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THE POWER OF THREE³

PHARMCO-AAPER
AND COMMERCIAL ALCOHOLS

Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300

MATERIAL SAFETY DATA SHEETS

Manufacturer: PHARMCO-AAPER
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Brookfield, CT 06804
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DIISOPROPANOLAMINE

PRODUCT NAME: DIISOPROPANOLAMINE
MSDS #: DW21320

2. COMPOSITION/INFORMATION ON INGREDIENTS

DIISOPROPANOLAMINE CAS# 000110-97-4 99%

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WHITE SOLID. SLIGHT AMMONIA ODOR. CAUSES EYE IRRITATION.
POTENTIAL HEALTH EFFECTS (SEE SECTION 11 FOR TOXICOLOGICAL DATA.)
EYE: MAY CAUSE SEVERE IRRITATION WITH CORNEAL INJURY.
SKIN: PROLONGED OR REPEATED EXPOSURE MAY CAUSE SKIN IRRITATION, EVEN A BURN. A SINGLE PROLONGED EXPOSURE IS NOT LIKELY TO RESULT IN THE MATERIAL BEING ABSORBED THROUGH SKIN IN HARMFUL AMOUNTS. DID NOT CAUSE ALLERGIC SKIN REACTIONS WHEN TESTED IN GUINEA PIGS. NOT CLASSIFIED AS CORROSIVE ACCORDING TO DOT.
INGESTION: SINGLE DOSE ORAL TOXICITY IS CONSIDERED TO BE LOW. SMALL AMOUNTS SWALLOWED INCIDENTAL TO NORMAL HANDLING OPERATIONS ARE NOT LIKELY TO CAUSE INJURY; SWALLOWING AMOUNTS LARGER THAN THAT MAY CAUSE INJURY.
INHALATION: AT ROOM TEMPERATURE, EXPOSURES TO VAPORS ARE UNLIKELY DUE TO PHYSICAL PROPERTIES; HIGHER TEMPERATURES MAY GENERATE VAPOR LEVELS SUFFICIENT TO CAUSE IRRITATION.
SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: IN ANIMALS, EFFECTS HAVE

BEEN REPORTED ON THE FOLLOWING ORGANS FOLLOWING INGESTION: BLADDER AND KIDNEY. THESE EFFECTS WERE ONLY OBSERVED AT EXAGGERATED DOSES.

CANCER INFORMATION: DID NOT CAUSE CANCER IN LONG-TERM ANIMAL STUDIES.

TERATOLOGY (BIRTH DEFECTS): NO RELEVANT INFORMATION FOUND.

REPRODUCTIVE EFFECTS: NO RELEVANT INFORMATION FOUND.

4. FIRST AID

EYE: IRRIGATE WITH FLOWING WATER IMMEDIATELY AND CONTINUOUSLY FOR 15 MINUTES. CONSULT MEDICAL PERSONNEL. SKIN: WASH OFF IN FLOWING WATER OR SHOWER.

INGESTION: IF SWALLOWED, SEEK MEDICAL ATTENTION. DO NOT INDUCE VOMITING UNLESS DIRECTED TO DO SO BY MEDICAL PERSONNEL.

INHALATION: REMOVE TO FRESH AIR IF EFFECTS OCCUR. CONSULT MEDICAL.

NOTE TO PHYSICIAN: IF BURN IS PRESENT, TREAT AS ANY THERMAL BURN, AFTER DECONTAMINATION.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: 276F, 136C

METHOD USED: SETAFLASH

AUTOIGNITION TEMPERATURE: NOT DETERMINED.

FLAMMABILITY LIMITS

LFL: NOT DETERMINED.

UFL: NOT DETERMINED.

