

MATERIAL SAFETY DATA SHEET (MSDS)

MSDS: C1866

This MSDS should be attached or kept with the respective product with which it is associated.

MATERIAL SAFETY DATA SHEET - C1866

NUFARM
MATERIAL SAFETY DATA SHEET
PRODEUCE (R*)

FOR CHEMICAL EMERGENCY, SPILL, FIRE, EXPOSURE, OR ACCIDENT, CALL CHEMTREC
DAY OR NIGHT: 1-800-424-9300.
FOR MEDICAL EMERGENCIES ONLY, CALL: 1-877-325-1840.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: PRODEUCE (R*)
EPA REG. NO.: 228-509
SYNONYMS: MIXTURE OF GLYPHOSATE AND PRODIAMINE
PRODUCT TYPE: HERBICIDE MIXTURE
COMPANY NAME: NUFARM AMERICAS INC.
DATE OF ISSUE: JUNE 2, 2010
SUPERSEDES: JANUARY 9, 2007
SECTIONS REVISED: 1, 2, 7, 8 AND 13

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:
APPEARANCE AND ODOR: YELLOW COLORED LIQUID WITH A FAINT ODOR.
WARNING STATEMENTS: CAUTION. KEEP OUT OF REACH OF CHILDREN. CAUSES MODERATE EYE IRRITATION.
POTENTIAL HEALTH EFFECTS:
LIKELY ROUTES OF EXPOSURE: INHALATION, EYE AND SKIN CONTACT.
EYE CONTACT: MODERATELY IRRITATING BASED ON TOXICITY STUDIES.
SKIN CONTACT: SLIGHTLY TOXIC AND SLIGHTLY IRRITATING BASED ON TOXICITY STUDIES.
INGESTION: SLIGHTLY TOXIC BASED ON TOXICITY STUDIES.
INHALATION: LOW INHALATION TOXICITY.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
SEE SECTION 11: TOXICOLOGICAL INFORMATION FOR MORE INFORMATION.
POTENTIAL ENVIRONMENTAL EFFECTS:
DRIFT AND RUNOFF FROM TREATED AREAS MAY BE HAZARDOUS TO AQUATIC ORGANISMS
SEE SECTION 12: ECOLOGICAL INFORMATION FOR MORE INFORMATION.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Table with 3 columns: COMPONENT, CAS NO., % BY WEIGHT. Rows include GLYPHOSATE, N-(PHOSPHONOMETHYL) GLYCINE, IN THE FORM OF ITS ISOPROPYLAMINE SALT (40.15%), PRODIAMINE (7.51%), OTHER INGREDIENTS INCLUDING: (52.34%), ETHOXYLATED TALLOWAMINES (61791-26-2).

4. FIRST AID MEASURES

IF IN EYES: HOLD EYE OPEN AND RINSE SLOWLY AND GENTLY WITH WATER FOR 15 TO 20 MINUTES.
IF ON SKIN OR CLOTHING: TAKE OFF CONTAMINATED CLOTHING. RINSE SKIN IMMEDIATELY WITH PLENTY OF WATER FOR 15 TO 20 MINUTES.
IF INHALED: MOVE PERSON TO FRESH AIR. IF PERSON IS NOT BREATHING, CALL 911 OR AN AMBULANCE, THEN GIVE ARTIFICIAL RESPIRATION, PREFERABLY BY MOUTH-TO-MOUTH, IF POSSIBLE.

IF SWALLOWED: CALL A POISON CONTROL CENTER OR DOCTOR IMMEDIATELY FOR TREATMENT ADVICE. HAVE PERSON SIP A GLASS OF WATER IF ABLE TO SWALLOW. DO NOT INDUCE VOMITTING UNLESS TOLD TO DO SO BY THE POISON CONTROL CENTER OR DOCTOR.

5. FIRE FIGHTING MEASURES

FLASH POINT: NOT APPLICABLE DUE TO AQUEOUS FORMULATION
AUTOIGNITION TEMPERATURE: NOT DETERMINED
FLAMMABILITY LIMITS: NOT DETERMINED
EXTINGUISHING MEDIA: USE WATER, DRY CHEMICAL, FOAM, OR CARBON DIOXIDE.
SPECIAL FIRE FIGHTING PROCEDURES: FIREFIGHTERS SHOULD WEAR NIOSH/MSHA APPROVED SELF-CONTAINED BREATHING APPARATUS AND FULL FIRE-FIGHTING TURN OUT GEAR.
UNUSUAL FIRE AND EXPLOSION HAZARDS: IF WATER IS USED TO FIGHT FIRE, CONTAIN RUNOFF, USING DIKES TO PREVENT CONTAMINATION OF WATER SUPPLIES.
HAZARDOUS DECOMPOSITION MATERIALS (UNDER FIRE CONDITIONS): MAY PRODUCE GASES SUCH AS OXIDES OF CARBON, NITROGEN, AND PHOSPHOROUS.
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) HAZARD RATING:
RATING FOR THIS PRODUCT: HEALTH 1, FLAMMABILITY 1, REACTIVITY 0

