

TERBUZINE 600 SC

Reg. No./Nr. L5829, Act No./Wet Nr. 36 of/van 1947
Botswana Reg. No./Nr W130312, Act No./Wet Nr.18 of/van 1999

READ THE LABEL BEFORE USE
KEEP OUT OF REACH OF CHILDREN AND ANIMALS

GROUP/GROEP	5	HERBICIDE/ONKRUIDDODER
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A suspension concentrate herbicide for selective control of most annual broadleaf weeds as well as goose grass in maize and grain sorghum.

'n Suspensie konsentraat onkruidodder vir selektiewe beheer van die meeste eenjarige breëblaaronkruid asook jongosgras in mielies en graansorghum.

ACTIVE INGREDIENTS:

Atrazine (triazine)300 g/l
Terbutylazine (triazine)300 g/l

AKTIEWE BESTANDDELE:

Atrasien (triasien)
Terbutielasien (triasien)

Net Volume

ℓ

Netto Volume



WARNING

GHS Hazard Statements

Harmful if swallowed.
Causes serious eye irritation.
May cause an allergic skin reaction.
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life with long lasting effects.

GHS Precautionary Statements

Do not breathe dust, fume, gas, mist, vapours or spray.
Wash thoroughly after handling.



REGISTRATION HOLDER / REGISTRASIEHOUER:

Nulandis® (A division of AECI Limited)/ Nulandis® ('n Afdeling van AECI Beperk)

Reg. No. / Nr. 1924/002590/06

P.O. Box / Posbus 14418

Witfield, 1467

Tel : (011) 823 8000

www.aeciph.com / www.aeciworld.com

IN CASE OF POISONING PLEASE PHONE / IN GEVAL VAN VERGIFTIGING SKAKEL;
0861 555777 / 082 446 8946

Batch No:

Lotnommer:

DATE OF MANUFACTURE: VERVAARDIGINGSDATUM:

UN No. / VN Nr. 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Terbutylazine)

Pamphlet

Terbuzine 600 SC – GHS August 2022 – Approved 2023

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Botswana Reg. No. W130312, Act No. 18 of 1999

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Harmful if swallowed.
Causes serious eye irritation.
May cause an allergic skin reaction.
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life with long lasting effects.

Store in a cool place.
Store away from food, feeds, seed and other agricultural remedies.
Keep out of reach of children, uninformed persons and animals.

Re-entry: Do not enter treated area within 1 day after treatment unless wearing protective

clothing. In case of poisoning – CALL A DOCTOR AND MAKE THIS LABEL AVAILABLE TO HIM.

Aerial application: Notify all the inhabitants of the immediate vicinity of the area to be sprayed and issue the necessary warnings. Do not spray over or allow drift to contaminate water or adjacent areas.

ALTHOUGH THIS REMEDY HAS BEEN EXTENSIVELY TESTED UNDER A LARGE VARIETY OF CONDITIONS THE REGISTRATION HOLDER DOES NOT WARRANT THAT IT WILL BE EFFICACIOUS UNDER ALL CONDITIONS BECAUSE THE ACTION AND EFFECT THEREOF MAY BE AFFECTED BY FACTORS SUCH AS ABNORMAL CLIMATIC AND STORAGE CONDITIONS; QUALITY OF DILUTION WATER; COMPATIBILITY WITH OTHER SUBSTANCES NOT INDICATED ON THE LABEL AND THE OCCURRENCE OF RESISTANCE OF WEEDS AGAINST THE REMEDY CONCERNED AS WELL AS BY THE METHOD, TIME AND ACCURACY OF APPLICATION. THE REGISTRATION HOLDER FURTHERMORE DOES NOT ACCEPT RESPONSIBILITY FOR DAMAGE TO CROPS, VEGETATION, THE ENVIRONMENT OR HARM TO MAN OR ANIMAL OR FOR LACK OF PERFORMANCE OF THE REMEDY CONCERNED DUE TO FAILURE OF THE USER TO FOLLOW THE LABEL INSTRUCTIONS OR TO THE OCCURRENCE OF CONDITIONS WHICH COULD NOT HAVE BEEN FORESEEN IN TERMS OF THE REGISTRATION. CONSULT THE SUPPLIER IN THE EVENT OF ANY UNCERTAINTY.

