M A T E R I A L S A F E T Y D A T A S H E E T

ARMA 901 A

PRODUCT NAME: ARMA 901 A HMIS CODES: H F R P

PRODUCT CODE: 101020261 3* 1 1 H

========== SECTION I - MANUFACTURER IDENTIFICATION ==========

MANUFACTURER'S NAME: ARMA INTERNATIONAL, INC.

ADDRESS : 4026 West 11th Ave.
Eugene, OR 97402

EMERGENCY CALL CHEM-TEL (800) 255-3924 DATE PRINTED : 06/26/97

DATE REVISED : June 1997

INFORMATION PHONE : (541) 484-5915 NAME OF PREPARER : ENVIRONMENTAL SECT.

===== SECTION 2 - HAZARDOUS INGREDIENTS/SARA III INFORMATION =====

REPORTABLE COMPONENTS	CAS NUMBER	VAPOR PRESSURE mm Hg @ TEMP		WEIGHT PERCENT
* 4,4'-Diphenylmethane Diisocyanate (MDI) OSHA PEL: 0.02 ppm ACGIH TLV: 0.005 ppm OTHER: 0.051 mg/m3	101-68-8	.00018	68	37
MIXED ISOMERS OF MDI	Not listed	0	0	
MDI HOMOPOLYMER OSHA PEL: 0.02 ppm ACGIH TLV: 0.005 ppm OTHER: 0.051 mg/m3	25686-28-6	.00018	68	
TRADE SECRET	PROPRIETARY	0.02	68° F	

* Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING RANGE: 392 °F SPECIFIC GRAVITY (H20=1): 1.14

VAPOR DENSITY: Heavier than Air MATERIAL VOC: 0.00 lb/gl

EVAPORATION RATE: Slower than Ether SOLUBILITY IN WATER: Water Reacts

APPEARANCE AND ODOR: Light Yellow Liquid; Slight Odor

VOC calculations are based on the federal EPA definition of volatile organic compound under the Clean Air Act. State and local air quality authorities may have more stringent regulation.

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POING: 430 °F METHOD USED: COC

FLAMMABLE LIMITS IN AIR BY COLUME - LOWER: 4.7 UPPER: 21

EXTINGUISHING MEDIA: FOAM, CO2, DRY CHEMICAL, WATER FOG.

SPECIAL FIREFIGHTING PROCEDURES

Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters. During a fire, MDI vapors and other irritating, toxic gases may be generated.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Avoid water contamination in closed containers or confined areas (CO2 Evolved). CO2 gas evolved can cause sealed containers to expand and possibly rupture. At temperatures greater than 400°F (204C), Polymeric MDI can polymerize and decompose which can cause pressure build-up in closed containers. Use cold water to cool fire exposed containers.

SECTION 5 - REACTIVITY DATA

STABILITY: Stable
CONDITIONS TO AVOID
Reaction with moisture may form CO2. Resulting pressure build-up may cause container rupture. Avoid high temperatures. Avoid freezing.

INCOMPATIBILITY (MATERIALS TO AVOID)
Water, Alcohols, Amines, Strong Bases. Will cause some corrosion to Copper alloys and Aluminum. The reaction with water is very slow under 122°F but is accelerated at higher temperatures.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS
By high heat and fire: Carbon Monoxide, Oxides of Nitrogen, traces of HCN, MDI Vapors or aerosols

HAZARDOUS POLYMERIZATION: May occur.

SECTION 6 - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
Can irritate mucous membrane/respiratory tract causing runny nose, sore throat, chest discomfort, shortness of breath and reduced lung function. Chemical or Hypersensitive Pneumonitis with flu-like symptoms has also been reported.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE
Skin: Irritation such as reddening, swelling, rash, scaling or blistering. Cured material is difficult to remove.
Eyes: Liquid, aerosols or vapors are irritating and can cause tearing, reddening and swelling.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
Isocyanates react with skin protein and moisture. Prolonged contact can cause reddening, swelling, rash, scaling or blistering, and in some cases, skin sensitization.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
Can result in irritation of the gastrointestinal tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea.

HEALTH HAZARDS (ACUTE AND CHRONIC)
Isocyanate sensitization can result from repeated overexposures or from a single large dose which will cause a reaction to a later exposure at levels well below the TLV. These symptoms, such as chest tightness, wheezing, cough, shortness of breath or asthma attack, could be immediate or delayed (up to several hours after exposure). Overexposure to Isocyanates has also been reported to cause lung damage which may be permanent. Sensitization can either be temporary or permanent.