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: WEAR APPROPRIATE PROTECTIVE GEAR FOR THE SITUATION.
ENVIRONMENTAL PRECAUTIONS: PREVENT MATERIAL FROM ENTERING PUBLIC SEWER SYSTEMS OR ANY WATERWAYS. DO NOT FLUSH TO DRAIN.
METHODS FOR CONTAINMENT: DIKE SPILL USING ABSORBENT OR IMPERVIOUS MATERIALS SUCH AS EARTH, SAND OR CLAY.
METHODS FOR CLEANUP AND DISPOSAL: PUMP ANY FREE LIQUID INTO AN APPROPRIATE CLOSED CONTAINER.
OTHER INFORMATION: LARGE SPILLS MAY BE REPORTABLE TO THE NATIONAL RESPONSE CENTER (800-424-8802) AND TO STATE AND/OR LOCAL AGENCIES.

7. HANDLING AND STORAGE

HANDLING: AVOID CONTACT WITH EYES OR CLOTHING. WEAR PROTECTIVE EYEWEAR. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.
SPRAY SOLUTIONS OF THIS PRODUCT SHOULD BE MIXED, STORED AND APPLIED USING ONLY STAINLESS STEEL, ALUMINUM, FIBERGLASS, PLASTIC OR PLASTIC-LINED CONTAINERS.
DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS.

STORAGE: STORE ABOVE 10 DEG. F (-12 DEG. C) TO KEEP PRODUCT FROM CRYSTALLIZING. CRYSTALS WILL SETTLE TO THE BOTTOM. IF ALLOWED TO CRYSTALLIZE, PLACE IN A WARM ROOM 68 DEG. F (20 DEG. C) FOR SEVERAL DAYS TO REDISSOLVE AND SHAKE OR ROLL TO MIX WELL BEFORE USING.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: WHERE ENGINEERING CONTROLS ARE INDICATED BY SPECIFIC USE CONDITIONS OR A POTENTIAL FOR EXCESSIVE EXPOSURE, USE LOCAL EXHAUST VENTILATION AT THE POINT OF GENERATION.
PERSONAL PROTECTIVE EQUIPMENT:

EYE/FACE PROTECTION:
TO AVOID CONTACT WITH EYES, WEAR CHEMICAL GOGGLES OR SHIELDED SAFETY GLASSES. AN EMERGENCY EYEWASH OR WATER SUPPLY SHOULD BE READILY ACCESSIBLE TO THE WORK AREA.

SKIN PROTECTION:
TO AVOID CONTACT WITH SKIN, WEAR LONG PANTS, LONG-SLEEVED SHIRT, SOCKS AND SHOES. AN EMERGENCY SHOWER OR WATER SUPPLY SHOULD BE READILY ACCESSIBLE TO THE WORK AREA.

RESPIRATORY PROTECTION:
NOT NORMALLY REQUIRED. IF VAPORS OR MISTS EXCEED ACCEPTABLE LEVELS, WEAR NIOSH APPROVED AIR-PURIFYING RESPIRATOR WITH CARTRIDGES/CANISTERS APPROVED FOR USE AGAINST PESTICIDES.

GENERAL HYGIENE CONSIDERATIONS:
PERSONAL HYGIENE IS AN IMPORTANT WORK PRACTICE EXPOSURE CONTROL MEASURE AND THE FOLLOWING GENERAL MEASURES SHOULD BE TAKEN WHEN WORKING WITH OR HANDLING THIS MATERIAL:

- 1) DO NOT STORE, USE AND/OR CONSUME FOODS, BEVERAGES, TOBACCO PRODUCTS, OR COSMETICS IN AREAS WHERE THIS MATERIAL IS STORED
- 2) WASH HANDS AND FACE CAREFULLY BEFORE EATING, DRINKING, USING TOBACCO, APPLYING COSMETICS OR USING THE TOILET.

EXPOSURE GUIDELINES:

COMPONENT	OSHA TWA	OSHA STEL	ACGIH TWA	ACGIH STEL	UNIT
ISOPROPYLAMINE SALT OF GLYPHOSATE	NE	NE	NE	NE	
PRODIAMINE	NE	NE	NE	NE	
ETHOXYLATED TALLOWAMINES	NE	NE	NE	NE	

NE = NOT ESTABLISHED

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: YELLOW COLORED LIQUID WITH A FAINT ODOR.