PRECAUTIONS:

GHS Precautionary Statements

Do not breathe dust, fume, gas, mist, vapours or spray.

Wash thoroughly after handling.

Wear protective gloves, protective clothing, eye protection & face protection.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF SWALLOWED: Call a POISON CENTRE or doctor/ physician if you feel unwell.

Avoid contact with skin and eyes-

Wash contaminated clothing after use.

Wash with soap and water after use.

Do not eat, drink or smoke whilst mixing or applying the product or before washing hands and face and changing clothes.

Prevent contamination of food, feed, drinking water and eating utensils. Prevent spray drift onto other crops, grazing, rivers, dams and other areas not under treatment.

Clean applicator thoroughly with **FLUSHSOL** before re-using and dispose of wash water where it will not contaminate crops, grazing, rivers and dams. Refer to the **FLUSHSOL** label for directions of use.

Triple rinse the empty container: Invert the empty container over the spray or mixing tank and drain for at least 30 seconds after the flow has slowed down to dripping. Thereafter rinse the empty container three times in succession with one quarter of the container volume fresh water and decant the rinsate into the spray or mixing tank. Puncture the triple rinsed container and dispose of via an approved collector or recycler (www.croplife.co.za). Do not bury, burn or donate the container to any other parties that may use it as a container for food or beverages.

RELEVANT SUBSTANCES:

Substance name (IUPAC/EC)	Concentration % by weight	Classification EC1272/2008
Ethylene glycol mono	1-10%	Acute toxicity oral (Category 4) H302
Ethoxylated fatty alcohol	1-10%	Acute toxicity oral (Category 4) H302. Serious eye damage (Category 1) H318.
Atrazine	20-30%	Skin sensitization (Category 1) H317. STOT RE 2 H373. Aquatic acute 1 H400. Aquatic chronic 1 H410. M=1
Terbuthylazine	20-30%	Acute toxicity oral (Category 4) H302. STOT RE 2 H373. Aquatic acute 1 H400, Aquatic chronic 1 H410 (M=10)

NOTE: The other ingredients not included above, do not cause or contribute towards the correct GHS classification of **TERBUZINE 600 SC** and are therefore, in terms of the South African Regulations for Hazardous Chemical Agents - 2021; Regulation 14(b), not listed.

FIRST AID:

In case of inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

In case of skin contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

In case of eye contact: Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

In case of ingestion: Immediately transfer patient to nearest hospital or medical centre, warning by telephone of the estimated arrival time so that the start of treatment is not delayed. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband.

NOTE TO PHYSICIAN:

No specific treatment. Treat symptomatically.

RESISTANCE WARNING:

For resistance management, **TERBUZINE 600 SC** is a group code 5 herbicide. Any weed population may contain individuals naturally resistant to **TERBUZINE 600 SC** and other group code 5 herbicides. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. The resistant weeds may not be controlled by **TERBUZINE 600 SC** or any other group code 5 herbicides.

To delay herbicide resistance:

- Avoid exclusive repeated use of herbicides from the same herbicide group code. Alternate or tank mix with registered products from different herbicide group codes.
- Integrate other control methods (chemical, cultural, biological) into weed control programmes.

For specific information on resistance management contact the registration holder of this product

MODE OF ACTION:

The mode of action for both Atrazine & Terbutylazine is by inhibition of photosynthesis at photosystem II.

ENVIRONMENTAL PRECAUTIONARY MEASURES:

Do not mix and load within at least 15 m from boreholes, streams, rivers and dams.

Do not apply within at least 15 m from boreholes, streams and rivers.

Do not apply within 60 m from dams.

Ensure that no back-siphoning to boreholes or dams takes place when product is applied through the irrigation system.

USE RESTRICTIONS:

1. To avoid damage to follow-up crops the following waiting periods should be observed:

(a) MAIZE AND SUGARCANE	NONE
(b) GRAIN SORGHUM	12 MONTHS
(c) SUNFLOWERS, GROUNDNUTS, SOYABEANS, POTATOES, DRY BEANS, FORAGE, SORGHUM AND SMALL GRAINS	18 MONTHS
(d) ALL OTHER CROPS (A TEST PLANTING IS RECOMMENDED)	24 MONTHS

(e) Where the rate of **TERBUZINE 600 SC** applied does not exceed 1,7 ℓ/ha the waiting period mentioned under (b) and (c) above can be reduced to 9 months except on sandy soils of the North west Province and North west Free State which contain 0-10 % clay.

