IS SPILLED OR RELEASED:
RINSE AREA WITH COLD WATER.

DISPOSAL METHOD: CAN BE RINSED TO SEWER WITH WATER.

PRECAUTIONS TO TAKE IN STORAGE AND HANDLING:

SECTION SEVEN - CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE):	NONE NEEDED	GLOVES:	NA
VENTILATION NEEDED:	LOCAL EXHAUST : NONE	EYE	
PROTECTION: NA	MECHANICAL (GENERAL): NEEDED.	OTHER :	NA

WORK/HYGIENIC PRACTICES: WASH SKIN WITH WATER WHEN CONTACT HAS BEEN MADE.

ARE ANY OF THE CHEMICALS SUBJECT TO SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) OF 1986 AND 40 CFR, PART 372?

DO ANY OF THE CHEMICALS HAVE AND RCRA HAZARDOUS WASTE NO.?

D.O.T. SHIPPING NAME IF ANY: NOT REGULATED
 D.O.T. HAZARD CLASS IF ANY:
 IDENTIFICATION NO.:
 IATA CLASS:
 IATA SHIPPING NAME:

MSDS - TNT
BESTON CHEMICAL / TNT / 04/30/1997
TNT Revised: 04/30/1997

MSDS Contents

PRODUCT IDENTIFICATION
HAZARDOUS COMPONENTS
PHYSICAL DATA
HAZARDOUS REACTIVITY
FIRE AND EXPLOSION DATA
HEALTH HAZARDS
FIRST AID
SPILL OR LEAK PROCEDURES
SPECIAL PROTECTION INFORMATION
SPECIAL PRECAUTIONS
STORAGE CONDITIONS
SHIPPING INFORMATION

BSI

BESTON CHEMICAL CORPORATION
P.O. BOX 2826
CONROE, TEXAS 77305-2826
PHONE: (409) 856-1431
FAX: (409) 856-3163

MATERIAL SAFETY DATA SHEET
(MSDS-TNT)

PRODUCT IDENTIFICATION

PRODUCT NAME
TNT

DESCRIPTION
HIGH EXPLOSIVES

TRADE NAMES AND SYNONYMS
2,4,6 TRINITROTOLUENE

MANUFACTURER/DISTRIBUTOR
CHINA NORTH CHEMICAL INDUSTRIES CORP.

TRANSPORTATION EMERGENCY
800-255-3924 (24 HRS - CHEM-TEL)

PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES

THE PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES IS A RESULT OF CAREFUL PLANNING AND OBSERVANCE OF THE BEST KNOWN PRACTICES. THE EXPLOSIVES USER MUST REMEMBER THAT HE IS DEALING WITH A POWERFUL FORCE AND THAT VARIOUS DEVICES AND METHODS HAVE BEEN DEVELOPED TO ASSIST HIM IN DIRECTING THIS FORCE. HE SHOULD REALIZE THAT THIS FORCE, IF MISDIRECTED, MAY EITHER KILL OR INJURE BOTH HIM AND HIS FELLOW WORKERS.

WARNING

ALL EXPLOSIVES ARE DANGEROUS AND MUST BE CAREFULLY HANDLED AND USED FOLLOWING APPROVED SAFETY PROCEDURES EITHER BY OR UNDER THE DIRECTION OF COMPETENT, EXPERIENCED PERSONS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, REGULATIONS, OR ORDINANCES. IF YOU HAVE ANY QUESTIONS OR DOUBTS AS TO HOW

MSDS - TNT

TO USE ANY EXPLOSIVE PRODUCT, DO NOT USE IT BEFORE CONSULTING WITH YOUR SUPERVISOR, OR THE MANUFACTURER, IF YOU DO NOT HAVE A SUPERVISOR. IF YOUR SUPERVISOR HAS ANY QUESTIONS OR DOUBTS, HE SHOULD CONSULT THE MANUFACTURER BEFORE USE.

