1. PRODUCT AND COMPANY IDENTIFICATION

Product name
LANDMASTER® BW Herbicide

EPA Reg. No.
524-351

Chemical name
Not applicable.

Synonyms
None.

Company
MONSANTO COMPANY, 800 N. Lindbergh Blvd., St. Louis, MO, 63167
Telephone: 800-332-3111, Fax: 314-694-5557

Emergency numbers
FOR CHEMICAL EMERGENCY, SPILL LEAK, FIRE, EXPOSURE, OR ACCIDENT Call CHEMTREC - Day or Night: 1-800-424-9300 toll free in the continental U.S., Puerto Rico, Canada, or Virgin Islands. For calls originating elsewhere: 703-527-3887 (collect calls accepted).
FOR MEDICAL EMERGENCY - Day or Night: 314-694-4000 (collect calls accepted).

2. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient
Isopropylamine salt of N-(phosphonomethyl)glycine; {Isopropylamine salt of glyphosate}
Isopropylamine salt of 2,4-dichlorophenoxyacetic acid; {Isopropylamine salt of 2,4-D}

Composition

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS No.</th>
<th>% by weight (approximate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropylamine salt of glyphosate</td>
<td>38641-94-0</td>
<td>12.9</td>
</tr>
<tr>
<td>Isopropylamine salt of 2,4-D</td>
<td>5742-17-6</td>
<td>20.6</td>
</tr>
<tr>
<td>Surfactant</td>
<td>61791-26-2</td>
<td>&gt;=10 - &lt;=20</td>
</tr>
<tr>
<td>N-methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td>&lt;=7</td>
</tr>
<tr>
<td>Water and minor formulating ingredients</td>
<td></td>
<td>44.8</td>
</tr>
</tbody>
</table>

The specific chemical identity is being withheld because it is trade secret information of Monsanto Company.

OSHA Status
This product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

3. HAZARDS IDENTIFICATION

Emergency overview
Appearance and odour (colour/form/odour): Yellow - Brown / Liquid / Mild

DANGER!
CAUSES EYE BURNS
HARMFUL IF SWALLOWED
MAY CAUSE ALLERGIC SKIN REACTION

Potential health effects
Likely routes of exposure
- Skin contact, eye contact

Eye contact, short term
- Risk of serious damage to eyes.

Skin contact, short term
- May cause allergic skin reaction.

Inhalation, short term
- Not expected to produce significant adverse effects when recommended use instructions are followed.

Single ingestion
- Harmful if swallowed.

Refer to section 11 for toxicological and section 12 for environmental information.

4. FIRST AID MEASURES

Eye contact
- Immediately flush with plenty of water.
- Continue for at least 15 minutes.
- If easy to do, remove contact lenses.
- Obtain medical attention from an eye specialist.

Skin contact
- Wash affected skin with plenty of water.
- Take off contaminated clothing, wristwatch, jewellery.
- If there are persistent symptoms, obtain medical advice.
- Wash clothes and clean shoes before re-use.

Inhalation
- Remove to fresh air.

Ingestion
- Rinse mouth thoroughly with water.
- Never give anything by mouth to an unconscious person.
- Do NOT induce vomiting unless directed by medical personnel.
- If symptoms occur, get medical attention.

Advice to doctors
- This product is not an inhibitor of cholinesterase.

Antidote
- Treatment with atropine and oximes is not indicated.

5. FIRE-FIGHTING MEASURES

Flash point
- None.

Extinguishing media
- Recommended: Water, foam, dry chemical, carbon dioxide (CO2)

Unusual fire and explosion hazards
- Minimise use of water to prevent environmental contamination.
- Environmental precautions: see section 6.

Hazardous products of combustion
- Carbon monoxide (CO), phosphorus oxides (PxOy), nitrogen oxides (NOx), hydrogen chloride (HCl)
Fire fighting equipment
- Self-contained breathing apparatus.
- Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
- Use personal protection recommended in section 8.

Environmental precautions
- Minimise spread.
- Contain spillage with sand bags or other means.
- Keep out of drains, sewers, ditches and water ways.
- Do NOT contaminate water when disposing of rinse waters.