BOILING POINT: NOT DETERMINED

SOLUBILITY IN WATER: DISPERSIBLE

DENSITY: 9.96 POUNDS/GALLON

SPECIFIC GRAVITY: 1.196 @ 20 DEG. C

EVAPORATION RATE: NOT DETERMINED

VAPOR DENSITY: NOT DETERMINED

FREEZING POINT: NOT DETERMINED

VAPOR PRESSURE: NOT DETERMINED

pH: 4.5 - 5.5 (1% SOLUTION)

VISCOSITY: 408.082 CST @ 20 DEG. C

NOTE:
PHYSICAL DATA ARE TYPICAL VALUES, BUT MAY VARY FROM SAMPLE TO SAMPLE. A TYPICAL VALUE SHOULD NOT BE CONSTRUED AS A GUARANTEED ANALYSIS OR AS A SPECIFICATION.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:
THIS MATERIAL IS STABLE UNDER NORMAL HANDLING AND STORAGE CONDITIONS.

CONDITIONS TO AVOID: EXCESSIVE HEAT. DO NOT STORE NEAR HEAT OR FLAME.

INCOMPATIBLE MATERIALS:

STRONG OXIDIZING AGENTS:
BASES AND ACIDS. THIS PRODUCT REACTS WITH GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) TO PRODUCE HYDROGEN GAS THAT MAY FORM A HIGHLY COMBUSTIBLE GAS MIXTURE WHICH COULD FLASH OR EXPLODE.

HAZARDOUS DECOMPOSITION PRODUCTS:
UNDER FIRE CONDITIONS MAY PRODUCE GASES SUCH AS OXIDES OF CARBON, NITROGEN, AND PHOSPHOROUS.

HAZARDOUS REACTIONS: HAZARDOUS POLYMERIZATION WILL NOT OCCUR.

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA:
DATA FROM LABORATORY STUDIES ON THIS PRODUCT ARE SUMMARIZED BELOW:

ORAL:
RAT LD50: >5,000 MG/KG (FEMALE)

DERMAL:
RAT LD50: >5,000 MG/KG

INHALATION:
RAT 4-HR LC50: >2.06 MG/L

EYE IRRITATION:
RABBIT: MILDLY IRRITATING

SKIN IRRITATION:
RABBIT: SLIGHTLY IRRITATING

SKIN SENSITIZATION:
NOT A CONTACT SENSITIZER IN GUINEA PIGS FOLLOWING REPEATED SKIN EXPOSURE.

SUBCHRONIC (TARGET ORGAN) EFFECTS:
REPEATED OVEREXPOSURE TO GLYPHOSATE MAY DECREASE BODY WEIGHT GAINS AND EFFECTS TO LIVER. REPEATED OVEREXPOSURE TO PRODIAMINE MAY DECREASE BODY WEIGHT GAINS AND AFFECT THE LIVER AND THYROID. THE SURFACTANT COMPONENT OF THIS PRODUCT IS REPORTED TO CAUSE IRRITATION TO THE EYES AND SKIN AND MAY CONTRIBUTE TO THE IRRITATION POTENTIAL REPORTED FOR THIS PRODUCT.

INGESTION MAY PRODUCE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING AND DIARRHEA.

CARCINOGENICITY / CHRONIC HEALTH EFFECTS:
PROLONGED OVEREXPOSURE TO GLYPHOSATE MAY CAUSE EFFECTS TO THE LIVER. PROLONGED OVEREXPOSURE TO PRODIAMINE MAY AFFECT LIVER AND THYROID. THERE WAS NO EVIDENCE OF CARCINOGENICITY IN ANIMAL STUDIES USING GLYPHOSATE. EPA HAS GIVEN GLYPHOSATE A GROUP E CLASSIFICATION (EVIDENCE OF NON-CARCINOGENICITY IN HUMANS). IN ANIMAL STUDIES WITH PRODIAMINE, BENIGN THYROID TUMORS WERE SEEN IN RATS, BUT NONE WERE OBSERVED IN MICE.

REPRODUCTIVE TOXICITY:
IN LABORATORY ANIMAL STUDIES WITH GLYPHOSATE AND PRODIAMINE, EFFECTS ON REPRODUCTION HAVE BEEN SEEN ONLY AT DOSES THAT PRODUCED TOXICITY TO THE PARENT ANIMALS. FOR PRODIAMINE THESE EFFECTS WERE SEEN AT HIGH DOSES.