HAZARDOUS COMPONENTS

MATERIAL OR COMPONENT
TNT (TRINITROTOLUENE)

CAS NO.
38082-89-2

TLV
1.5 MG/M3

PEL
0.5 MG/M3

N/A = NOT ASSIGNED
N/E = NOT ESTABLISHED

PHYSICAL DATA

BOILING POINT
464 DEG. F

VAPOR PRESSURE
0.057 MPa @ 179 DEG. F

VAPOR DENSITY
N/A

SOLUBILITY IN WATER
INSOLUBLE

SPECIFIC GRAVITY
1.5 - 1.6

MELTING POINT
176 DEG. F

EVAPORATION RATE
N/A

APPEARANCE AND ODOR
YELLOW FLAKES, WITH BITTER ALMOND ODOR

HAZARDOUS REACTIVITY

INSTABILITY
STABLE

INCOMPATIBILITY

NO DATA APPLICABLE

HAZARDOUS DECOMPOSITION
NITROUS OXIDE

POLYMERIZATION
POLYMERIZATION WILL NOT OCCUR

FIRE AND EXPLOSION DATA

FLASHPOINT
NOT APPLICABLE

EXTINGUISHING MEDIA
NONE

UNUSUAL FIRE AND EXPLOSIVE HAZARDS
WILL DETONATE IF SUITABLY PRIMED BY HEAT OR FLAME. HAZARDOUS GASES PRODUCED IN
FIRE ARE NITROGEN OXIDES.

SPECIAL FIRE FIGHTING PROCEDURES
SEE BELOW

AUTO IGNITION TEMPERATURE
570 DEG. F

ALL EXPLOSIVES:
DO NOT FIGHT EXPLOSIVES FIRES. TRY TO KEEP FIRE FROM REACHING EXPLOSIVES.
ISOLATE AREA AND EVACUATE PERSONNEL TO A SAFE PLACE. GUARD AGAINST INTRUDERS.

DIVISION 1.1 EXPLOSIVES:
EVACUATE THE AREA FOR 5,000 FEET (1 MILES). CONSULT NORTH AMERICAN EMERGENCY
RESPONSE GUIDEBOOK GUIDE NUMBER 112 FOR FURTHER DETAILS.

HEALTH HAZARDS

GENERAL
TNT IS A DIVISION 1.1 EXPLOSIVE, AND DETONATION MAY CAUSE SEVERE PHYSICAL
INJURY, INCLUDING DEATH. ALL EXPLOSIVES ARE DANGEROUS AND MUST BE HANDLED
CAREFULLY AND USED FOLLOWING APPROVED SAFETY PROCEDURES UNDER THE DIRECTION OF
COMPETENT, EXPERIENCED PERSONS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE
AND LOCAL LAWS, REGULATIONS AND ORDINANCES.

INHALATION OF EXPLOSIVES POWDERS MAY CAUSE NERVOUS SYSTEM IRREGULARITIES,
INCLUDING HEADACHE AND DIZZINESS.

NITROGEN OXIDES GENERATED DURING USE ARE SKIN, EYE AND RESPIRATORY TRACT
IRRITANTS.

CARCINOGENICITY
NONE OF THE COMPONENTS OF TNT ARE LISTED AS A CARCINOGEN BY NTP, IARC OR OSHA.

FIRST AID

MSDS - TNT

INHALATION

IF DETONATION FUMES ARE INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION, PREFERABLY MOUTH-TO-MOUTH. IF BREATHING IS DIFFICULT, GIVE OXYGEN AND CALL A PHYSICIAN.

EYE AND SKIN CONTACT

FLUSH EYES WITH WATER. WASH SKIN WITH SOAP AND WATER.

INGESTION

INDUCE VOMITING IMMEDIATELY BY GIVING TWO GLASSES OF WATER AND STICKING FINGER DOWN THROAT.

INJURY FROM DETONATION

SEEK PROMPT MEDICAL ATTENTION.

SPILL OR LEAK PROCEDURES

SPILL/LEAK RESPONSE

REVIEW FIRE AND EXPLOSION HAZARDS BEFORE PROCEEDING WITH CLEAN UP. REMOVE ALL IGNITION SOURCES. WEAR PROTECTIVE EQUIPMENT DURING CLEAN UP. MOP UP WITH WATER.