Methods for cleaning up
- SMALL QUANTITIES:
  - Absorb in earth, sand or absorbent material.
  - Wash spill area with detergent and water.
  - Minimise use of water to prevent environmental contamination.
- LARGE QUANTITIES:
  - Contain spillage with sand bags or other means.
  - Dig up heavily contaminated soil.
  - Collect in containers for reclamation or disposal.
  - Place leaking containers in oversize leakproof drums for transport.
  - Refer to section 7 for types of containers.

Refer to section 13 for disposal of spilled material.

7. HANDLING AND STORAGE

Good industrial practice in housekeeping and personal hygiene should be followed.

Handling
- Avoid contact with eyes, skin and clothing.
- When using do not eat, drink or smoke.
- Wash hands thoroughly after handling or contact.
- Thoroughly clean equipment after use.
- Do not contaminate drains, sewers and water ways when disposing of equipment rinse water.
- Refer to section 13 for disposal of rinse water.
- Wash contaminated clothing before re-use.
- Emptied containers retain vapour and product residue.
- FOLLOW LABELED WARNINGS EVEN AFTER CONTAINER IS EMPTIED.

Storage
- Minimum storage temperature: 40 °F
- Compatible materials for storage: stainless steel, aluminium, fibreglass, plastic, glass lining
- Incompatible materials for storage: galvanised steel, unlined mild steel, see section 10.
- Keep out of reach of children.
- Keep away from food, drink and animal feed.
- Keep only in the original container.
- Partial crystallization may occur on prolonged storage below the minimum storage temperature.
- If frozen, place in warm room and shake frequently to put back into solution.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION
### Airborne exposure limits

<table>
<thead>
<tr>
<th>Components</th>
<th>Exposure Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropylamine salt of glyphosate</td>
<td>No specific occupational exposure limit has been established.</td>
</tr>
<tr>
<td>Isopropylamine salt of 2,4-D</td>
<td>No specific occupational exposure limit has been established. ACGIH TLV and OSHA PEL are 10 mg/m³ for the acid.</td>
</tr>
<tr>
<td>Surfactant</td>
<td>No specific occupational exposure limit has been established.</td>
</tr>
<tr>
<td>N-methyl-2-pyrrolidone</td>
<td>TLV (ACGIH): No specific occupational exposure limit has been established. PEL (OSHA): No specific occupational exposure limit has been established. MWPEG (Monsanto Workplace Permissible Exposure Limit): 2 ppm: skin</td>
</tr>
<tr>
<td>Water and minor formulating ingredients</td>
<td>No specific occupational exposure limit has been established.</td>
</tr>
</tbody>
</table>

### Engineering controls
- Provide local exhaust ventilation.
- Have eye wash facilities immediately available at locations where eye contact can occur.

### Eye protection
- If there is potential for contact:
  - Wear chemical goggles.
  - Applicators and other handlers must wear eye protection.

### Skin protection
- Wear chemical resistant gloves.
- Applicators and other handlers must wear:
  - Wear long sleeved shirt, long pants and shoes with socks.

### Respiratory protection
- If airborne exposure is excessive:
  - Wear respirator.

When recommended, consult manufacturer of personal protective equipment for the appropriate type of equipment for a given application.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour/colour range</td>
<td>Yellow - Brown</td>
</tr>
<tr>
<td>Form</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>Mild</td>
</tr>
<tr>
<td>Freezing point</td>
<td>14 °F</td>
</tr>
<tr>
<td>Flash point</td>
<td>None.</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.1308 ± 0.0002</td>
</tr>
<tr>
<td>Specific gravity (20 °C / 15.6 °C)</td>
<td>1.1308 ± 0.0002</td>
</tr>
<tr>
<td>Solubility</td>
<td>Water: Soluble</td>
</tr>
<tr>
<td>pH</td>
<td>5.9 @ 54 g/l</td>
</tr>
</tbody>
</table>

### 10. STABILITY AND REACTIVITY

**Stability**
Stable under normal conditions of handling and storage.

**Hazardous decomposition**
Thermal decomposition: Hazardous products of combustion: see section 5.

**Materials to avoid/Reactivity**
Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

### 11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists and other health professionals.

Data obtained on product and components are summarized below.