DEVELOPMENTAL TOXICITY:
IN ANIMAL STUDIES, GLYPHOSATE DID NOT CAUSE BIRTH DEFECTS IN ANIMALS; OTHER EFFECTS WERE SEEN IN THE FETUS ONLY AT DOSES WHICH CAUSED TOXIC EFFECTS TO THE MOTHER. FOR PRODIAMINE, FETAL TOXICITY HAS BEEN SEEN AT HIGH DOSE LEVELS IN RATS, DEVELOPMENTAL AND MATERNAL TOXICITY OBSERVED AT 1 G/KG/DAY.

GENOTOXICITY:
GLYPHOSATE HAS PRODUCED NO GENETIC CHANGES IN A VARIETY OF STANDARD TESTS USING ANIMALS AND ANIMAL OR BACTERIAL CELLS. ANIMAL TESTS WITH PRODIAMINE DID NOT DEMONSTRATE MUTAGENIC EFFECTS.

ASSESSMENT CARCINOGENICITY: NONE LISTED WITH ACGIH, IARC, NTP OR OSHA.

SEE SECTION 2: HAZARDS IDENTIFICATION FOR MORE INFORMATION.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

DATA ON GLYPHOSATE TECHNICAL:
96-HOUR LC50 BLUEGILL: 120 MG/L
96-HOUR LC50 RAINBOW TROUT: 86 MG/L
48-HOUR LC50 DAPHNIA: 780 MG/L
BOBWHITE QUAIL 8-DAY DIETARY LC50: >4,500 PPM
MALLARD DUCK 8-DAY DIETARY LC50: >4,500 PPM

DATA ON PRODIAMINE:
96-HOUR LC50 BLUEGILL SUNFISH: 0.55 PPM
96-HOUR LC50 RAINBOW TROUT: 0.83 PPM
48-HOUR LC50 DAPHNIA MAGNA: 0.66 PPM
BOBWHITE QUAIL 8-DAY DIETARY LC50: >10,000 PPM
MALLARD DUCK 8-DAY DIETARY LC50: >10,000 PPM
BEES LC50/EC50: >100 (MICRO)G/BEE

ENVIRONMENTAL FATE:
IN THE ENVIRONMENT, SALTS OF GLYPHOSATE RAPIDLY DISSOCIATE TO GLYPHOSATE, WHICH ADSORBS STRONGLY TO SOIL AND IS EXPECTED TO BE IMMOBILE IN SOIL. GLYPHOSATE IS READILY DEGRADED BY SOIL MICROBES TO AMPA (AMINOMETHYL PHOSPHONIC ACID) THAT IS FURTHER DEGRADED TO CARBON DIOXIDE. GLYPHOSATE AND AMPA ARE UNLIKELY TO ENTER GROUND WATER DUE TO THEIR STRONG ADSORPTIVE CHARACTERISTICS. TERRESTRIALLY-APPLIED GLYPHOSATE HAS THE POTENTIAL TO MOVE INTO SURFACE WATERS THROUGH SOIL EROSION BECAUSE IT MAY BE ADSORBED TO SOIL PARTICLES SUSPENDED IN THE RUNOFF. AQUATIC APPLICATIONS REGISTERED FOR CERTAIN FORMULATIONS MAY ALSO RESULT IN GLYPHOSATE ENTERING SURFACE WATERS. COMPLETE DEGRADATION IS SLOW, BUT DISSIPATION IN WATER IS RAPID BECAUSE GLYPHOSATE IS BOUND IN SEDIMENTS AND HAS LOW BIOLOGICAL AVAILABILITY TO AQUATIC ORGANISMS. THESE CHARACTERISTICS SUGGEST A LOW POTENTIAL FOR BIOCONCENTRATION IN AQUATIC ORGANISMS AND THIS HAS BEEN VERIFIED BY LABORATORY INVESTIGATIONS OF GLYPHOSATE BIOCONCENTRATION IN NUMEROUS MARINE AND FRESHWATER ORGANISMS WITH AND WITHOUT SOIL. THE MAXIMUM WHOLE BODY BIOCONCENTRATION FACTORS FOR FISH WERE OBSERVED TO BE LESS THAN 1X. BIOCONCENTRATION FACTORS FOR SEDIMENT DWELLING MOLLUSKS AND CRAYFISH TENDED TO BE SLIGHTLY HIGHER, BUT WERE ALWAYS LESS THAN 10X. IN ADDITION, ANY RESIDUES ACCUMULATED IN ORGANISMS WERE RAPIDLY ELIMINATED.