CARCINOGENICITY:

NTP CARCINOGEN: No

IARC MONOGRAPHS: No

OSHA REGULATED: No
Neither MDI nor Polymeric MDI are listed by the NTP, IARC or Regulated by OSHA as Carcinogens.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
Preexisting skin, eye, or respiratory conditions. (I.E. Asthma, Bronchitis, Emphysema, Skin allergies, Eczema)

EMERGENCY AND FIRST AID PROCEDURES
Eyes: Flush with water at least 15 minutes, holding eyelids open, refer to physician for immediate follow-up.
Skin: Wash affected skin with soap and water. remove contaminated clothing. Launder before reuse. If irritation develops, refer to physician.
Ingestion: Do Not induce vomiting. Give 1-2 cups milk or water to drink. Consult a physician.
Inhalation: Move to fresh air to prevent further exposure. Administer oxygen or artificial respiration as needed. Asthma-like symptoms may develop immediately or may be delayed up to several hours. Consult physician should this occur.

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Wear protective gear/respiratory equipment. Evacuate/ventilate spill area. Contain and absorb large spillages onto inert absorbent such as earth or sand. Shovel into open-top drums for further decontamination if necessary. Decontaminate spill area. Neutralize small spills with decontaminate. Allow deactivated material to stand for at least 30 minutes before shoveling into drums. Neutralizing solution: 2% Detergent, 8% Ammonia in water. Mixing with earth is also effective, but slower to deactivate. Decontaminated containers must remain open for at least 48 hours to allow Carbon Dioxide gas to escape.

WASTE DISPOSAL METHOD
Dispose of solidified waste in a licensed facility. Incinerate or landfill. Do Not discharge into waterways or sewer systems.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep containers closed and store in well ventilated area (60°-80°F). Outage should be filled with dry inert gas to avoid reaction with moisture. Contamination by moisture and basic compounds can cause dangerous pressure buildup in container. * Monitoring of airborne Isocyanates should become part of the overall employee exposure characterization program.

OTHER PRECAUTIONS
Persons with pre-existing, nonspecific Bronchial Hyperactivity can respond to concentrations below the TLV with similar symptoms of acute inhalation. In situations where MDI is not sprayed or heated an air-purifying, organic cartridge respirator with a particulate filter may be worn. However, this should be permitted only for short periods of time (less than 1 hour) at relatively low concentrations (at or near the TLV). In addition, due to the poor warning properties or MDI, proper fit and timely replacement of filter elements must be ensured. Observe OSHA regulations for respirator use.

SECTION 8 - CONTROL MEASURES

RESPIRATORY PROTECTION

Concentrations greater than the TLV can occur when MDI is sprayed, heated or used in a poorly ventilated area. In such cases, or whenever concentrations of MDI exceed the TLV or are not known, respiratory protection must be worn. A supplied air respirator (either positive pressure or continuous flow type) is required. In an emergency situation, a self-contained breathing apparatus may be used. MDI has poor warning properties, since the concentration at which MDI can be smelled is substantially higher than the maximum exposure limit. Observe OSHA regulations for respirator use (29 CFR 1910.134).

VENTILATION
Local exhaust should be used to maintain levels below the TLV whenever MDI is processed, heated or spray applied. Standard reference sources regarding industrial ventilation (i.e., ACGIH INDUSTRIAL VENTILATION) should be consulted for guidance about adequate ventilation.

PROTECTIVE GLOVES
Chemical resistant gloves. (Butyl Rubber, Nitrile Rubber, Neoprene)

EYE PROTECTION
Tight and sealed goggles or face shield and safety glasses. Contact lenses should not be worn.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT
Apron and boots. Protective clothing must be impermeable. Launder daily. Safety shower and eyewash station should be available. Educate and train employees in safe use of product. Keep exposed skin to a minimum with protective clothing.

WORK/HYGIENIC PRACTICES
Wash thoroughly after handling, and before eating, drinking, smoking, or using the toilet facilities.

SECTION 9 - DISCLAIMER

To the best of our knowledge, the information provided herein is accurate, obtained from sources believed to be accurate. Since the conditions and methods of use of our product are beyond our control, we disclaim any and all liability arising out of the improper use of this product or the information provided herewith.

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SECTION 2 - HAZARDOUS INGREDIENTS/SARA III INFORMATION

REPORTABLE COMPONENTS	CAS NUMBER	VAPOR PRESSURE mm Hg @ TEMP	WEIGHT PERCENT
Polyoxypropylenediamine	9046-10-0	1	212
Diethyltoluenediamine (DETDA)	68479-98-1	.001	68

*** No toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372 are present. *** DOT Classification: Corrosive Liquid N.O.S. (Polyoxypropylenediamine), 8, UN 1760, PG III.

SECTION 3 Physical/chemical Characteristics

Boiling Range: >400 Degrees F Specific Gravity (H20=1): 1.01
Vapor Density: Heavier than air Material VOC: 0.00 lb/gl
Evaporation Rate: Slower than ether Solubility in Water: Negligible
Appearance and odor: Pigmented Opaque Liquid with very slight amine odor

VOC calculations are based on the federal EPA definition of volatile organic compound under the Clean Air Act. State and local air quality authorities may have more stringent regulation.