**Acute oral toxicity**
- **Rat, LD50:** 3,860 mg/kg body weight
  - Slightly toxic.
  - FIFRA category III.

**Acute dermal toxicity**
- **Rabbit, LD50:** > 6,366 mg/kg body weight
  - Practically non-toxic.
  - FIFRA category IV.

**Skin irritation**
- **Rabbit, 6 animals, modified Draize test:**
  - Days to heal: 3
  - Primary Irritation Index (PII): 0.6/8.0
  - Slight irritation.
  - FIFRA category IV.

**Eye irritation**
- **Rabbit, 6 animals, Draize test:**
  - Days to heal: > 21
  - Severe irritation.
  - FIFRA category I.

**Acute inhalation toxicity**
- **Rat, LC50, 4 hours, aerosol:**
  - Slightly toxic.
  - FIFRA category III.
  - No 4-hr LC50 at the maximum achievable concentration.

**Skin sensitization**
- **Guinea pig, 9-induction Buehler test:**
  - Positive incidence: 10%
  - Negative.

**N-(phosphonomethyl)glycine; (glyphosate)**

**Mutagenicity**
- **In vitro and in vivo mutagenicity test(s):**
  - Not mutagenic.

**Repeated dose toxicity**
- **Rabbit, dermal, 21 days:**
  - NOAEL toxicity: > 5,000 mg/kg body weight/day
  - Target organs/systems: none
  - Other effects: none

- **Rat, oral, 3 months:**
NOAEL toxicity: > 20,000 mg/kg diet
Target organs/systems: none
Other effects: none

**Carcinogenicity**

**Mouse, oral, 24 months:**
- NOEL tumour: > 30,000 mg/kg diet
- NOAEL toxicity: ~ 5,000 mg/kg diet
- Tumours: none
- Target organs/systems: liver
  Other effects: decrease of body weight gain, histopathologic effects

**Rat, oral, 24 months:**
- NOEL tumour: > 20,000 mg/kg diet
- NOAEL toxicity: ~ 8,000 mg/kg diet
- Tumours: none
- Target organs/systems: eyes
  Other effects: decrease of body weight gain, histopathologic effects

**Toxicity to reproduction/fertility**

**Rat, oral, 3 generations:**
- NOAEL toxicity: > 30 mg/kg body weight
- NOAEL reproduction: > 30 mg/kg body weight
- Target organs/systems in parents: none
  Other effects in parents: none
- Target organs/systems in pups: none
  Other effects in pups: none

**Developmental toxicity/teratogenicity**

**Rat, oral, 6 - 19 days of gestation:**
- NOAEL toxicity: 1,000 mg/kg body weight
- NOAEL development: 1,000 mg/kg body weight
- Other effects in mother animal: decrease of body weight gain, decrease of survival
  Developmental effects: weight loss, post-implantation loss, delayed ossification
  Effects on offspring only observed with maternal toxicity.

**Rabbit, oral, 6 - 27 days of gestation:**
- NOAEL toxicity: 175 mg/kg body weight
- NOAEL development: 175 mg/kg body weight
- Target organs/systems in mother animal: none
- Other effects in mother animal: decrease of survival
  Developmental effects: none

**Isopropylamine salt of 2,4-D**

**EXPERIENCE WITH HUMAN EXPOSURE**

**Eye contact, short term, accidental misuse:**
- Eye effects: irritation

**Skin contact, prolonged, accidental misuse:**
- Skin effects: irritation

**2,4-D acid**

**Mutagenicity**

In vitro and in vivo mutagenicity test(s):
- Not mutagenic.