WASTE DISPOSAL

DISPOSE OF IN COMPLIANCE WITH FEDERAL REGULATIONS UNDER THE AUTHORITY OF THE RESOURCE CONSERVATION AND RECOVERY ACT (40 CFR PARTS 260-271).

SPECIAL PROTECTION INFORMATION

VENTILATION RESPIRATORY

GENERAL VENTILATION WITH LOCAL EXHAUST IN OPERATION AREA. WEAR FITTED NIOSH APPROVED RESPIRATOR, AVOID DUSTING BY KEEPING WET WHEN POSSIBLE.

EYE

CHEMICAL GOGGLES.

GLOVES

COTTON OR LEATHER GLOVES.

OTHER

FLAME PROOF COVERALLS AND CONDUCTIVE BOOTS.

SPECIAL PRECAUTIONS

REFER TO MANUFACTURER'S INSTRUCTIONS AND WARNINGS SUPPLIED WITH PRODUCT

STORAGE CONDITIONS

STORE IN ACCORDANCE WITH THE REQUIREMENTS OF SUBPART K, ATF: EXPLOSIVES LAW AND REGULATIONS (27 CFR 55.201-55.219).

SHIPPING INFORMATION

PROPER SHIPPING NAME
TNT

HAZARD CLASS
1.1D

UN NUMBER
UN0209 (1.1D)

DOT LABEL & PLACARD
DOT LABEL EXPLOSIVE 1.1D
DOT PLACARD EXPLOSIVES 1.1

THE INFORMATION CONTAINED IN THIS MATERIAL SAFETY DATA SHEET IS BASED UPON AVAILABLE DATA AND BELIEVED TO BE CORRECT; HOWEVER, AS SUCH AS BEEN OBTAINED FROM VARIOUS SOURCES, INCLUDING THE MANUFACTURER AND INDEPENDENT LABORATORIES, IT IS GIVEN WITHOUT WARRANTY OR REPRESENTATION THAT IT IS COMPLETE, ACCURATE, AND CAN BE RELIED UPON. BESTON CHEMICAL CORPORATION, INC. HAS NOT ATTEMPTED TO CONCEAL IN ANY MANNER THE DELETERIOUS ASPECTS OF THE PRODUCT LISTED HEREIN, BUT MAKES NO WARRANTY AS TO SUCH. FURTHER, BESTON CHEMICAL CORPORATION, INC. CANNOT ANTICIPATE NOR CONTROL THE MANY SITUATIONS IN WHICH THE PRODUCT OR THIS INFORMATION MAY BE USED; THERE IS NO GUARANTEE THAT THE HEALTH AND SAFETY PRECAUTIONS SUGGESTED WILL BE PROPER UNDER ALL CONDITIONS. IT IS THE SOLE RESPONSIBILITY OF EACH USER OF THE PRODUCT TO DETERMINE AND COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE LAWS AND REGULATIONS REGARDING ITS USE. THIS INFORMATION IS GIVEN SOLELY FOR THE PURPOSES OF SAFETY TO PERSONS AND PROPERTY. ANY OTHER USE OF THIS INFORMATION IS EXPRESSLY PROHIBITED.

FOR FURTHER INFORMATION CONTACT:
MICHAEL E. POTTER OR FRANCIS X. COLLIGAN
P.O. BOX 2826
CONROE, TEXAS 77305-2826
TELEPHONE NUMBER: 409-856-1431
FAX NUMBER: 409-856-3163

MSDS PREPARED BY:
OWEN COMPLIANCE SERVICES, INC.
ORIGINAL PUBLICATION DATE: 4/30/97
REVISION DATE NA

MSDS - WINDEX

S.C. JOHNSON / WINDEX - BLUE / 12/22/1993 S.C. JOHNSON
WINDEX - BLUE Revised: 12/22/1993

MSDS Contents

PRODUCT IDENTIFICATION
INGREDIENT INFORMATION
PHYSICAL DATA
FIRE AND EXPLOSION INFORMATION
TOXICOLOGICAL AND FIRST AID DATA
FIRST AID PROCEDURES
REACTIVITY DATA
PREVENTIVE MEASURES
SPECIAL PROTECTION INFORMATION
SPECIAL PRECAUTIONS
ADDITIONAL INFORMATION
PREPARATION INFORMATION

