Nufarm 2,4-D Ester 700 Liquid Herbicide
Safety Data Sheet

Issue Date: 2017-10-04 Supersedes Date: 2017-05-17 {Reserved}

1. Identification

Product Name: **Nufarm 2,4-D Ester 700 Liquid Herbicide**
PCP Registration No.: **27820**
Refer to the approved product label for handling and use instructions.
Product Type: **Herbicide**

Supplier: Nufarm Agriculture Inc.
Suite 350, 2618 Hopewell Place NE
Calgary, Alberta, T1Y 7J7, Canada
1-800-868-5444

Telephone Numbers: 24 Hour Emergency Response Number, Chemtrec, 1-800-424-9300.
For medical emergencies, ProPharma Group, 1-877-325-1840.
For product and use information, Nufarm Agriculture Inc., 1-800-868-5444.

2. Hazard Identification

Classified according to UN GHS Version 5.

Physical Hazards:
None
Health Hazards:

Acute toxicity (Oral)	Category 4
Acute toxicity (Inhalation)	Category 4
Acute toxicity (Dermal)	Category 5
Skin sensitizer	Category 1B

Environmental Hazards:
Hazardous to aquatic environment, acute Category 1
Signal Word:
WARNING
Hazard Statements:
Harmful if swallowed. Harmful if inhaled. May be harmful in contact with skin. May cause an allergic skin reaction. Very toxic to aquatic life.

Precautionary Statements:
May be harmful in contact with skin. Avoid contact with skin, eyes and clothing. After use, wash hands and other exposed skin. Wear coveralls over a long-sleeved shirt, long pants, socks, shoes and chemical-resistant gloves. Rinse gloves before removal. Remove and wash contaminated clothing before reuse.
Avoid breathing spray mist. Use only outdoors or in a well-ventilated area.
Harmful if swallowed. Do not eat, drink or smoke when using this product.
This product contains an active ingredient and petroleum distillates which are toxic to aquatic organisms.

3. Composition / Information on Ingredients

Hazardous Components	CAS No.	Wt. %
2,4-D 2-ethylhexyl ester	1928-43-4	89-94
Chemical Synonyms: 2,4-D 2EH; 2-ethylhexyl (2,4-dichlorophenoxy)acetate		
Distillate petroleum, hydro treated light	64742-47-8	3-4

Other ingredients are considered non-hazardous.

Content as Expressed on Product Label
2,4-D, present as the 2-ethylhexyl ester … 660 g a.e./L

4. First Aid Measures

If swallowed, call a poison control centre or doctor immediately for treatment advice. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give **any** liquid to the person. Do not give anything by mouth to an unconscious person.
If on skin or clothing, take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre or doctor for treatment advice.
If in eyes, hold eye open and rinse slowly and gently with water for 15–20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice.
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. Call a poison control centre or doctor for further treatment advice.

Take container, label or product name and Pest Control Product Registration Number with you, when seeking medical attention.

DO NOT induce vomiting. This product contains petroleum distillates. Vomiting may cause aspiration pneumonia. No specific antidote. Employ supportive care. This product may cause mild irritation to the eyes. Overexposure to 2,4-D may cause coughing, burning, dizziness or temporary loss of muscle coordination. Other possible effects of overexposure include fatigue,

muscle weakness or nausea. Treatment should be based on judgement of the physician in response to reactions of the patient. Treat symptomatically.

5. Fire-fighting Measures

Extinguishing Media: Water fog, alcohol foam, carbon dioxide, dry chemical.
Special Firefighting Procedures: Firefighters should wear self-contained breathing apparatus and full protective clothing when fighting chemical fires. Minimize and contain water runoff.
Flash Point:.....>100 C
Conditions of Flammability:..... Not classed as a combustible liquid, but may burn under fire conditions.
Hazardous Decomposition Products:... Under fire conditions, may produce gases such as hydrogen chloride, nitrogen oxides and carbon oxides.
National Fire Protection Association (NFPA) Hazard Rating:

Rating for this product: Health: 2 **Flammability:** 1 **Reactivity:** 0
Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

6. Accidental Release Measures

Use safety equipment and procedures appropriate to the size of the spill. Keep unnecessary people away. Avoid runoff to natural waters and sewers. Surround and absorb spills with inert material such as perlite, sawdust, clay granules, vermiculite, sand or dirt. Contain all affected material in a closed, labeled container for proper disposal. Isolate from other waste materials. Clean contaminated area such as hard surfaces with detergent and water, collecting cleaning solution for proper disposal. Large spills to soil or similar surfaces may necessitate removal of top soil.