**Repeated dose toxicity**

**Mouse, oral:**
- NOAEL toxicity: 15 mg/kg body weight/day
- Target organs/systems: kidneys, liver
  Other effects: histopathologic effects, blood biochemistry effects, organ weight change
Rat, oral, 90 days:
- NOAEL toxicity: 15 mg/kg body weight/day
- Target organs/systems: adrenals, kidneys, liver
- Other effects: histopathologic effects, weight loss, organ weight change, blood biochemistry effects

Carcinogenicity

Dog, oral, 1 years:
- NOAEL toxicity: 1 mg/kg body weight/day
- Target organs/systems: kidneys, liver
- Other effects: histopathologic effects, blood biochemistry effects

Mouse, oral, 2 years:
- NOEL tumour: >= 45 mg/kg body weight/day
- NOAEL toxicity: 1 mg/kg body weight/day
- Tumours: none
- Target organs/systems: adrenals, kidneys
- Other effects: organ weight change, histopathologic effects

Rat, oral, 2 years:
- NOEL tumour: 45 mg/kg body weight/day
- NOAEL toxicity: 1 mg/kg body weight/day
- Tumours: brain
- Benign tumours.

Toxicity to reproduction/fertility

Rat, oral, 2 generations:
- NOAEL toxicity: 5 mg/kg body weight/day
- NOAEL reproduction: 5 mg/kg body weight/day
- Other effects in pups: decrease of body weight gain

Developmental toxicity/teratogenicity

Rabbit, oral, 6 - 18 days of gestation:
- NOEL toxicity: 90 mg/kg body weight
- NOEL development: 90 mg/kg body weight
- Target organs/systems in mother animal: none
- Developmental effects: none
- Other effects in foetus: none

Rat, oral, 6 - 15 days of gestation:
- NOAEL development: 75 mg/kg body weight
- Developmental effects: delayed ossification
- Effects on offspring only observed with maternal toxicity.

Acute neurotoxicity

Rat, oral, single dose, gavage:
- NOAEL: 67 mg/kg body weight
- Other effects: decreased activity, equilibrium disturbances

EXPERIENCE WITH HUMAN EXPOSURE

Ingestion, short term, intentional misuse:
- Eye effects: narrowed pupils (miosis)
- Gastro-intestinal effects: irritation
- Musculoskeletal effects: jerky muscle movements, stiffness (myotonia), muscle injury (rhabdomyolysis), weakness
- Cardiovascular effects: rapid heart rate (tachycardia), abnormal heart rhythm (cardiac dysrhythmia), decreased heart output (myocardial depression)
- General/systemic effects: fever
- Autonomic system effects: increased sweating
- Neurological effects: convulsions, disturbance of level of consciousness
- Laboratory effects - blood chemistry: mild acidosis, elevated creatininine
- Laboratory effects - hepatic: elevated aspartate aminotransferase/serum glutamic-oxaloacetic transaminase (AST/SGOT), elevated alanine aminotransferase/serum glutamic-pyruvic transaminase (ALT/SGPT), elevated alkaline phosphatase
Surfactant

Mutagenicity
In vitro and in vivo mutagenicity test(s):
Not mutagenic.

Repeated dose toxicity
Rat, oral, 1 months:
NOAEL toxicity: 800 mg/kg diet
Target organs/systems: none
Other effects: decrease of food consumption, weight loss, decrease of body weight gain, soft stools
Rat, oral, 3 months:
NOAEL toxicity: 500 mg/kg diet
Target organs/systems: none
Other effects: decrease of food consumption, weight loss, decrease of body weight gain, haematological effects, histopathologic effects, soft stools

Developmental toxicity/teratogenicity
Rat, oral, 6 - 15 days of gestation:
NOAEL toxicity: 15 mg/kg body weight/day
NOAEL development: > 300 mg/kg body weight/day
Target organs/systems in mother animal: none
Other effects in mother animal: weight loss, decrease of body weight gain, decrease of survival, decrease of food consumption
Developmental effects: none

N-methyl-2-pyrrolidone

Mutagenicity
Ames test(s):
Not mutagenic with and without metabolic activation.

Micronucleus test(s):
Not mutagenic.

