

TO CAUSE A HAZARD IN THE USE, STORAGE OR DISPOSAL OF THIS SUBSTANCE IS AN OFFENCE.

PRECAUTIONS

1. Handle with care; avoid splashing and contact, especially in the region of eyes. Poisonous by swallowing, inhalation and contact with skin. Gloves, goggles and overalls should be used when handling.
2. DO NOT eat, drink or smoke while mixing and applying this product.
3. Wash thoroughly with soap and water after handling.
4. Remove contaminated clothing and was before re-use.
5. DO NOT CONTAMINATED DRINKING POOLS, DAMS, RIVERS AND WATERWAYS OR OTHER WATER SUPPLIES.
6. Dangerous to Fish and Bees.
7. KEEP OUT THE REACH OF CHILDREN.
8. KEEP APART FROM FOOD AND FOODSTUFFS.
9. Store in original container and KEEP UNDER LOCK AND KEY.
10. May contaminate spraying equipment - DO NOT USE same spraying equipment for susceptible crops.
11. Destroy empty containers - DO NOT use for any other purpose.

SYMPTOMS OF POISONING:

No specific symptoms have been observed.

FIRST AID:

If in eyes: Flush eyes with large amounts of water. Get medical attention if irritation occurs.

If on skin: Wash skin with soap with water. Get medical attention if irritation occurs.

If swallowed: DO NOT induce vomiting. Refer to Physician and show this label.

If inhaled: Remove victim to fresh air.

NOTE TO PHYSICIAN:

There is no specific antidote. Treat symptomatically. The material is slightly to moderately toxic by ingestion. If indicated, empty stomach. The main hazard is aspiration of the liquid into lungs resulting in chemical pneumonitis or pulmonary edema.

WARNING:

AVOID SPRAY DRIFT INTO ADJACENT CROPS. Although ARSENAL movement in or on soil is limited, do not apply within the root zone of desirable vegetation. Care should be taken to avoid excessive run-off of spray onto the soil surface as ARSENAL residues in soil will adversely affect seedlings and established vegetation some of which may be exceptionally sensitive.

WARRANTY:

This product and recommendations concerning its use should give excellent results, but since performance and effectiveness of crop protection chemicals can be greatly influenced by factors outside the manufacturer's control, the manufacturer and seller give no guarantee or warranty, expressed or implied, concerning the use of this product and they assume no responsibility for damage or injury arising from the use thereof.

DIRECTIONS FOR USE:

GENERAL

ARSENAL is a non-selective, systemic herbicide with residual activity. ARSENAL controls annual and perennial grasses, broadleaf weeds, sedges and woody species. ARSENAL possesses pre-emergence activity but is most effective when applied post-emergence to actively growing plants. When applied post-emergence it is readily absorbed through the roots and foliage and is rapidly translocated to the meristematic regions. Rain two hours after application should have little effect on the efficacy of the product. Plant growth is arrested shortly after application but kill of treated plants is slow, especially under dry conditions where complete kill should take several months. The residual effect of ARSENAL is affected by the susceptibility of weed species concerned, dosage and soil moisture. It should vary from three months (under wet conditions) to over 9 months (under dry conditions).

COMPATIBILITY:

DO NOT mix with contact herbicides.

MIXING:

Spray solution of ARSENAL should be mixed, stored and applied only in stainless steel, fibreglass, plastic and plastic-lined steel containers. ARSENAL may be corrosive to mild steel and brass.

Add the required amount of ARSENAL to half-filled spray tank while the tank is being agitated. Continue agitation and completely fill the tank. Maintain agitation during spraying.

TIMING:

Weeds are best controlled when actively growing. Woody species are also well controlled when there is active downward translocation.

SITUATION/WEEDS	DOSE RATE	REMARKS
Industrial Sites Railways Road Verges Pavements Runways etc	4.0 - 6.0 litres ARSENAL per hectare	Ensure adequate coverage by applying in at least 500 litres water per hectare. NB. Use higher rates for Sporobolus spp. and certain Eragrostis spp.
<i>Lantana camara</i>	Foliar: 0.5 litres ARSENAL in 100 litres water Cut Stump: 80 ml ARSENAL in 10 litres of water	Apply at least 500 litres water per hectare. If necessary respray regrowth using same spray concentration. Apply solution to freshly cut stump using a low pressure applicator or suitable paint brush at approx. 10 ml per 100 mm of stump diameter.

For further information on this product or in event of an emergency, phone Harare 309800.

Arsenal GEN 2®

Reg. No.:
97-C-117-2

NET CONTENTS:
1 Litre



HARMFUL IF SWALLOWED

COMPOSITION: (mass/volume)
imazapyr 240 g/L
inert ingredients 760 g/L
Chemical Group: IMIDAZOLINONE

ARSENAL is a non-selective herbicide used for industrial weed control and for the control of *Lantana camara*.

Registered by: Pivotal Agro-Services (Pvt) Limited
PO Box WGT 450, Westgate, Harare, Telephone 309800/18.

Manufactured by:
BASF Agro BV Arnhem (NL), Wädenswil, Switzerland.