IMPORTANT NOTES:

1. The abovementioned waiting periods are valid only if the correct dosage rate of **TERBUZINE 600 SC** according to soil type was applied and normal or above average rainfall occurred after application.
2. When **TERBUZINE 600 SC** is applied to soils which expand on wetting and crack or crumble on drying out, such as turf soils, the **TERBUZINE 600 SC** may remain active in the soil for much longer than the above mentioned waiting periods. Thus, **TERBUZINE 600 SC** should not be used on such soils if sensitive crops might be planted in the foreseeable future. On such soils the herbicide may also give poor control of the weeds when applied pre-emergence.
3. Do not apply **TERBUZINE 600 SC** to inbred parent plants of maize and grain sorghum hybrids or experimental or newly released maize and grain sorghum cultivars without first referring to the manufacturer or seed supplier.

DIRECTIONS FOR USE: USE ONLY AS DIRECTED

COMPATIBILITY:

TERBUZINE 600 SC is compatible with **2,4-D Amine 480 SL** (Reg. No. L5233, Act No. 36 of 1947), as well as other soil insecticides. The compatibility of **TERBUZINE 600 SC** with other products may be influenced by the formulation of the products involved as well as the quality of the water. Since the formulation of other products may change without the knowledge of the registration holder and water quality may vary from farm to farm, a physical compatibility test should always be carried out prior to application. When **TERBUZINE 600 SC** is used in conjunction with any other agricultural remedy, all **WARNINGS, PRECAUTIONS** and **DIRECTIONS FOR USE** mentioned on that particular label, must be adhered to.

MIXING INSTRUCTIONS:

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Shake well before use: Replace cap after pouring.

Half-fill the spray tank with water, then pour the required quantity of **TERBUZINE 600 SC** through a 300 µm sieve into the tank whilst stirring. Top up the tank with water to the final volume required. When **TERBUZINE 600 SC** is used in a tank mixture with **2,4-D Amine 480 SL** the **TERBUZINE 600 SC** should be mixed first using a tank half-filled with water and agitated well after which the spray tank should be filled almost to capacity. Only then should the **2,4-D Amine 480 SL** be added whilst the spray tank is filled to its final volume. Ensure thorough agitation during filling and spraying operations. After each spray thoroughly flush spray equipment out with water.

APPLICATION METHODS:

TERBUZINE 600 SC must be applied before or shortly after weeds emerge. The soil should preferably have a smooth surface, free of large clods.

If dry conditions prevail for a period of 7 to 14 days after application, weeds may emerge and develop. In such cases it is recommended that a light cultivation be carried out with a rotary cultivator to destroy these weeds and to mix the herbicide into the top 10 to 20 mm of soil.

GROUND APPLICATION:

TERBUZINE 600 SC can be applied with any medium or high volume sprayer equipped with efficient agitation and which is capable of adequate coverage and even distribution. Best results are obtained using fan-type spray nozzles and applying a minimum spray volume of 200 ℓ water/ha.

AERIAL APPLICATION:

Aerial application may only be done by a registered aerial application operator using a correctly calibrated, registered aircraft according to the instructions of SANS Code 10118 (Aerial Application of Agricultural Remedies). It is important to ensure that the spray mixture is distributed evenly over the target area and that the loss of spray material during application is restricted to a minimum. It is therefore essential that the following criteria are met:

Equipment:

Use suitable atomising equipment (hydraulic nozzles or rotary atomisers) that will produce the desired droplet size and coverage, but which will ensure the minimum loss of product through drift.

The operator must use a setup that will produce a droplet spectrum with the lowest possible relative span. Use a conventional boom. Nozzles must be equipped with flat fan tips eg. SS 6515 or similar.

All nozzles / atomisers should be positioned within the inner 60 to 75 % of the wingspan to prevent droplets from entering the wingtip vortices.

Application parameters:

A minimum volume of 30 ℓ spray mixture per hectare is recommended. As this product has not been evaluated at a reduced volume rate, the registration holder cannot guarantee efficacy, or be held responsible for any adverse effects if this product is applied aerially at a lower volume rate than recommended above.