Repeated dose toxicity
Mouse, oral, 28 days:
NOAEL toxicity: 2,500 mg/kg diet
Target organs/systems: kidneys
Other effects: histopathologic effects
Rat, oral, 28 days:
NOAEL toxicity: 6,000 mg/kg diet
Rat, inhalation, 4 weeks:
NOAEL toxicity: 0.5 mg/L
Other effects: decreased activity, increased mortality, breathing irregularities

Carcinogenicity
Rat, inhalation, 2 years:
NOEL tumour: > 0.4 mg/L
NOAEL toxicity: 0.4 mg/L
Tumours: none

Toxicity to reproduction/fertility
Rat, inhalation, 2 generations:
NOEL toxicity: 51 ppm
NOEL reproduction: 51 ppm
Target organs/systems in parents: none
Other effects in parents: decreased hearing
Target organs/systems in pups: none
Other effects in pups: weight loss
Effects on offspring only observed with maternal toxicity.

Developmental toxicity/teratogenicity
Rat, inhalation, 6 - 15 days of gestation:
NOAEL toxicity: 0.1 mg/L
NOAEL development: > 0.36 mg/L
Other effects in mother animal: behavioural changes, breathing irregularities
Developmental effects: none

**Rat, dermal, 6 - 15 days of gestation:**
NOEL toxicity: 237 mg/kg body weight
NOEL development: 237 mg/kg body weight
Other effects in mother animal: weight loss
Developmental effects: post-implantation loss, skeletal variations, weight loss
Effects on offspring only observed with maternal toxicity.

EXPERIENCE WITH HUMAN EXPOSURE

**Skin contact, prolonged:**
Skin effects: skin chronic inflammation (dermatitis), blistering, swelling (oedema), redness

**Eye contact:**
Eye effects: irritation

**Inhalation, short term:**
Neurological effects: headache

12. ECOLOGICAL INFORMATION

This section is intended for use by ecotoxicologists and other environmental specialists.

Monsanto has not conducted environmental studies on this product. Data obtained on components are summarized below.

**Similar glyphosate/surfactant mixture**

**Aquatic toxicity, fish**
Bluegill sunfish (Lepomis macrochirus):
- Acute toxicity, 96 hours, flowthrough, LC50: 5.8 mg/L
- Moderately toxic.

Rainbow trout (Oncorhynchus mykiss):
- Acute toxicity, 96 hours, flowthrough, LC50: 8.2 mg/L
- Moderately toxic.

**Aquatic toxicity, invertebrates**
Water flea (Daphnia magna):
- Acute toxicity, 48 hours, static, EC50: 11 mg/L
- Slightly toxic.

**Aquatic toxicity, algae/aquatic plants**
Green algae (Selenastrum capricornutum):
- Acute toxicity, 96 hours, static, EC50: 2.6 mg/L
- Moderately toxic.

Duckweed (Lemna minor):
- Acute toxicity, 7 days, static, EC50: > 6 mg/L

**Avian toxicity**
Bobwhite quail (Colinus virginianus):
- Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet
- Practically non-toxic.

Mallard duck (Anas platyrhynchos):
- Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet
- Practically non-toxic.

**Arthropod toxicity**
Honey bee (Apis mellifera):
- Oral/contact, 48 hours, LD50: > 100 µg/bee
- Practically non-toxic.
Soil organism toxicity, invertebrates

Earthworm (Eisenia fetida):
- Acute toxicity, 14 days, LC50: > 5,000 mg/kg dry soil
- Practically non-toxic.

N-(phosphonomethyl)glycine; {glyphosate}

Bioaccumulation

Bluegill sunfish (Lepomis macrochirus):
- Whole fish: BCF: < 1
- No significant bioaccumulation is expected.

Dissipation

Soil, field:
- Half life: 2 - 174 days
- Koc: 884 - 60,000 L/kg
- Adsorbs strongly to soil.

Water, aerobic:
- Half life: < 7 days

Isopropylamine salt of 2,4-D

Aquatic toxicity, fish

Bluegill sunfish (Lepomis macrochirus):
- Acute toxicity, 96 hours, static, LC50: 1,700 mg/L
- Practically non-toxic.

Rainbow trout (Oncorhynchus mykiss):
- Acute toxicity, 96 hours, static, LC50: 2,840 mg/L
- Practically non-toxic.

Aquatic toxicity, invertebrates

Water flea (Daphnia magna):
- Acute toxicity, 48 hours, static, EC50: 583 mg/L
- Practically non-toxic.