MATERIAL SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET - E 126000
PRODUCT NAME: WINDEX - BLUE

WHMIS

SERIAL NO: 3
ISSUED: 1993-12-22
SUPERSEDES:

PRODUCT IDENTIFICATION

PRODUCT NAME: WINDEX - BLUE

MANUFACTURER:
S.C. JOHNSON & SON, LIMITED
PHONE NO: (519) 756-7900
1 WEBSTER STREET
BRANTFORD, ONTARIO N3T 5R1

DISTRIBUTOR:
S.C. JOHNSON & SON, LIMITED
PHONE NO: (519) 756-7900
1 WEBSTER STREET
BRANTFORD, ONTARIO N3T 5R1

PRODUCT USE:
HOUSEHOLD CLEANING PRODUCT

HMIS RATING
HEALTH : 1
FLAMMABILITY : 2
REACTIVITY : 0
SPECIAL WARNING:

THIS SHEET REFERS TO FINISHED PRODUCT CODES:

FG CODE	QTY	SIZE
00769	12 /	355 ML
00770	12 /	650 ML
00772	12 /	950 ML
10486	8 /	1.5 LT
10738	6 /	2.0 LT

20672 4 / 5.0 LT

INGREDIENT INFORMATION

WEIGHT %	CAS	INGREDIENT
0.1 - 1.0	1336-21-6	AMMONIUM HYDROXIDE EXP. LIMITS: NOT ESTABLISHED
0.5 - 1.5	111-76-2	ETHYLENE GLYCOL MONOBUTYL ETHER EXP. LIMITS: 25 PPM (TLV-TWA ACGIH)
3 - 7	67-63-0	ISOPROPANOL EXP. LIMITS: 400 PPM (TLV-TWA ACGIH)
0.1 - 1.0	25155-30-0	SODIUM DODECYL BENZENE SULFONATE EXP. LIMITS: NOT ESTABLISHED
0.5 - 1.5	112-25-4	ETHYLENE GLYCOL N-HEXYL ETHER EXT. LIMITS: NOT ESTABLISHED EXP. LIMITS: NOT ESTABLISHED

PHYSICAL DATA

PHYSICAL STATE: LIQUID

ODOUR/APPEARANCE: CLEAR, BLUE LIQUID WITH MILD AMMONIACAL ODOUR

ODOUR THRESHOLD: NOT AVAILABLE

SPECIFIC GRAVITY (WATER = 1.0): 0.996

VAPOUR PRESSURE (MM HG): NOT AVAILABLE

VAPOUR DENSITY (AIR=1.0): NOT AVAILABLE

WATER SOLUBILITY: COMPLETE

EVAPORATION RATE (BUTYL ACETATE = 1.0): NOT AVAILABLE

BOILING POINT (DEG. C): NOT AVAILABLE

FREEZING POINT (DEG. C): NOT AVAILABLE

PH: 10.3 - 11.3

COEF. WATER/OIL: NOT AVAIL.

FIRE AND EXPLOSION INFORMATION

FLASH POINT (DEG. C): 47

FLAMMABLE LIMITS: NOT AVAILABLE

AUTO-IGNITION TEMP (DEG. C): NOT AVAILABLE

FLAMMABILITY CLASSIFICATION: COMBUSTIBLE LIQUID

MSDS - WINDEX

EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL

SPECIAL FIRE FIGHTING PROCEDURES:
NORMAL FIRE FIGHTING PROCEDURE MAY BE USED.
COOL AND USE CAUTION WHEN APPROACHING CONTAINERS.
FIRE FIGHTERS SHOULD WEAR SCBA AND PROTECTIVE CLOTHING.

EXPLOSION DATA:
RISK OF EXPLOSION IF HEATED UNDER CONFINEMENT.
CONTAINER MAY ROCKET OR EXPLODE IN HEAT OF FIRE.