HAZARDOUS COMBUSTION PRODUCTS: DURING A FIRE, SMOKE MAY CONTAIN THE ORIGINAL MATERIAL IN ADDITION TO UNIDENTIFIED TOXIC AND/OR IRRITATING COMPOUNDS. HAZARDOUS DECOMPOSITION PRODUCTS DEPEND UPON TEMPERATURE, AIR SUPPLY AND THE PRESENCE OF OTHER MATERIALS. HAZARDOUS DECOMPOSITION PRODUCTS MAY INCLUDE AND ARE NOT LIMITED TO NITROGEN OXIDES.

OTHER FLAMMABILITY INFORMATION: VIOLENT STEAM GENERATION OR ERUPTION MAY OCCUR UPON APPLICATION OF DIRECT WATER STREAM TO HOT LIQUIDS. SPILLS OF THESE ORGANIC LIQUIDS ON HOT FIBROUS INSULATIONS MAY LEAD TO LOWERING OF THE AUTOIGNITION TEMPERATURES POSSIBLY RESULTING IN SPONTANEOUS COMBUSTION.

EXTINGUISHING MEDIA: WATER FOG OR FINE SPRAY, CARBON DIOXIDE, DRY CHEMICAL, FOAM. ALCOHOL RESISTANT FOAMS (ATC TYPE) ARE PREFERRED IF AVAILABLE. GENERAL PURPOSE SYNTHETIC FOAMS (INCLUDING AFFF) OR PROTEIN FOAMS MAY FUNCTION, BUT MUCH LESS EFFECTIVELY. DO NOT USE DIRECT WATER STREAM. WILL SPREAD FIRE.

FIRE FIGHTING INSTRUCTIONS: KEEP PEOPLE AWAY. ISOLATE FIRE AND DENY UNNECESSARY ENTRY. BURNING LIQUIDS MAY BE MOVED BY FLUSHING WITH WATER TO PROTECT PERSONNEL AND MINIMIZE PROPERTY DAMAGE. BURNING LIQUIDS MAY BE EXTINGUISHED BY DILUTION WITH WATER.

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: WEAR POSITIVE-PRESSURE, SELF-CONTAINED BREATHING APPARATUS (SCBA) AND PROTECTIVE FIRE FIGHTING CLOTHING (INCLUDES FIRE-FIGHTING HELMET, COAT, PANTS, BOOTS AND GLOVES). IF PROTECTIVE EQUIPMENT IS NOT AVAILABLE OR NOT USED, FIGHT FIRE FROM A PROTECTED LOCATION OR SAFE DISTANCE.

6. ACCIDENTAL RELEASE MEASURES (SEE SECTION 15 FOR REGULATORY INFORMATION)

PROTECT PEOPLE: CLEAR NON-EMERGENCY PERSONNEL FROM AREA.
PROTECT THE ENVIRONMENT: CONTAIN MATERIAL TO PREVENT CONTAMINATION OF SOIL, SURFACE WATER OR GROUND WATER.
CLEANUP: COLLECT MATERIAL IN SUITABLE AND PROPERLY LABELED OPEN CONTAINERS.