Aquatic toxicity, algae/aquatic plants

Green algae (Selenastrum capricornutum):
- Acute toxicity, 120 hours, static, EC50: 43.4 mg/L
- Slightly toxic.

Avian toxicity

Bobwhite quail (Colinus virginianus):
- Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet
- Practically non-toxic.

Mallard duck (Anas platyrhynchos):
- Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet
- Practically non-toxic.

13. DISPOSAL CONSIDERATIONS

Product

Excess product may be disposed of according to label instructions.
- Keep out of drains, sewers, ditches and water ways.
- Recycle if appropriate facilities/equipment available.
- Burn in special, controlled high temperature incinerator.
- Follow all local/regional/national/international regulations.

Container

See the individual container label for disposal information.
- Emptied containers retain vapour and product residue.
- Observe all labelled safeguards until container is cleaned, reconditioned or destroyed.
Empty packaging completely.  
Triple or pressure rinse empty containers.  
Do NOT contaminate water when disposing of rinse waters.  
Ensure packaging cannot be reused.  
Do NOT re-use containers.  
Store for collection by approved waste disposal service.  
Recycle if appropriate facilities/equipment available.  
Follow all local/regional/national/international regulations.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

US DOT basic description and technical name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (2,4-D salt), 9, UN3082, III

Note

Applies ONLY to packages which contain an RQ.

US DOT Reportable quantity

<table>
<thead>
<tr>
<th>RQ Component</th>
<th>RQ</th>
<th>Minimum package size containing RQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-D salt</td>
<td>100 lb</td>
<td>485 lb</td>
</tr>
</tbody>
</table>

IMDG Code

See US DOT

IATA/ICAO

Use description for Aviation regulated liquid, n.o.s.

15. REGULATORY INFORMATION

TSCA Inventory

All components are on the US EPA’s TSCA Inventory

OSHA Hazardous Components

Isopropylamine salt of 2,4-D  
Surfactant  
N-methyl-2-pyrrolidone

SARA Title III Rules

Section 311/312 Hazard Categories  
Immediate  
Section 302 Extremely Hazardous Substances  
Not applicable.  
Section 313 Toxic Chemical(s)  
n-Methyl-2-pyrrolidone

CERCLA Reportable quantity

<table>
<thead>
<tr>
<th>RQ Component</th>
<th>RQ</th>
<th>Minimum package size containing RQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-D acid</td>
<td>100 lb</td>
<td>485 lb</td>
</tr>
</tbody>
</table>

Release of more than any reportable quantity to the environment in a 24 hour period requires notification to the National Response Center (800-424-8802 or 202-426-2675).
16. OTHER INFORMATION

The information given here is not necessarily exhaustive but is representative of relevant, reliable data. Follow all local/regional/national/international regulations.
Please consult supplier if further information is needed.

In this document the British spelling was applied.

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health</th>
<th>Flammability</th>
<th>Instability</th>
<th>Additional Markings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Full denomination of most frequently used acronyms. BCF (Bioconcentration Factor), BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), EC50 (50% effect concentration), ED50 (50% effect dose), I.M. (intramuscular), I.P. (intraperitoneal), I.V. (intravenous), Koc (Soil adsorption coefficient), LC50 (50% lethality concentration), LD50 (50% lethality dose), LEL (Lower Explosion Limit), LOAEC (Lowest Observed Adverse Effect Concentration), LOAEL (Lowest Observed Adverse Effect Level), LOEC (Lowest Observed Effect Concentration), LOEL (Lowest Observed Effect Level), MEL (Maximum Exposure limit), MTD (Maximum Tolerated Dose), NOAEC (No Observed Adverse Effect Concentration), NOAEL (No Observed Adverse Effect Level), NOEC (No Observed Effect Concentration), NOEL (No Observed Effect Level), OEL (Occupational Exposure Limit), PEL (Permissible Exposure Limit), PII (Primary Irritation Index), Pow (Partition coefficient n-octanol/water), S.C. (subcutaneous), STEL (Short-Term Exposure Limit), TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED 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-approved label.

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