® Registered Trademark of BASF

Batch No:

Date of Manufacture:

Expiry Date: 2 years from date of manufacture

Safety data sheet

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BASF Safety data sheet according to Regulation (EC) No.1907/2006

Date / Revised: 25.09.2007

Product: **ARSENAL GEN 2**

Version: 1.0

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(30451967/SDS_CPA_EU/EN)

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1. Substance/preparation and company identification

ARSENAL GEN 2

Use: crop protection product, herbicide

Company:

BASF SE

67056 Ludwigshafen

GERMANY

Unternehmensbereich Pflanzenschutz

Telephone: +49 621 60-27777

Telefax number: +49 621 60-27125

E-mail address: Produktinformation-Pflanzenschutz@basf.com

Emergency information:

International emergency number:

Telephone: +49 180 2273-112

2. Hazard identification

May cause sensitization by skin contact.

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. Composition/information on ingredients

Chemical nature

herbicide, crop protection product, water-soluble concentrate (SL)

Contains: imazapyr isopropylamine salt

Hazardous ingredients

imazapyr

Content (W/W): 21.8 %
CAS Number: 81334-34-1
Hazard symbol(s): Xi, N
R-phrase(s): 36, 50/53

fatty alcohol,ethoxylated,propoxylated,phosphoric ester,acidi

Content (W/W): $\geq 17.75\%$ - $\leq 20\%$
CAS Number: 68649-29-6
Hazard symbol(s): Xi
R-phrase(s): 36/38

phosphoric acid

Content (W/W): $\geq 4.2\%$ - $\leq 5.2\%$
CAS Number: 7664-38-2
EC-Number: 231-633-2
INDEX-Number: 015-011-00-6
Hazard symbol(s): C
R-phrase(s): 34

The wording of the hazard symbols and R-phrases is specified in chapter 16 if dangerous ingredients are mentioned.

4. First-aid measures

General advice:

Avoid contact with the skin, eyes and clothing. Remove contaminated clothing. If difficulties occur: Obtain medical attention. Show container, label and/or safety data sheet to physician.

If inhaled:

Keep patient calm, remove to fresh air, seek medical attention.

On skin contact:

After contact with skin, wash immediately with plenty of water and soap. If irritation develops, seek medical attention.

On contact with eyes:

Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:

Rinse mouth immediately and then drink plenty of water, seek medical attention. Do not induce vomiting unless told to by a poison control center or doctor. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions.

Note to physician:

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-fighting measures

Suitable extinguishing media:

water spray, water fog, carbon dioxide, foam, dry extinguishing media

Specific hazards:

carbon monoxide, nitrogen oxides

The substances/groups of substances mentioned can be released in case of fire.

Special protective equipment:

Wear self-contained breathing apparatus and chemical-protective clothing.

Further information:

In case of fire and/or explosion do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. Accidental release measures

Personal precautions:

Use personal protective clothing. Avoid contact with the skin, eyes and clothing. Remove contaminated clothes, undergarments and shoes immediately.

Environmental precautions:

Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater.

Methods for cleaning up or taking up:

For small amounts: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr).

For large amounts: Dike spillage. Pump off product.

Dispose of absorbed material in accordance with regulations. Collect waste in suitable containers, which can be labeled and sealed. Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations.

7. Handling and storage

Handling

No special measures necessary if stored and handled correctly. Ensure thorough ventilation of stores and work areas.

Protection against fire and explosion:

Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy.

Storage

Segregate from foods and animal feeds.

Further information on storage conditions: Keep away from heat. Protect against moisture. Protect from direct sunlight. Keep in a cool, well-ventilated place.

Storage stability:

Storage duration: 24 Months

Protect from temperatures above: 40 °C

Changes in the properties of the product may occur if substance/product is stored above indicated temperature for extended periods of time.

8. Exposure controls and personal protection

Personal protective equipment

Respiratory protection:

Respiratory protection in case of vapour/aerosol release. Wear respiratory protection if ventilation is inadequate. Particle filter with medium efficiency for solid and liquid particles (e.g. EN 143 or 149, Type P2 or FFP2)

Hand protection:

Suitable chemical resistant safety gloves (EN 374) also with prolonged, direct contact

(Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374): E.g. nitrile rubber (0.4 mm), chloroprene rubber (0.5 mm), butyl rubber (0.7 mm) and other

Eye protection:

Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures:

The statements on personal protective equipment in the instructions for use apply when handling crop-protection agents in final-consumer packing. Avoid contact with the skin, eyes and clothing. Wearing of closed work clothing is recommended. Take off immediately all contaminated clothing. Store work clothing separately. Keep away from food, drink and animal feeding stuffs. No eating, drinking, smoking or tobacco use at the place of work. Hands and/or face should be washed before breaks and at the end of the shift.

9. Physical and chemical properties

Form:	liquid
Colour:	transparent light yellow
Odour:	odourless
pH value:	6.8 (20 °C)
Flash point:	approx. 93.3 °C
Vapour pressure:	No data available.
Density:	1.10 g/cm ³ (20 °C)
Solubility in water:	miscible
Viscosity, dynamic:	163.2 mPa.s (20 °C) 56.59 mPa.s (40 °C)

10. Stability and reactivity

Conditions to avoid:

Avoid all sources of ignition: heat, sparks, open flame. Avoid extreme temperatures. Avoid prolonged exposure to extreme heat. Avoid contamination. Avoid electro-static discharge. Avoid prolonged storage.

