

# BRUSH-OFF®

SOUTH AFRICA Registration Number/Registrasie Nommer L4535, Act No. 36  
of 1947/Wet 36 van 1947

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

GROUP/GROEP	<b>2</b>	HERBICIDES	ONKRUIDDODERS
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A water dispersible granular herbicide for the control of certain broad-leaved weeds in cereals as well as invader weeds in natural pastures and conservation areas.	'n Water dispergeerbare korrel-onkruidodder vir die beheer van sekere breëblaaronkruid in kleingraan sowel as indringerplante in natuurlike weidings en bewaringsgebiede.
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**HAZARD STATEMENT:**

Very toxic to aquatic life with long lasting effects.

**PRECAUTIONARY STATEMENTS:**

**Prevention:**

Avoid release to the environment.

**Response:**

Collect spillage.

**Disposal:**

Dispose of contents/ container to an approved waste disposal plant.

**WARNING**

**Active ingredient**

Metsulfuron methyl (sulfonil urea) - 600 g/kg

**Aktiewe bestanddeel**

Metsulfuronmetiel (sulfonielureum) – 600 g/kg

<b>Net Volume</b>	<b>250g</b>	<b>Netto Volume</b>
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**REGISTRATION HOLDER/REGISTRASIEHOUER:**

FMC Chemicals (Pty) Ltd  
Company Registration Number: 1988/001451/07  
West End Office Park  
Building C  
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Centurion, 0014  
Telephone number: +27 (76) 875 4432  
[www.ag.fmc.com/za/en](http://www.ag.fmc.com/za/en)

**Batch Number**  
**Date of Manufacture**  
**Expiry Date**

**Printed on Container**  
**Printed on Container**  
**2 Years from date of**  
**manufacture**

**Lot Nommer**  
**Datum van Vervaardiging**  
**Vervaldatum**

**UN Number/VN Nommer**

**3077**

<b>For any emergency or poisoning contact: Griffon Poison Information Centre (24 hrs)</b> <b>Vir enige noodgeval of vergiftiging kontak Griffon vergiftiging Inligtingsentrum (24 hr)</b>	<b>+27-(0)-82-446-8946</b>
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## **WARNINGS:**

### **HAZARD STATEMENT:**

- Very toxic to aquatic life with long lasting effects.

### **WITHHOLDING PERIOD:**

- Allow the following number of days between application and grazing of natural pastures .....  
28 days
- The product may irritate eyes, nose, throat and skin.
- Keep out of reach of children, animals and uninformed persons.
- Store in a cool dry place.
- Store away from food and feeds.
- **RE-ENTRY:** Do not enter treated area until spray deposit has dried unless wearing protective clothing.
- **Aerial application:** Notify all inhabitants in the immediate vicinity of the area to be sprayed and issue the necessary warnings. Do not spray over or allow drift to contaminate adjacent areas.

**BRUSH OFF** is a highly active herbicide that in very small quantities, when used incorrectly, can cause serious damage to crop seedlings or deciduous fruit trees and grape vines during the budding and early season growth stages. When aerially applied under the following conditions it can cause serious damage as far as 3-5 kilometers from the nearest flight path of the aircraft: cloudy weather with relative humidity above 80 % and low air movement of less than 5 km per hour. Where such conditions prevail, aerial application should not be carried out where crop seedlings or deciduous fruit trees and grape vines in budding or early development stages are present within 5 kilometers of the nearest flight path.

- Should the recommended dosage rate or time of application be exceeded, damage to cereal crops may occur.
  - Where certain climatic conditions (such as lengthy wet, cold periods) prevail soon after application, then the use of **BRUSH-OFF®** can lead to a yellowing of the leaves of the cereal plants and eventually to temporary retarded growth.

**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 soil, climatic and storage conditions, quality of dilution water, compatibility with other substances not indicated on the label and the occurrence of resistance of the 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 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:**

### **PRECAUTIONARY STATEMENTS:**

#### **Prevention:**

- Avoid release to the environment.

#### **Response:**

- Collect spillage.

#### **Disposal:**

- Dispose of contents/ container to an approved waste disposal plant.

Do not smoke, drink or eat while using this product.

Prevent contamination of food, feeds, drinking water, water supplies and eating utensils.

#### **For safety when mixing:**

- Do not inhale dust.
- Wear a face shield.
- In the event of contact with eyes, wash with water immediately.
- Wear rubber gloves.
- In the event of contact with skin, wash with water and soap immediately.
- In the event of contact with clothes, remove and wash.

#### **For safety when spraying:**

- Do not inhale and avoid contact with the spray mist as much as possible.
- Avoid spray drift onto susceptible crops, grazing, rivers, dams and areas not under treatment.

#### **For safety after spraying:**

- Wash yourself.
- Change and wash work clothes.
- **Clean applicator thoroughly after use using the following method:**
  - i. Drain tank completely then flush tank, boom and hoses with clean water. Drain again.
  - ii. Fill the tank with clean water and add household ammonia (containing 3 % active) at the rate of 1 l for every 100 l water. Circulate the ammonia solution through the tank, boom and hoses for at least 15 minutes. Drain completely.
  - iii. To remove traces of ammonia, rinse the tank with clean water and flush through booms and hoses.
  - iv. Repeat step (ii).
  - v. Nozzles and filters must be removed and cleaned separately with ammonia solution at the same concentration as above.
  - vi. Any contamination on the outside of the spraying equipment should be removed by washing with clean water.

