MATERIAL SAFETY DATA SHEET

TURFWEEDER APM

Date Issued: May 2011and is valid for 3 years from this date.
Revision No.: 2
Print Date: 3/10/14

---

1. PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME: TURFWEEDER APM

SUPPLIER: **EFEKTO**
PO BOX 652147
BENMORE
2010

TEL No. 011 287 5700

EMERGENCY TELEPHONE NUMBERS:

SPILLAGES: 083 1233 911

Fax: 086 685 3129

POISONINGS:

National Poison Centre 021-9386084 (office hours).
021-9316129 (after hours).
082 446 8946

Use: A soluble concentrate selective herbicide for the control of a wide range of broadleaf weeds as listed on the label.

---

2. HAZARDS IDENTIFICATION

- Irritant. Risk of serious damage to eyes.
- Harmful to aquatic organisms

Likely routes of exposure:
Eye contact, skin contact, ingestion, and inhalation.

Eye contact:
Extremely irritating and corrosive to eyes.
Skin contact:
Moderately irritating to skin.
Ingestion:
Harmful if large amounts are swallowed.
Inhalation:
Moderately irritating to respiratory tract.

Symbols: Xi; N
Risk-phrase(s): R22, R36/38; R 41; R52/53

UN No.: 3082

MATERIAL SAFETY DATA SHEET

TURFWEEDER APM

Class: 9

3. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredients:

Active ingredients.	CAS No.:	EC No.:
MCPA as APM salt MCPA118.5 g/ℓ. a.e	5221-16-9	226-015-4
Dicamba as APM salt Dicamba 90.0 g/ℓ a.e	2300-66-5	2300-66-5
2, 4-D as APM salt 135.0 g/ℓ.a.e	2008-39-1	217-915-8

Chemical Name: MCPA:(4-chloro-2-methylphenoxyacetic acid (IUPAC) –APM salt.
Dicamba: 3,6-dichloro-*o*-anisic acid (IUPAC) -APM.salt

Chemical Family: **2, 4-D and MCPA** are Phenoxy herbicides. **Dicamba** mimics auxins,
Chemical Formula: **MCPA:** $C_9H_8C\ell KO_3$
DICAMBA: $C_{10}H_{13}C\ell_2NO_3$
2, 4-D: $C_{15}H_{19}Cl_2N_2O_4$
NIOSH/RTECS No.: -

4. FIRST-AID MEASURES

Signs of poisoning:
Dimethylamine salts of dicamba - loss of appetite, loss of weight, vomiting, depressions, general tenseness and muscular weakness. There have been very few poisonings using dicamba alone; most exposures have occurred in mixtures of herbicides, especially chlorophenoxy compounds.
Ingestion of large amounts of MCPA may cause bradypnea, respiratory failure, hyperventilation, or pulmonary edema.
Nausea, vomiting, and diarrhea have been reported.
Inhalation:
Vapour inhalation is unlikely; inhalation of spray mist or droplets may cause irritation of the respiratory tract. In case of inhalation, remove source of contamination, or leave contaminated area and move to fresh air as rapidly as possible. Keep victim from contact for at least 2-3 days.
Skin contact:
If irritation occurs, remove contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Gently wipe off excess chemical. Wash skin gently and thoroughly with water and non-abrasive soap. Dermal absorption may lead to systemic poisoning. **Seek medical advice immediately if irritation persists.**
Eye contact:

Immediately flush eyes with gently flowing lukewarm water or saline solution for 15 minutes, holding the eyelids open. Seek medical attention.

Ingestion:
Unlikely to occur under occupational conditions. In case of deliberate ingestion, have victim rinse mouth thoroughly with water. Do not induce vomiting. Give plenty of water to drink. Seek medical advice immediately. If breathing has stopped, apply artificial respiration. If substantial amounts of chlorophenoxy compounds have been ingested, spontaneous emesis may occur.

Advice to the physician: There is no antidote. Treatment is symptomatic and supportive.

5. FIRE-FIGHTING MEASURES

Extinguishing agents:
Extinguish small fires with carbon dioxide, dry powder, or alcohol-resistant foam. Water spray can be used for cooling of unaffected stock, but avoid water coming in contact with the product. Contain water used for fire-fighting for later disposal.
Avoid the accumulation of polluted run-off from the site.