PRODIAMINE DOES NOT BIOACCUMULATE. PRODIAMINE IS PERSISTENT IN SOIL (IMMOBILE) AND HAS AN AVERAGE HALF-LIFE OF APPROXIMATELY 120 DAYS. PRODIAMINE IS STABLE IN WATER (SINKS IN WATER AFTER 24 HOURS).

13. DISPOSAL CONSIDERATIONS

CONTAINER DISPOSAL:
NONREFILLABLE CONTAINER. DO NOT REUSE OR REFILL THIS CONTAINER.

IF EMPTY:
DO NOT REUSE THIS CONTAINER. PLACE IN TRASH OR OFFER FOR RECYCLING IF AVAILABLE.

IF PARTLY FILLED:
IF PRODUCT CANNOT BE USED AS DIRECTED, CALL YOUR LOCAL SOLID WASTE AGENCY FOR DISPOSAL INSTRUCTIONS. NEVER PLACE UNUSED PRODUCT DOWN ANY INDOOR (INCLUDING TOILET) OR OUTDOOR (INCLUDING SEWER) DRAIN.

14. TRANSPORTATION INFORMATION

FOLLOW THE PRECAUTIONS INDICATED IN SECTION 7: HANDLING AND STORAGE OF THIS MSDS.

DOT:
<119 GALLONS PER COMPLETED PACKAGE: NOT REGULATED

>= 119 GALLONS PER COMPLETED PACKAGE:
UN 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (PRODIAMINE), 9, III, MARINE POLLUTANT

IMDG:
UN 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (PRODIAMINE), 9, III, MARINE POLLUTANT

IATA: NON REGULATED

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

TSCA INVENTORY:
THIS PRODUCT IS EXEMPTED FROM TSCA BECAUSE IT IS SOLELY FOR FIFRA REGULATED USE.

SARA HAZARD NOTIFICATION/REPORTING:

HAZARD CATEGORIES UNDER CRITERIA OF SARA TITLE III RULES (40 CFR PART 370):
IMMEDIATE, DELAYED

SECTION 313 TOXIC CHEMICAL(S): NONE

REPORTABLE QUANTITY (RQ) UNDER U.S. CERCLA: NONE

RCRA WASTE CODE: NONE

STATE INFORMATION:
OTHER STATE REGULATIONS MAY APPLY. CHECK INDIVIDUAL STATE REQUIREMENTS.

CALIFORNIA PROPOSITION 65: NOT LISTED

16. OTHER INFORMATION

THIS MATERIAL SAFETY DATA SHEET (MSDS) SERVES DIFFERENT PURPOSES THAN AND DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (ATTACHED TO AND ACCOMPANYING THE PRODUCT CONTAINER). THIS MSDS PROVIDES IMPORTANT HEALTH, SAFETY AND ENVIRONMENTAL INFORMATION FOR EMPLOYERS, EMPLOYEES, EMERGENCY RESPONDERS AND OTHERS HANDLING LARGE QUANTITIES OF THE PRODUCT IN ACTIVITIES GENERALLY OTHER THAN PRODUCT USE, WHILE THE LABELING PROVIDES THAT INFORMATION SPECIFICALLY FOR PRODUCT USE IN THE ORDINARY COURSE.

USE, STORAGE AND DISPOSAL OF PESTICIDE PRODUCTS ARE REGULATED BY THE EPA UNDER THE AUTHORITY OF THE FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT (FIFRA) THROUGH THE PRODUCT LABELING, AND ALL NECESSARY AND APPROPRIATE PRECAUTIONARY, USE, STORAGE, AND DISPOSAL INFORMATION IS SET FORTH ON THAT LABELING. IT IS A VIOLATION OF FEDERAL LAW TO USE A PESTICIDE PRODUCT IN ANY MANNER NOT PRESCRIBED ON THE EPA-ACCEPTED LABEL.

ALTHOUGH THE INFORMATION AND RECOMMENDATIONS SET FORTH HEREIN (HEREINAFTER "INFORMATION") ARE PRESENTED IN GOOD FAITH AND BELIEVED TO BE CORRECT AS OF THE DATE HEREOF, NUFARM AMERICAS INC. MAKES NO REPRESENTATIONS AS TO THE COMPLETENESS OR ACCURACY THEREOF. INFORMATION IS SUPPLIED UPON THE CONDITION THAT THE PERSONS RECEIVING SAME WILL MAKE THEIR OWN DETERMINATION AS TO ITS SUITABILITY FOR THEIR PURPOSES PRIOR TO USE. IN NO EVENT WILL NUFARM AMERICAS INC. BE RESPONSIBLE FOR DAMAGES OF ANY NATURE WHATSOEVER RESULTING FROM THE USE OF OR RELIANCE UPON INFORMATION. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

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