Thermal decomposition: No decomposition if stored and handled as prescribed/indicated.

Substances to avoid:

strong oxidizing agents, strong reducing agents

Corrosion to metals: brass
mild steel

Hazardous reactions:

No hazardous reactions if stored and handled as prescribed/indicated.

Hazardous decomposition products:

No hazardous decomposition products if stored and handled as prescribed/indicated.

11. Toxicological information

Acute toxicity

LD50 rat (oral): > 2,000 mg/kg

LC50 rat (by inhalation): > 5.5 mg/l 4 h

LD50 rabbit (dermal): > 5,000 mg/kg

Irritation

Primary skin irritation rabbit: non-irritant

Primary irritations of the mucous membrane rabbit: non-irritant

Sensitization

Guinea pig maximization test guinea pig: Caused skin sensitization in animal studies.

Genetic toxicity

Information on: imazapyr

Assessment of mutagenicity:

No mutagenic effect was found in various tests with microorganisms and mammals.

Carcinogenicity

Information on: imazapyr

Assessment of carcinogenicity:

In long-term studies in rats and mice in which the substance was given by feed, a carcinogenic effect was not observed.

Reproductive toxicity

Information on: imazapyr

Assessment of reproduction toxicity:

The results of animal studies gave no indication of a fertility impairing effect.

Developmental toxicity

Information on: imazapyr

Assessment of teratogenicity:

No indications of a developmental toxic / teratogenic effect were seen in animal studies.

Other relevant toxicity information

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Misuse can be harmful to health.

12. Ecological information

Ecotoxicity

Information on: *imazapyr*

Toxicity to fish:

LC50 (96 h) > 100 mg/l, *Oncorhynchus mykiss*

Information on: *imazapyr*

Aquatic invertebrates:

EC50 (48 h) > 100 mg/l, *Daphnia magna*

Information on: *imazapyr*

Aquatic plants:

EC50 71 mg/l, *Selenastrum capricornutum*

EC50 0.024 mg/l, *Lemna gibba*

Persistence and degradability

Information on: *imazapyr*

Elimination information:

Not readily biodegradable (by OECD criteria).

Additional information

Other ecotoxicological advice:

Do not discharge product into the environment without control. Ecological data are not available. The ecological data given are those of the active ingredient.

13. Disposal considerations

Must be dumped or incinerated in accordance with local regulations.

Contaminated packaging:

Contaminated packaging should be emptied as far as possible and disposed of in the same manner as the substance/product.

14. Transport information

Land transport

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ADR

Hazard class: 9
Packing group: III
ID number: UN 3082
Hazard label: 9
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,
N.O.S. (contains IMAZAPYR 22%)

RID

Hazard class: 9
Packing group: III
ID number: UN 3082
Hazard label: 9
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,
N.O.S. (contains IMAZAPYR 22%)

Inland waterway transport

ADNR

Hazard class: 9
Packing group: III
ID number: UN 3082
Hazard label: 9
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,
N.O.S. (contains IMAZAPYR 22%)

Sea transport

IMDG

Hazard class: 9
Packing group: III
ID number: UN 3082
Hazard label: 9
Marine pollutant: YES
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,
N.O.S. (contains IMAZAPYR 22%)

Air transport

IATA/ICAO

Hazard class: 9
Packing group: III
ID number: UN 3082
Hazard label: 9
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,
N.O.S. (contains IMAZAPYR 22%)

15. Regulatory information

Regulations of the European union (Labelling) / National legislation/Regulations

EEC Directives:

Hazard symbol(s)

Xi Irritant.
 N Dangerous for the environment.

R-phrase(s)

R43 May cause sensitization by skin contact.
 R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s)

S2 Keep out of the reach of children.
 S13 Keep away from food, drink and animal feeding stuffs.
 S20/21 When using do not eat, drink or smoke.
 S24 Avoid contact with skin.
 S35 This material and its container must be disposed of in a safe way.
 S37 Wear suitable gloves.
 S46 If swallowed, seek medical advice immediately and show this container or label.
 S57 Use appropriate container to avoid environmental contamination.

Hazard determining component(s) for labelling: IMAZAPYR

Other regulations

For the user of this plant-protective product applies: 'To avoid risks to man and the environment, comply with the instructions for use.' (Directive 1999/45/EC, Article 10, No. 1.2)

16. Other information

Full text of hazard symbols and R-phrases if mentioned as hazardous components in chapter 3:

Xi Irritant.
 N Dangerous for the environment.
 C Corrosive.
 36 Irritating to eyes.
 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 36/38 Irritating to eyes and skin.
 34 Causes burns.

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Vertical lines in the left hand margin indicate an amendment from the previous version.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. The data do not describe the product's properties (product specification). Neither should any agreed property nor the suitability of the product for any specific purpose be deduced from the data contained in the safety data sheet. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.