Firefighting:
Remove spectators from surrounding area. Remove container from fire area if possible. Fight fire from maximum distance.
Contain fire control agents for later disposal. Use a recommended extinguishing agent for the type of surrounding fire. Water can be used to cool unaffected containers but must be contained for later disposal. Avoid inhaling hazardous vapours. Keep upwind.

Special Hazards:
Fire may produce irritating or poisonous vapours (toxic fumes of hydrogen chloride, chlorine, and oxides of nitrogen and carbon), mists or other products of combustion.

Personal protective equipment:
Fire-fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:
Do not inhale fumes. Ventilate area of spill or leak, especially confined areas. Avoid contact with skin, eyes or clothes. For personal protection see Section 8.

Environmental precautions:
Do not allow entering drains or watercourses. When the product contaminates public waters, inform appropriate authorities immediately in accordance with local regulations.

Occupational spill:
For **small spills**, soak up sand or suitable non-combustible absorbent material, place into containers for subsequent disposal. Thoroughly wash body areas, which come into contact with the product. Avoid runoff to sewer as it may cause fire/explosion. Do not allow the product to come in contact with water systems. For **large spills** contact the manufacturer. Contain liquid far ahead of spill. Contain spillage and contaminated water for subsequent disposal. Do not flush spilled material into drains. Keep spectators away and upwind.

7. HANDLING AND STORAGE

Handling:
Harmful by inhalation or if swallowed. Avoid contact with eyes and skin and inhalation of fumes. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking or using the toilet. Operators should change and wash clothing daily. Remove clothing immediately if the insecticide gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. Do not apply directly to areas where surface water is present, or to intertidal areas below the mean high water mark. Water used to clean equipment must be disposed of correctly to avoid contamination

Storage:
Store in its original container in isolated, dry, cool (avoid temperatures above 400C) and well-ventilated area. Avoid cross contamination with other pesticides and fertilizers. Precipitation of free acid from water may occur if the dimethylammonium salt is combined with lime sulfur, heavy-metal salts or strongly acidic materials. Keep under lock and key out of reach of unauthorized persons, children and animals. Store away form incompatible substances. Not to be stored next to foodstuffs and water supplies. Local regulations should be complied with.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits:
MCPA Acid: 5 mg/m^3 [Manufacturers guideline].
2, 4-D: ACGHI TLV: 10mg/m^3 TWA 10 hr.
No exposure limits have been assigned for this product by OSHA.

Engineering control measures:
It is essential to provide adequate ventilation. Ensure that control systems are properly designed and maintained. . Only spark –resistant equipment should be used. Comply with occupational safety, environmental, fire and other applicable regulations.

PERSONAL PROTECTIVE EQUIPMENT:
If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal equipment including approved respiratory protection.

Respirator:
An approved full-face respirator suitable for protection from mists of pesticides is required. Limitations of respirator use specified by the approving agency and the manufacturer must be observed.

Clothing:
Employee must wear appropriate protective (impervious) clothing and equipment to prevent skin contact with the substance.

Gloves:
Employee must wear appropriate chemical resistant protective gloves to prevent contact with this substance.

Eye protection:
Employee must wear splash-proof safety goggles and face-shield to prevent contact with this substance.

Emergency eye wash: Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.

9. PHYSICAL AND CHEMICAL PROPERTIES

MATERIAL SAFETY DATA SHEET

TURFWEEDER APM

Appearance: Liquid.
Color: Amber to light brown
Odour: Mild amine..
Flammability: Not flammable.
Explosive properties: Not explosive under use conditions.
Flash point: Not applicable, water based formulation.
pH: 10,0-10,5
Relative density: 1,15 g/ml.

10. STABILITY AND REACTIVITY

Storage stability:
Turfweeder APM is stable at elevated temperatures and at low temperatures.
Stable to iron, copper and aluminium. Slightly unstable to sunlight. (98.6%, 24 hours exposure)
Product is resistant to oxidation and hydrolysis under normal conditions. Also stable in acids and alkalis.
Decomposes at temperatures higher than 2000C
Incompatibility:
Precipitation of free acid from water may occur if the dimethylammonium salt is combined with lime sulfur, heavy-metal salts or strongly acidic materials.
Hazardous decomposition:
Product undergoes decomposition at high temperatures.