7. HANDLING AND STORAGE

HANDLING: AVOID CONTACT WITH EYES, SKIN AND CLOTHING. AVOID BREATHING VAPORS. DO NOT USE SODIUM NITRITE OR OTHER NITROSATING AGENTS IN FORMULATIONS CONTAINING THIS PRODUCT.
SUSPECTED CANCER-CAUSING NITROSAMINES COULD BE FORMED.
STORAGE: DO NOT STORE IN ALUMINUM, COPPER, OR COPPER ALLOYS.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: PROVIDE GENERAL AND/OR LOCAL EXHAUST VENTILATION TO CONTROL AIRBORNE LEVELS BELOW THE EXPOSURE GUIDELINES.
PERSONAL PROTECTIVE EQUIPMENT
EYE/FACE PROTECTION: USE CHEMICAL GOGGLES.
SKIN PROTECTION: WHEN PROLONGED OR FREQUENTLY REPEATED CONTACT COULD OCCUR, USE PROTECTIVE CLOTHING IMPERVIOUS TO THIS MATERIAL. SELECTION OF SPECIFIC ITEMS SUCH AS FACESHIELD, GLOVES, BOOTS, APRON, OR FULL-BODY SUIT WILL DEPEND ON OPERATION.
RESPIRATORY PROTECTION: ATMOSPHERIC LEVELS SHOULD BE MAINTAINED BELOW THE EXPOSURE GUIDELINE. FOR MOST CONDITIONS, NO RESPIRATORY PROTECTION SHOULD BE NEEDED; HOWEVER, IF HANDLING AT ELEVATED TEMPERATURES WITHOUT SUFFICIENT VENTILATION, USE AN APPROVED AIR-PURIFYING RESPIRATOR.
EXPOSURE GUIDELINE(S): DIISOPROPANOLAMINE: DOW IHG IS 5 PPM.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: WHITE SOLID.
ODOR: SLIGHT AMMONIA ODOR.
VAPOR PRESSURE: < 0.1 MMHG @ 20C
VAPOR DENSITY: NOT DETERMINED.
BOILING POINT: 480F, 249C
SOLUBILITY IN WATER: COMPLETELY MISCIBLE.
SPECIFIC GRAVITY: 1.0 @ 40/4C
FREEZE POINT: 111F, 44C (SUPERCOOLS; FREEZING POINT MAY THEREFORE VARY).

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: STABLE UNDER RECOMMENDED STORAGE CONDITIONS. SEE STORAGE, SECTION 7.
CONDITIONS TO AVOID: PRODUCT CAN DECOMPOSE AT ELEVATED TEMPERATURES.
INCOMPATIBILITY WITH OTHER MATERIALS: AVOID CONTACT WITH STRONG OXIDIZERS, STRONG ACIDS.
HAZARDOUS DECOMPOSITION PRODUCTS: HAZARDOUS DECOMPOSITION PRODUCTS DEPEND UPON TEMPERATURE, AIR SUPPLY AND THE PRESENCE OF OTHER MATERIALS. HAZARDOUS DECOMPOSITION PRODUCTS MAY INCLUDE AND ARE NOT LIMITED TO: NITROGEN OXIDES.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

11. TOXICOLOGICAL INFORMATION

(SEE SECTION 3 FOR POTENTIAL HEALTH EFFECTS. FOR DETAILED TOXICOLOGICAL DATA, WRITE OR CALL THE ADDRESS OR NON-EMERGENCY NUMBER SHOWN IN SECTION 1)
SKIN: THE LD50 FOR SKIN ABSORPTION IN RABBITS IS 8000 MG/KG FOR 24 HOURS.
INGESTION: THE ORAL LD50 FOR RATS IS 2000-4000 MG/KG.
MUTAGENICITY: IN VITRO MUTAGENICITY STUDIES WERE NEGATIVE.