SECTION 4 Fire and Explosion Hazard Data

Flash Point: 275 Degrees F Method Used: Calculated
Flammable Limits in Air by Volume- Lower: N/A **Upper**: N/A

Extinguishing Media: Foam, CO2, Dry Chemical, Water Fog.

Special Firefighting Procedures
Fire may produce irritating or poisonous fumes. (i.e. CO, Nox) Avoid breathing smoke and vapor. Water or foam may cause frothing. Use water to cool fire-exposed containers.

Unusual Fire and Explosion Hazards
None known.

SECTION 5 Reactivity Data

Stability: Stable

Conditions to Avoid:
Thermal decomposition.

Incompatibility (materials to Avoid):
Strong oxidizers. Reacts violently with acids.

Hazardous Decomposition or Byproducts:
CO , Nox, CO2, Toxic Levels of Ammonia. Irritating aldehydes and ketones may be formed on burning in limited air supply.

Hazardous Polymerization: WILL NOT OCCUR

SECTION 6 Health Hazard Data

Inhalation Health Risks and Symptoms of Exposure:
Vapors or Mists in unusually high concentrations generated from spraying or heating may cause irritation of the nose and throat, headache, nausea, and drowsiness.

Skin and Eye Contact Health Risks and Symptoms of Exposure:
Eyes: Causes severe irritation, excess redness, swelling and chemical burns of the eye. Severe eye damage may cause blindness.
Skin: Causes severe irritation, excess redness, swelling, chemical burns and blister formation.

Skin Absorption Health Risks and Symptoms of Exposure:
Expected to be irritating and toxic by dermal absorption. Prolonged contact may cause severe irritation and discomfort seen as local redness and swelling.

Ingestion Health Risks and Symptoms of Exposure:
Harmful or fatal if swallowed. May cause abdominal pain, nausea, diarrhea, thirst, weakness, and collapse. Can cause lung injury if swallowed and aspirated.

Health Hazard (Acute and Chronic):
Data from two year study in rats indicate data caused effects in pancreas, liver, thyroid and possibly adrenal glands and eyes. Data analysis still in progress. In rare instances, sensitization may occur.

Carcinogenicity: NTP CARCINOGEN: No **IARC MONOGRAPHS:** No
OSHA REGULATED: No

Medical Conditions generally Aggravated by Exposure:
Repeated contact may aggravate pre-existing skin conditions.

Emergency and First Aid Procedures

Eyes: Flush with water for 15 minutes holding eyelids apart while flushing. Get medical attention immediately. Continue flushing if medical attention is not immediately available.
Skin: Wash skin with plenty of water for at least 15 minutes. Get medical attention.
Ingestion: Obtain immediate professional medical attention. Give two glasses of water. Do not induce vomiting. Endotrachial blockage is recommended if stomach is to be emptied.
Inhalation: Remove affected person to fresh air immediately. Seek prompt professional medical attention.

SECTION 7 Precautions for Safe Handling and Use

Steps to be Taken in Case Material Is Released or Spilled:
Ventilate area. Avoid breathing vapor. Contain spill if possible. Absorb with suitable material and shovel into DOT approved container. Prevent entry into sewers and waterways. Avoid skin and eye contact.

Waste Disposal Method:
Waste material, including concentrated liquids, contaminated absorbent and materials from spill clean-up procedures, must be handled in accordance with Federal, State and Local regulations.

Precautions to be Taken in Handling and Storing:
Store in cool, dry, well ventilated area. Keep container closed tight when not in use. Avoid water contamination. Avoid contact with skin, eyes and clothing.

Other Precautions:
Never use welding or cutting torch on or near containers. Eye wash should be available nearby when this product is handled or used.

SECTION 8 Control Measures

Respiratory Protection:
Airborne Concentrations should be kept to lowest levels possible. If vapor, mist, or dust is generated a NIOSH approved organic vapor respirator should be used. Supplied air respiratory protection should be used for cleaning large spills. Work station conditions should be evaluated by management to determine appropriate personal protection. The contents of this package may be blended with other components before the product can be used. Any mixture of components will have hazards of all components. Before opening the packages, read all warnings labels, follow all precautions.

Ventilation:
Local Exhaust ventilation recommended at source of vapor.

Protective Gloves:
Nitrile or Neoprene rubber.

Eye Protection:
Chemical goggles or face shield to prevent eye contact.

Other Protective Clothing or Equipment:
Rubber gloves, footwear, coveralls and/or apron as necessary to prevent prolonged or repeated skin contact. The liquid penetrates clothing and leather footwear causing delayed irritation.

Work/Hygienic Practices:
Product should be handled in accordance with good industrial hygienic practices.

SECTION 9 Disclaimer

To the best of our knowledge, the information provided herein is accurate, obtained from sources believed to be accurate. Since the conditions and methods of use of our product are beyond our control, we disclaim any and all liability arising out of the improper use of this product or the information provided herewith.