11. TOXICOLOGICAL INFORMATION

NO DATA AVAILABLE ON HORMOBAN 420 SL

(Information on the active ingredient)
DICAMBA:
Acute oral LD_{50} : 1707 mg/kg in female rats.
Acute dermal LD_{50} : > 2 000 mg/kg in rats.
Acute inhalation LC_{50} : LC_{50} : > 9.6 mg/l
Acute skin irritation: Does provoke moderate irritation.
Acute eye irritation: Causes severe eye irritation and erosions.
Dermal sensitisation: Strong to extreme possibility for causing contact hypersensitivity.
Carcinogenicity: Dicamba is not carcinogenic. **Teratogenicity:** Dicamba was shown not to be teratogenic in rabbits and rats tested.
Mutagenicity: Dicamba has not been shown to be a mutagen. Exposure to 2,4-D indicates that mutagenic effects are unlikely

MCPA 400 SL:
Acute oral LD_{50} : > 700-1160 mg/kg in rats.
Acute dermal LD_{50}: >4000 mg/kg in rabbits.
Acute inhalation: LC_{50} 4-hour: > 6.36 g/m^3 in rats.
Acute skin irritation: Not an irritant.
Acute eye irritation: Severe irritant to eyes.

Acute sensitisation: Non sensitization in guinea pigs.
Carcinogenicity, Teratogenicity, Mutagenicity:
All of the available cancer evidence on MCPA indicates that the compound does not cause cancer
2,4-D amine 480 :
Oral LD_{50}: 600.5 mg/kg in rats.
Acute dermal LD_{50}: > 4 347.73 mg/kg in male rats.
Acute inhalation LC_{50}(4h) : > 1.79mg/l in Rats

12. ECOLOGICAL INFORMATION

No Data on Hormoban 420 SL

Dicamba
Birds:
Acute LD_{50} for mallard ducks: 2000 mg/kg
LC_{50} (8 days dietary) for mallard ducks and bobwhite quail > 10 000 mg/kg mg/l
Fish: LC_{50} (96 h) 135 mg/l
Daphnia: LC_{50} (48 h) 110 mg/l
Bees: Not toxic to bees. LD_{50} > 100µg/bee
Earthworms: No information currently available.
Algae LC_{50}: 41, 0 to > 250 mg/l, depending on spp.

MCPA:
Soil: Residual activity is c. 3-4 months, following an application rate of 3kg per ha.
MCPA 400 SL
Birds: LD_{50}: 500 mg/kg b.w - 2000 mg/kg b.w. (Japanese quail)
Fish: LC_{50} : > 100 mg/l (96 h) (*Brachydanio rerio*)
Daphnia magna:
48-h EC_{50} = 80.6 mg/l
Bees: LD_{50} > 100 µg/bee (*Apis mellifera*.)
Earthworms: LC_{50} > maximum tested concentration 1000 mg/kg.
Algae:
Toxic to algae.(Selanastrum capricornutum >392 mg/l.
E_bC_{50}: 0,02 mg/l (72h)
E_rC_{50}: 0,03 mg/l (72h)
German wgk: Not available.

2, 4-D 480 SL:
Birds: 2, 4-D amine 600: LD_{50} : 625 to 2 000 mg/kg (bobwhite quail.)
Daphnia: Practically non-toxic.
The 48 hour LC_{50} is > 130, 3 mg/L (*Daphnia magna*)
Fish: Practically non-toxic.
96-hour LC_{50} >114 mg/L (Rainbow trout).
Freshwater algae:
2, 4-D 480SL: $EC_{50:}$ > 100 mg/L (72 and 120 hour exposures based on growth rate and biomass.)
Earthworms:

2, 4-D amine 480 SL:14 day LC_{50} : 682.5 mg/kg soil dry weight. NOEC : 250 mg /kg soil dry weight.
Fate and behaviour in water :
Rate and route of degradation:
2, 4-D:
DT_{50} varies between 10 and 15 days for 0.5 µg/mℓ and 20 and 25 days for 7, 0 µg/mℓ.
Rate and route of degradation:
2, 4-D is subject to photo-oxidation by reaction with hydroxyl radicals, and has an estimated half-life of 1 day. Volatilisation is negligible. May degrade following prolonged exposure to sunlight.
Degradability: (Technical material)
Environmental factors can greatly influence the degradation rate in soil. The half-life of dicamba in soil has been observed to vary from 4 to 555 days with the typical half-life being 1 to 6 weeks. Under conditions suitable to rapid metabolism, the half-life is less than two weeks.
Microbial degradation may be one of the most important factors in persistence of dicamba in soil.
The result and average soil persistence of MCPA at recommended application rates is up to 1 month in moist conditions and up to 6 months under drier climates; typical soil half-lives of 2-3 weeks have been observed under normal growing conditions.
If released to soil, microbial degradation will be the major degradation process.
Mobility:
Dicamba is very mobile in most soils and significant leaching is possible. MCPA leaches readily in soil.
Accumulation:
The times for 50% of the applied dicamba to be degraded were approximately 16 days in both the clay loam and sandy loam, and about 50 days in the heavy clay.
The resultant average persistence of MCPA at recommended application rates is up to 1 month in moist conditions and up to 6 months under drier climates.

13. DISPOSAL CONSIDERATIONS

Pesticide disposal:
Contaminated absorbents, surplus product, etc., should be burned in a high-temperature incinerator (> 1000 ^{o}C) with effluent gas scrubbing. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Comply with local legislation applying to waste disposal.
Package product wastes:
Emptied containers retain vapour and product residues. Observe all labeled safeguards until container is destroyed. Combustible containers should be disposed of in pesticide incinerators. Non-combustible containers must be triple rinsed with water and then be punctured and transported to a scrap metal facility for recycling or disposal in approved landfill site. Comply with any local legislation applying to disposal.

14. TRANSPORT INFORMATION

UN NUMBER: 3082
ADR/IRD:
Proper shipping name:Environmentally hazardous substance liquid, n.o.s. (2, 4-D , Dicamba, MCPA).
Class: 9
Classification code: M 6
Hazard ID NR: 90
Label: 9

MATERIAL SAFETY DATA SHEET

TURFWEEDER APM

AIR/IATA:

Proper shipping name:	Environmentally hazardous substance liquid, n.o.s. (2, 4-D, Dicamba, MCPA).
Class:	9
Hazard Label:	Miscellaneous
Packaging group:	III
Passenger aircraft:	Y914 (30Kg), 914 (No Limit)
Cargo aircraft:	914 (No limit)

IMG/IMO:

Proper shipping name:	Environmentally hazardous substance liquid, n.o.s. (2, 4-D, Dicamba, MCPA).
Packaging group:	III
Label of class:	9

Tremcard no: 90GM6-III

15. REGULATORY INFORMATION

Symbols: Xi; N
Indication of Danger: Irritant; Dangerous for the environment.

Risk phrases:

R22	Harmful if swallowed.
R36/38	Irritating to eyes and skin
R 41	Risk of serious damage to eyes.
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases:

S 2	Keep out of the reach of children.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37	Wear suitable gloves.
S39	Wear eye/face protection.
S 61	Avoid release to the environment. Refer to special instructions/Safety data sheets.

National legislation:
In accordance with the South African National Road Traffic Act, 1996 (Act 93 of 1996), the Fire Brigade Act, 1987 (Act 99 of 1987) and the Occupational Health and Safety Act, 1993 (Act. No. 85 of 1993)

16. OTHER INFORMATION

Compiled by: Danie Fourie

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith

MATERIAL SAFETY DATA SHEET

TURFWEEDER APM

and believed to be correct. This information applies to the PRODUCT AS SUCH. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear.
It is the responsibility of persons in receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produces formulations(s) containing this product, it is the recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.

REFERENCES

- EPA RED, August 10, 2006.
- *The Pesticide Manual*; Eleventh Edition; Editor Clive Tomlin; Crop Protection Publications, 1997.
- HSDB (Hazardous substance Database).
- ECB-ESIS.
- EXTOXNET PIP.
- ADR 2011, Part 3.
- IMDG Code, 2005 Edition, Vol. 2.
- IATA Dangerous goods regulations, Effective 1 January 2011

END OF MSDS.