12. ECOLOGICAL INFORMATION

(FOR DETAILED ECOLOGICAL DATA, WRITE OR CALL THE ADDRESS OR NON-EMERGENCY NUMBER SHOWN IN SECTION 1)
ENVIRONMENTAL FATE
MOVEMENT & PARTITIONING: BIOCONCENTRATION POTENTIAL IS LOW (BCF LESS THAN 100 OR LOG POW LESS THAN 3). LOG OCTANOL/WATER PARTITION COEFFICIENT (LOG POW) IS -0.82. HENRY'S LAW CONSTANT (H) IS ESTIMATED TO BE 5.72E-10 ATM-M3/MOL. POTENTIAL FOR MOBILITY IN SOIL IS VERY HIGH (KOC BETWEEN 0 AND 50). SOIL ORGANIC CARBON/WATER PARTITION COEFFICIENT (KOC) IS ESTIMATED TO BE 21.77.
DEGRADATION & PERSISTENCE: MATERIAL IS READILY BIODEGRADABLE. PASSES OECD TEST(S) FOR READY BIODEGRADABILITY. BIODEGRADATION REACHED IN MANOMETRIC RESPIROMETRY TEST (OECD TEST NO. 301 F) AFTER 28 DAYS: 94%. BIODEGRADATION RATE MAY INCREASE SOIL AND/OR WATER WITH ACCLIMATION. UNDER AEROBIC SOIL CONDITIONS THE HALF-LIFE IS 1.6 DAYS. UNDER AEROBIC AQUATIC CONDITIONS THE HALF-LIFE IS 5.1 DAYS. THEORETICAL OXYGEN DEMAND (THOD) IS CALCULATED TO BE 2.41 P/P. CHEMICAL OXYGEN DEMAND (COD IS 1.86 P/P.
ECOTOXICITY: MATERIAL IS PRACTICALLY NON-TOXIC TO AQUATIC ORGANISMS ON AN ACUTE BASIS (LC50/EC50 >100 MG/L IN MOST SENSITIVE SPECIES TESTED). ACUTE LC50 FOR FATHEAD MINNOW (POMEPALES PROMELAS) IS GREATER THAN 100 MG/L. ACUTE LC50 FOR GOLDFISH (CARASSIUS AURATUS) IS 1100 MG/L TO GREATER THAN 5000 MG/L. ACUTE LC50 FOR GOLDEN ORFE (LEUSISCUS IDUS) IS 1000 MG/L. ACUTE IMMOBILIZATION EC50 FOR WATER FLEA DAPHNIA MAGNA IS 277.7 MG/L.

13. DISPOSAL CONSIDERATIONS

(SEE SECTION 15 FOR REGULATORY INFORMATION)

DISPOSAL: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND OR INTO ANY BODY OF WATER. ALL DISPOSAL METHODS MUST BE IN COMPLIANCE WITH ALL FEDERAL, STATE/PROVINCIAL AND LOCAL LAWS AND REGULATIONS. REGULATIONS MAY VARY IN DIFFERENT LOCATIONS. WASTE CHARACTERIZATIONS AND COMPLIANCE WITH APPLICABLE LAWS ARE THE RESPONSIBILITY SOLELY OF THE WASTE GENERATOR. THE DOW CHEMICAL COMPANY HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION 2 (COMPOSITION/INFORMATION ON INGREDIENTS). FOR UNUSED & UNCONTAMINATED PRODUCT, THE PREFERRED OPTIONS INCLUDE SENDING TO A LICENSED, PERMITTED: RECYCLER, RECLAIMER INCINERATOR OR OTHER THERMAL DESTRUCTION DEVICE.

14. TRANSPORT INFORMATION

DEPARTMENT OF TRANSPORTATION (D.O.T.): FOR DOT REGULATORY INFORMATION, IF REQUIRED, CONSULT TRANSPORTATION REGULATIONS,

PRODUCT SHIPPING PAPERS, OR CONTACT YOUR DOW REPRESENTATIVE.
CANADIAN TDG INFORMATION: FOR TDG REGULATORY INFORMATION, IF
REQUIRED, CONSULT TRANSPORTATION REGULATIONS, PRODUCT SHIPPING
PAPERS, OR CONTACT YOUR DOW REPRESENTATIVE.

15. REGULATORY INFORMATION (NOT MEANT TO BE ALL-INCLUSIVE—SELECTED
REGULATIONS REPRESENTED)

NOTICE: THE INFORMATION HEREIN IS PRESENTED IN GOOD FAITH AND
BELIEVED TO BE ACCURATE AS OF THE EFFECTIVE DATE SHOWN ABOVE. HOWEVER, NO
WARRANTY, EXPRESS OR IMPLIED IS GIVEN. REGULATORY REQUIREMENTS ARE SUBJECT
TO CHANGE AND MAY DIFFER FROM ONE LOCATION TO ANOTHER; IT IS THE BUYER'S
RESPONSIBILITY TO ENSURE THAT ITS ACTIVITIES COMPLY WITH FEDERAL, STATE OR
PROVINCIAL, AND LOCAL LAWS. THE FOLLOWING SPECIFIC INFORMATION IS MADE FOR
THE PURPOSE OF COMPLYING WITH NUMEROUS FEDERAL, STATE OR PROVINCIAL, AND
LOCAL LAWS AND REGULATIONS. SEE OTHER SECTIONS FOR HEALTH AND SAFETY
INFORMATION. SARA 313 INFORMATION: TO THE BEST OF OUR KNOWLEDGE, THIS
PRODUCT CONTAINS NO CHEMICAL SUBJECT TO SARA TITLE III SECTION 313 SUPPLIER
NOTIFICATION REQUIREMENTS.