TOXICOLOGICAL AND FIRST AID DATA

LD50: >5,000 MG/KG (BRIDGED DATA)

LC50: NOT AVAILABLE

PRIMARY ROUTE OF ENTRY: EYE CONTACT, INHALATION,

EFFECTS OF ACUTE EXPOSURE:
MAY CAUSE EYE IRRITATION.
MAY DRY OR DE-FAT SKIN.
PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION.

EFFECTS OF CHRONIC EXPOSURE: NOT AVAILABLE

IRRITANCY OF PRODUCT: MILDLY IRRITATING TO EYES

SENSITIZATION: NONE KNOWN

CARCINOGENICITY: NONE KNOWN

REPRODUCTIVE TOXICITY: NONE KNOWN

TERATOGENICITY: NONE KNOWN

MUTAGENICITY: NONE KNOWN

FIRST AID PROCEDURES

EYE CONTACT:
FLUSH IMMEDIATELY WITH WATER FOR 15 MINUTES.
IF IRRITATION OCCURS, GET MEDICAL ATTENTION.

SKIN CONTACT:
WASH CONTAMINATED AREA WITH WARM WATER AND SOAP.
IF IRRITATION OCCURS, GET MEDICAL ATTENTION.

INHALATION:
REMOVE TO FRESH AIR.
ADMINISTER ARTIFICIAL RESPIRATION, IF NEEDED.

INGESTION:
DILUTE WITH 1-2 GLASSES OF WATER.
DO NOT ADMINISTER ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.
REMOVE TO FRESH AIR.

REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID: NONE KNOWN

INCOMPATIBILITY: AVOID STRONG OXIDIZERS.

HAZARDOUS DECOMPOSITION PRODUCTS:
WHEN EXPOSED TO FIRE, PRODUCES NORMAL COMBUSTION PRODUCTS.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: NOT APPLICABLE

PREVENTIVE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
LARGE SPILLS MUST BE CONTAINED BY DYKING.
ELIMINATE ALL SOURCES OF IGNITION.
CONTACT WASTE CO-ORDINATOR.
VENTILATE SPILL AREA.
COLLECT IN STEEL DRUMS.

WASTE DISPOSAL INFORMATION:
KEEP STORAGE CONTAINERS WELL SEALED.
OBSERVE ALL FEDERAL, PROVINCIAL AND MUNICIPAL REGULATIONS.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: NOT REQUIRED

VENTILATION:
GOOD VENTILATION SHOULD BE SUFFICIENT TO CONTROL AIRBORNE LEVELS.

PROTECTIVE GLOVES: ANY IMPERVIOUS GLOVE.

EYE PROTECTION: SPLASH GOGGLES.

OTHER PROTECTIVE MEASURES:

SPECIAL PRECAUTIONS

PRECAUTIONARY LABELING:
KEEP AWAY FROM SOURCES OF IGNITION.
AVOID PROLONGED OR REPEATED BREATHING OF VAPOURS.

OTHER HANDLING AND STORAGE CONDITIONS:
BOND AND GROUND DURING MATERIAL TRANSFER.
KEEP CONTAINER WELL CLOSED WHEN NOT IN USE.

OBSERVE GOOD PERSONAL HYGIENE PRACTICES.

ADDITIONAL INFORMATION

SHIPPING NAME: FLAMMABLE LIQUID, N.O.S. (ISOPROPANOL)
TDG CLASSIFICATION: 3.3
PIN/NIP: UN1993
PACKING GROUP: III
PLACARD: FLAMMABLE LIQUID
EXEMPTION NAME: EXEMPT AS PER TDGA 2.23.2(1)
WHMIS CLASSIFICATION: B,3
DSL STATUS: OK
TSCA STATUS:
REASON FOR CHANGE: NEW; REPLACES 126005 SER. 001

PREPARATION INFORMATION

PREPARED BY: REGULATORY AFFAIRS DEPT., S.C. JOHNSON & SON, LIMITED
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PREPARATION DATE: 1993-12-22

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END OF MATERIAL SAFETY DATA SHEET

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