7. Handling and Storage

Handling: Avoid contact with skin, eyes and clothing. After use, wash hands and other exposed skin. Wear coveralls over a long-sleeved shirt, long pants, socks, shoes and chemical-resistant gloves. Rinse gloves before removal. Remove and wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product.
Storage: Store the container tightly closed away from seeds, fertilizer, plants and foodstuffs. May be stored at any temperature. Shake well before using.

8. Exposure Controls / Personal Protection

Engineering Controls: Use only outdoors or in a well-ventilated area.
Personal Protective Equipment: Coveralls, long-sleeved shirt, long pants, socks, shoes and chemical-resistant gloves. Rinse gloves before removal.
Exposure Guidelines:

Component	TWA*	STEL**	Reference/Note
2,4-D 2-ethylhexyl ester	10 mg/m^3	20 mg/m^3	Adopted limits for 2,4-D

			acid and its esters
Distillate petroleum, hydro treated light	1200 mg/m^3	N/E	Manufacturers recommendation, total hydrocarbon

*Time-weighted Average, 8-hour unless otherwise noted.
**Short Term Exposure Limit
NE = Not Established
Refer to approved product label for additional exposure control guidance.

9. Physical and Chemical Properties

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.

Appearance (physical state, colour, etc.) ..... clear amber liquid
Odour ..... hydrocarbon-like, phenolic
Odour threshold ..... not available
pH ..... 5.0 (1% w/w dilution)
Melting point / Freezing point ..... <-37C (2,4-D 2EH)
Initial boiling point and boiling range ..... >300C (decomposition) (2,4-D 2EH)
Flash point ..... >100C
Evaporation rate ..... not available
Flammability (solids, gases) ..... not applicable
Upper / Lower flammability or explosive limits ... not available
Vapour pressure ..... 4.80 x 10^{-4} Pa at 25C (2,4-D 2EH)
Vapour density ..... not available
Relative density 1.134
Solubility(ies) ..... product is emulsifiable in water
Partition coefficient: n-octanol/water ..... product is oil soluble
Autoignition temperature ..... not available
Decomposition temperature ..... >300C (2,4-D 2EH)
Viscosity ..... 34.4 cP @ 20C

10. Stability and Reactivity

Reactivity: Not reactive.
Chemical Stability: Stable under normal handling and storage conditions.
Possibility of Hazardous Reactions: Hazardous polymerization will not occur.
Conditions to Avoid: Excessive heat. Do not store near heat or flame.
Incompatible Materials: Avoid contact with strong acidic, basic or oxidizing agents.
Hazardous Decomposition Products: Under fire conditions, may produce gases such as hydrogen chloride, nitrogen oxides and carbon oxides.

11. Toxicological Information

Likely routes of exposure: Inhalation, ingestion, skin and eye contact.
Eye contact: May cause eye irritation, generally of minimal degree. Causes redness and tearing.
Skin contact: May cause an allergic skin reaction. Overexposure by skin absorption may cause symptoms similar to those caused by ingestion.
Ingestion: Harmful if swallowed. May cause dizziness, temporary loss of muscle coordination, nausea, vomiting, abdominal pain, decreased blood pressure, fatigue, muscle weakness, muscle spasms.
Inhalation: Harmful if inhaled. Vapours could cause coughing, burning, headache, dizziness, respiratory irritation and symptoms similar to those from ingestion.
Medical Conditions Aggravated by Exposure: Skin exposure may aggravate preexisting skin conditions. Inhalation of mist may aggravate preexisting respiratory conditions.
Toxicological Data:

Acute oral LD_{50} (mg/kg) ..... 737 (Rat, combined male & female)
Acute dermal LD_{50} (mg/kg) ..... >2000 (Rat, male & female)
Acute inhalation LC_{50} (mg/l) ..... >2.66 (Rat, male & female, 4-hour, nose-only exposure)
Skin corrosion/irritation ..... Tested as slightly irritating to skin (Rabbit)
Serious eye damage/irritation ..... Tested as mildly irritating to the eye (Rabbit)
Respiratory or skin sensitization ... Considered as a contact dermal sensitizer (Guinea pig)
Germ cell mutagenicity ..... *In vitro* and *in vivo* test results indicate 2,4-D is not mutagenic or genotoxic. Products similar to the hydrocarbon component are not considered to be mutagenic.
Carcinogenicity ..... The International Agency for Research on Cancer (IARC) lists exposure to 2,4-D as possibly carcinogenic to humans (Group 2B), based on inadequate evidence in humans and limited evidence in animals. 2,4-D was not carcinogenic to rats or mice in lifetime feeding studies. Products similar to the hydrocarbon component are not considered to be mutagenic and are unlikely to cause tumors.
Reproductive toxicity ..... 2,4-D is not considered a reproductive toxin.

12. Ecological Information

Ecotoxicity:
Data are from laboratory studies conducted on 2,4-D 2-ethylhexyl technical.
Aquatic Invertebrate: 48-Hour EC_{50} (mg/L) ..... 5.2 (*Daphnia*)
Fish: 96-Hour LC_{50} (mg a.e./L) .. 7.2 (Rainbow Trt), >5 (Bluegill), 0.24 (Tidewater Silverside)
Algae: 120-Hour EC_{50} (mg/L) .... >30 (*Selenastrum*), 4.1 (*Navicula)*, 0.23 *(Skeletonema)*
Birds: Oral LD_{50} (mg/kg) ..... 663 (Mallard), Dietary LC_{50} (5-day) >5620 ppm (Mallard, Bobwhite)
Bees: Oral and Contact LD_{50} ..... >100 µg/bee

Persistence and Degradability: In aerobic soil and water, 2,4-D 2EH is rapidly hydrolysed to 2,4-D acid, DT_{50} <1 day. 2,4-D is microbially degraded with typical half-life (ester and acid) of 5 to 10 days. Persistent in anaerobic environments.
Mobility in Soil: Moderate to high mobility potential, but rapidly degraded.

Bioaccumulation Potential: Negligible.

13. Disposal Considerations

For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Disposal should be made in accordance with federal, provincial and local regulations.

Do not reuse container for any purpose. If applicable, return container in accordance with return program. If a recyclable container, dispose of at a container collection site. Contact local distributor, dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site, triple or pressure rinse the empty container adding rinsings to spray tank, and make container unsuitable for further use. If there is no container collection site in your area, dispose of the container in accordance with provincial requirements.

14. Transport Information

Canadian TDG Description (Road & Rail):
UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (2,4-D Ester), Class 9, PG III

Marine pollutant.

Section 1.45.1 of the TDG Regulations provides an exemption from documentation and safety marks only for this product and only when transported by a road or railway vehicle.

United States DOT Description:
< 18 gallons per complete package
Non Regulated – See 49 CFR 173.132(b)(3) & 172.101 Appendix A

≥ 18 but < 119 gallons per complete package
UN 3082, Environmentally hazardous substance, liquid, n.o.s. (2,4-D Ester), 9, III, RQ

≥ 119 gallons per complete package
UN 3082, Environmentally hazardous substance, liquid, n.o.s. (2,4-D Ester), 9, III, RQ, Marine Pollutant

15. Regulatory Information

Pest Control Products Act Registration Number: 27820

OPAC Schedule: …. 2

Read the approved label, authorized under the Pest Control Products Act, prior to using or handling the pest control product.

This chemical is a pest control product registered by Health Canada Pest Management Regulatory Agency and is subject to certain labelling requirements under the Pest Control Products Act. These requirements differ from the classification criteria and hazard information required for GHS-consistent safety data sheets. Following is the hazard information required on the pest control product label:

DANGER POISON
POTENTIAL SKIN SENSITIZER
WARNING – SKIN IRRITANT

WHMIS exempt.

16. Other Information

This Safety Data Sheet (SDS) is designed to comply with the Globally Harmonized System (GHS) of classification, and the *Hazardous Products Regulations*.

This SDS 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. The product labeling provides that information specifically for product use as intended.

Company and published information is used in the development of this SDS. The information herein is presented in good faith and believed accurate at the date of publication. However, no warranty, expressed or implied, is given.

Revisions to the last issue: Addition of PMRA guidance info to Section 15.

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