A droplet coverage: The following number of droplets per cm² must be recovered at the target area: **Pre-emergence 20 to 30 droplets; Post-emergence 35 – 45 droplets.**

A droplet size: The following droplet spectra are recommended: **Pre-emergence a VMD of 350 to 400 microns is recommended; Post-emergence a VMD of 300 to 350 micron is recommended.** Ensure that the production of fine droplets (smaller than 150 microns) is restricted to a minimum.

The height of the spray boom should be maintained at 3-4 metres above the target. Do not spray when aircraft is in a climb, at the top or during a dive, or when banking.

Apply before the crop becomes too dense, thus preventing proper coverage of the weeds.

Meteorological conditions:

The difference between the wet and dry bulb readings as determined by a whirling hygrometer, must not exceed 8 °C

Do not spray under turbulent, unstable conditions during the heat of the day when rising thermals and downdraughts occur.

Do not spray under temperature inversion conditions (spraying in or above the inversion layer).

Do not spray if the wind speed exceeds 15 km/h.

- Stop spraying under turbulent, unstable and dry conditions during the heat of the day.
- Spraying under temperature inversion conditions (spraying in or above the inversion layer) and/or high humidity conditions (relative humidity 80 % and above) may lead to the following:
 - reduced efficacy due to suspension and evaporation of small droplets in the air (inadequate coverage).
 - damage to other sensitive crops and/or non-target areas through drifting of the suspended spray cloud away from the target field.

General:

Ensure that fields are accurately marked and that the aerial spray operator knows exactly which fields to spray.

Obtain an assurance from the aerial spray operator that the above requirements will be met.

APPLICATION TABLE:

MAIZE (Pre- and early post-emergence)

Soil type	% Clay	TERBUZINE 600 SC (l/ha) for overall application	REMARKS
Light sand/sand	0 - 10	2,10	TERBUZINE 600 SC can only be applied post-emergence if broadleaf weeds have not developed beyond the 4-leaf stage and grasses have not yet emerged. Where grasses have already emerged and broadleaf weeds have developed beyond the 4-leaf stage, these weeds must first be destroyed by cultivation and TERBUZINE 600 SC then applied onto clean soil. When applied post-emergence to the weeds a suitable surfactant such as Biodew (Reg. No. L8120, Act No. 36 of 1947) should be added to the spray mixture.
Loamy sand/sandy loam	11 - 20	2,70	
Sandy clay loam	21 - 30	3,30	
Sandy clay loam/sandy clay	31 - 40	4,00	

MAIZE: TERBUZINE 600 SC PLUS 2,4-D AMINE 480 SL (Post-emergence)

This treatment is only recommended in cases where a grass killer has been applied prior to or at time of planting. This treatment controls all the broadleaf weeds as mentioned hereunder in addition to large cocklebur (*Xanthium strumarium*), striped wild cucumber (*Cucumis myriocarpus*), Devils thorn= dubbeltjie (*Tribulus terrestris*), common morning glory (*Ipomoea purpurea*) and *Ipomoea coscinospermum*.

Application rates:

(a) 1,70 ℓ **TERBUZINE 600 SC** + 0,5 ℓ **2,4-D Amine 480 SL**/ha or

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(b) 1,25 ℓ **TERBUZINE 600 SC** + 0,75 ℓ **2,4-D Amine 480 SL**/ha

IMPORTANT

- a) Under cold and wet or hot and humid conditions **2,4-D Amine 480 SL** may retard the development of prop roots in maize. For this reason treatment (a) above using the low quantity of **2,4-D Amine 480 SL** is preferred. Where Bengal wandering Jew (*Commelina benghalensis*) and Devils thorn= dubbeltjie (*Tribulus terrestris*) form an important part of the weed spectrum, treatment (b) above containing the higher quantity of **2,4-D Amine 480 SL** is preferred.
- b) The weeds must be sprayed early post-emergence e.g. not larger than the 4-leaf stage or 100 mm in height. If application is made at a later stage, the yield may be reduced due to weed competition. On the other hand, weaker control may result if the weeds are allowed to grow larger. When the maize is taller than 400 mm, a directed inter row spray must be applied to ensure better coverage.