Do not spray, drain or flush equipment on or near desirable trees or plants or where their roots may extend.

## **FIRST AID MEASURES:**

#### ***General Advice:***

- Move out of dangerous area.
- Show this safety data sheet to the doctor in attendance.
- Do not leave the victim unattended.

#### ***If Inhaled:***

- If unconscious, place in recovery position and seek medical advice.
- If symptoms persist, call a physician.

#### ***In case of eye contact:***

- Flush eyes with water as a precaution.
- Remove contact lenses.
- Protect unharmed eye.
- Keep eye wide open while rinsing.

- If eye irritation persists, consult a specialist.

***If swallowed:***

- Keep respiratory tract clear.
- Do not give milk or alcoholic beverages.
- Never give anything by mouth to an unconscious person.
- If symptoms persist, call a physician

***Most important symptoms and effects, both acute and delayed***

- None known.

***Indication of any immediate medical attention and special treatment needed***

- Treat symptomatically

**CONTAINER DISPOSAL:**

- Containers and packages must be completely emptied before being disposed of.
- Shake out thoroughly into the application hopper.
- **TRIPLE RINSE** the empty container as follows: 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](http://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.

**RESISTANCE WARNING:**

For resistance management **BRUSH-OFF®** is a group code 2 herbicide. Any weed population may contain individuals naturally resistant to **BRUSH-OFF®** and other group code 2 herbicides. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. **BRUSH-OFF®** or any other group code 2 herbicide may not control these resistant weeds.

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.

**USE RESTRICTIONS CEREALS:**

1. **FOLLOW-UP CROPS:**

1.1 Treated areas should not be planted with any crops other than small grain cereals (wheat, barley, oats) within 10 months of **BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®** treatment. Wheat may be planted within one month while barley and oats may be planted 6 months after **BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®** application.

1.2 **BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®** applied to soils with pH levels exceeding 6.5 (KCl) and/or soils containing free lime may result in longer residual activity in respect of follow-up crops. Consult a FMC technical advisor should any uncertainty occur.

2. **BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®** has a limited effect on germinating weeds, the control of which is affected by factors such as weed species, soil pH and soil moisture.

3. Erratic control/regrowth of weeds may occur if one or more of the following conditions exist:

- 3.1 Light sandy acid soils that
  - tend to leach
  - tend to become waterlogged
- 3.2 Excessive stones covering the soil surface.

3.3 Should application be made later than 6 weeks after planting in the Western, Southern and Eastern Cape.

3.4 A low plant density.

Under risky conditions described under 3.1 and 3.2, application of the herbicide should take place not later than two weeks post-emergence of the weeds.

4. **BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®** may not be used on the oats cultivar Heros.
5. Do not spray **BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®** on to cereals that are growing under stress conditions (stress conditions can result from water logging, drought, disease, insect damage and mineral element deficiencies, especially nitrogen).
6. **Undersown Cereals:**  
**BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®** must not be applied to cereals undersown with pastures.
7. **Dilution Water:**  
Use only water of which the quality is suitable for overhead irrigation. (Avoid water with a conductivity exceeding 1.0 mS/cm, or with a resistance of less than 300 ohm and/or pH higher than eight).
8. Do not apply **BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®** in combination with insecticides containing chlorpyrifos.
9. Do not add a wetter to the spray mixture when EC formulations are mixed with **BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®**.
10. Rain immediately after application (before the spray deposit has dried) may adversely affect the efficacy of the herbicide.
11. Under no circumstances should unused spray mixture be kept overnight.

#### **DIRECTIONS FOR USE CEREALS:**

#### **USE ONLY AS DIRECTED**

- A dosage rate variation of as much as 7,5 % can occur if the **BRUSH-OFF®** measuring device is used to measure the required dosage rate. For total accuracy the dosage rates must be weighed out.
- Apply **BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®** tank mixtures with **MCPA** between the 3-5 leaf stage of the crop in the Western, Southern and Eastern Cape.
- Apply **BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®** tank mixtures and tank mixtures with **MCPA** or **2,4-D ESTER** from the 3 leaf stage of the crop and before the canopy stage in the Summer Rainfall Region.
- Prepare only sufficient spray mixture for immediate use, in the following manner:

#### **MIXING:**

- Pre-mix the required amount of **BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®** with a small amount of water to form a smooth cream.
- Half fill the spray tank (or pre-mix tank in case of aerial application) with water.
- Add the creamed **BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®** to the tank through a sieve.
- Thereafter add the mixing partners e.g **MCPA** or **2,4-D ESTER** followed by the adjuvant of choice as per use Tables A or B.
- Top up with water whilst agitating continuously.
- Apply directly after thorough mixing and continue agitation during application.