SARA HAZARD CATEGORY: THIS PRODUCT HAS BEEN REVIEWED ACCORDING TO THE EPA
"HAZARD CATEGORIES" PROMULGATED UNDER SECTIONS 311 AND 312 OF THE
SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986 (SARA TITLE III) AND IS
CONSIDERED, UNDER APPLICABLE DEFINITIONS, TO MEET THE FOLLOWING CATEGORIES:
AN IMMEDIATE HEALTH HAZARD
A DELAYED HEALTH HAZARD

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires
notification of the National Response Center of release of quantities of Hazardous Substances equal or
greater than the reportable quantities (RQs) in 40 CFR 302.4. Components present in this product at a level
which could require reporting under the statute are: **NONE**

STATE RIGHT-TO-KNOW: THE FOLLOWING PRODUCT COMPONENTS ARE CITED ON
CERTAIN STATE LISTS AS MENTIONED. NON-LISTED COMPONENTS MAY BE SHOWN IN
THE COMPOSITION SECTION OF THE MSDS. CHEMICAL NAME CAS NUMBER LIST

2-PROPANOL, 1,1'-IMINOBIS- 000110-97-4 PA1 PA1 PA3
PA1=PENNSYLVANIA HAZARDOUS SUBSTANCE (PRESENT AT GREATER THAN OR EQUAL
TO 1.0%).

OSHA HAZARD COMMUNICATION STANDARD:
THIS PRODUCT IS A "HAZARDOUS CHEMICAL" AS DEFINED BY THE OSHA HAZARD
COMMUNICATION STANDARD, 29 CFR 1910.1200.

CANADIAN REGULATIONS

WHMIS INFORMATION: THE CANADIAN WORKPLACE HAZARDOUS MATERIALS
INFORMATION SYSTEM (WHMIS) CLASSIFICATION FOR THIS PRODUCT IS:
D2B – EYE OR SKIN IRRITANT REFER ELSEWHERE IN THE MSDS FOR SPECIFIC WARNINGS
AND SAFE HANDLING INFORMATION. REFER TO THE EMPLOYER'S WORKPLACE
EDUCATION PROGRAM.

CPR STATEMENT: THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE
HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS (CPR) AND
THE MSDS CONTAINS ALL THE INFORMATION REQUIRED BY THE CPR.

HAZARDOUS PRODUCTS ACT INFORMATION: THIS PRODUCT CONTAINS THE FOLLOWING INGREDIENTS WHICH ARE CONTROLLED PRODUCTS AND/OR ON THE INGREDIENT DISCLOSURE LIST (CANADIAN HPA SECTION 13 AND 14):
COMPONENTS: CAS # AMOUNT(%W/W) DIISOPROPANOLAMINE CAS# 000110-97-4 99%

16. OTHER INFORMATION

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

HEALTH 2

FLAMMABILITY 1

REACTIVITY 0

REVISION INDICATOR: NO REVISIONS. REVIEWED FOR CANADIAN REGULATIONS.

The information contained herein is based on data considered to be accurate based on the material as packaged. However, no warranty is expressed regarding the accuracy of these data or the results to be obtained from the use thereof. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It is the user's obligation to determine the conditions of safe use of the product. While this MSDS is based on technical data judged to be reliable, PHARMCO-AAPER assumes not responsibility for the completeness or accuracy of the information contained herein.