GRAIN SORGHUM (only post-emergence)

Soil type	% Clay	TERBUZINE 600 SC (ℓ/ha) for overall application	REMARKS
Loamy sand/sandy loam	0 - 20	NOT RECOMMENDED	TERBUZINE 600 SC can only be applied post-emergence if broadleaf weeds have not developed beyond the 4-leaf stage and grasses have not yet emerged, and the grain sorghum has 5 or more leaves. Where grasses have already emerged and broadleaf weeds have developed beyond the 4-leaf stage, these weeds must first be destroyed by cultivation and TERBUZINE 600 SC then applied onto clean soil. Under cold and/or very wet conditions TERBUZINE 600 SC may damage grain sorghum.
Sandy clay loam	21 - 30	3,30	
Sandy clay loam/sandy clay	31 - 40	4,00	

GRAIN SORGHUM: TERBUZINE 600 SC + 2,4-D AMINE 480 SL (Post emergence)

A post-emergence treatment of 1,7 ℓ **TERBUZINE 600 SC** + 0,5 ℓ **2,4-D Amine 480 SL** / ha can also be used in grain sorghum.

IMPORTANT:

- a) Under hot, humid conditions **2,4-D Amine 480 SL** may cause temporary damage in grain sorghum. This damage is normally outgrown and does not affect yield.
- b) The correct application timing in grain sorghum is 4 - 5 weeks after planting at the 4 to 5-leaf stage and when the plants are approximately 150 mm tall.
- c) The weeds must be sprayed early post-emergence before exceeding the 4-leaf stage or 100 mm in height.

IMPORTANT (maize and grain sorghum)

- i) Apply **2,4-D Amine 480 SL** according to the manufacturer's label recommendations.
- ii) Consult the **2,4-D Amine 480 SL** label with regard to use restrictions, withholding periods, list of weeds controlled, etc.
- iii) Ensure that sufficient fertilizer is band-placed near the seed at planting to promote vigorous seedling growth.

WEEDS CONTROLLED BY TERBUZINE 600 SC:

The following weed species are normally controlled by **TERBUZINE 600 SC** at the dosage rates recommended above:

Broadleaf weeds:

<i>Acanthospermum australe</i>	Eight-seeded prostrate starbur
<i>Acanthospermum glabratum</i>	Five-seeded prostrate starbur
<i>Acanthospermum hispidum</i>	Upright starbur
<i>Amaranthus deflexus</i>	Perennial pigweed
<i>Amaranthus hybridus</i>	Common pigweed
<i>Amaranthus spinosus</i>	Thorny pigweed
<i>Amaranthus thunbergii</i>	Red pigweed
<i>Bidens bipinnata</i>	Spanish blackjack
<i>Bidens formosa</i> => <i>Cosmos bipinnatus</i>	Cosmos
<i>Bidens pilosa</i>	Blackjack
<i>Chenopodium album</i>	White goosefoot
<i>Chenopodium carinatum</i>	Green goosefoot
<i>Cleome monophylla</i>	Spindlepod
<i>Cleome rubella</i>	Pretty lady
<i>Commelina benghalensis</i>	Bengal wandering Jew
<i>Crotalaria sphaerocarpa</i>	Mielie Crotalaria
<i>Datura ferox</i>	Large thorn apple
<i>Datura stramonium</i>	Thorn apple
<i>Galinsoga parviflora</i>	Gallant soldier
<i>Gisekia pharnaceoides</i>	Gisekia
<i>Hibiscus cannabinus</i>	Kenaf
<i>Hibiscus trionum</i>	Bladderweed
<i>Nicandra physaloides</i>	Apple of Peru
<i>Physalis angulata</i>	Wild gooseberry
<i>Portulaca oleracea</i>	Purslane
<i>Richardia brasiliensis</i>	Tropical Richardia
<i>Schkuhria pinnata</i>	Dwarf marigold
<i>Tagetes minuta</i>	Khaki weed
<i>Vigna vexillata</i>	Wild cow-pea

Grasses:

Eleusine indica => *Eleusine coracana* Goose grass

If dry conditions prevail for a period of 7 to 14 days after pre-emergence application, the following weed species may not be adequately controlled, especially on heavy soils:

<i>Bidens formosa</i> => <i>Cosmos bipinnatus</i>	Cosmos
<i>Commelina benghalensis</i>	Bengal wandering Jew
<i>Datura</i> spp.	Thorn apple
<i>Eleusine indica</i> => <i>Eleusine coracana</i>	Goose grass

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2,4-D Amine 480 SL is the registered tradename of Nulandis® (A division of AECI Ltd.)