#### **APPLICATION:**

##### **1. Ground Application:**

- Apply by means of a tractor mounted boom sprayer that is correctly calibrated to deliver at least 200 l spray mixture/ha at a constant speed and pressure (100-200 kPa) to ensure an even delivery.
- Avoid overlapping of swaths and close the nozzles while starting, slow movement, turning and stopping to prevent over-application.

##### **2. Aerial application:**

Aerial application of **BRUSH-OFF®** 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 Pesticides). 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 be met:

- Volume: A spray mixture volume of 30 to 35 l per ha 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.
- Droplet coverage: 30 to 40 droplets per cm<sup>2</sup> must be recovered at the target area.
- Droplet size: A droplet spectrum with a VMD of 300 to 350 microns is recommended. Limit the production of fine droplets less than 150 microns (high drift and evaporation potential) to a minimum.
- Flying height: Maintain the height of the spray boom at 3 to 4 metres above the target. Do not spray when aircraft dives, is in a climb or when banking.
- Use suitable atomising equipment that will produce the desired droplet size and coverage, but which will ensure the minimum loss of product. The spraying system must produce a droplet spectrum with the lowest possible "Relative Span".
- Position all the atomisers within the inner 60 to 75 % of the wingspan to prevent droplets from entering the wingtip vortices.
- The difference in temperature between the wet and dry bulb thermometers, of a whirling hygrometer, should not exceed 8 °C.
- Stop spraying 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.
- Ensure 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 and that relevant data will be compiled in a logbook and kept for future reference.

#### **COMPATIBILITY:**

**BRUSH-OFF®** or **BRUSH-OFF®** plus **GLEAN®** tank mixtures are compatible with **SPECTRA AID S** (Reg. No. L7141 Act No. 36 of 1947), **MCPA, 2,4-D ESTER & ROUND UP** (Reg. No. L0407 Act No. 36 of 1947).

**APPLICATION TABLE A : ONLY FOR THE WESTERN, SOUTHERN AND EASTERN CAPE**

CROP	DOSAGE	REMARKS
<b>Ground and Aerial application:</b> Wheat ( <i>Triticum aestivum</i> ) Oats ( <i>Avena sativa</i> ) Barley ( <i>Hordeum vulgare</i> )	<p><b>3.5g BRUSH-OFF® or 4g BRUSH-OFF® plus 300 ml SPECTRA AID S /100 l spray mixture</b></p> <p><b>3.5 g BRUSH-OFF® plus 8 g GLEAN® plus 300 ml SPECTRA AID S /100 l spray mixture</b></p>	<p>Apply as a post- emergence spray when the cereal crop is in the 3 to 5 leaf stage, but after the weeds have emerged and not exceeded the optimum recommended stage as indicated below. Refer to Table 1 for weed spectrum controlled with <b>BRUSH-OFF®</b> at specific dosage rates and to Table 2 for weed spectrum controlled with <b>BRUSH-OFF®</b> plus <b>GLEAN®</b> tank mixture.</p> <p><b>MCPA at 500 ml/ha should be added to all BRUSH-OFF® or BRUSH-OFF® plus GLEAN® applications for improved control of <i>Raphanus raphanistrum</i> (Wild radish). This also acts as an anti-resistant strategy. Refer to the MCPA label for specific use restrictions on cereals.</b></p> <p>See "Use Restrictions" no.'s 3.1 and 3.2 and notes below.</p>

**NOTES**

- Established weeds not killed by pre-plant cultivations and showing signs of regrowth will not be controlled.
- Do not apply if the crop is growing under stress such as drought, excessive moisture, etc.
- Moderate chlorosis and/or retarded growth may occur after application. DO NOT exceed the recommended dosage rate.
- Best results are obtained whilst weeds are actively growing under moist conditions during the period of control.
- For mixing instructions, refer to "DIRECTIONS FOR USE".

**Table 1: WEEDS CONTROLLED IN THE WESTERN, SOUTHERN AND EASTERN CAPE: BRUSH OFF APPLICATION @ 3.5 - 4 g/ha – refer to APPLICATION TABLE A.**

BOTANICAL NAME	COMMON NAME	MAXIMUM WEED APPLICATION STAGE	
		BRUSH-OFF® 3.5g PER HA	BRUSH-OFF® 4g PER HA
<i>Anagallis arvensis</i>	Pimpernel	3 cm high	5 cm high
<i>Chenopodium album</i>	White goosefoot	3 cm high	5 cm high
<i>Emex australis</i>	Spiny emex	3 cm diameter	5 cm diameter
<i>Fumaria muralis</i>	Fumitory	not recommended	3 cm high
<i>Galinsoga parviflora</i>	Gallant soldier	2 cm high	3 cm high
<i>Pentzia suffruticosa</i>	Small stinkweed	3 cm high	5 cm high
<i>Plantago lanceolata</i>	Narrow leaved ribwort	2 cm high	3 cm high
<i>Polygonum aviculare</i>	Prostrate knotweed	not recommended	3 cm high
<i>Raphanus raphanistrum</i>	Wild radish	2 leaves	3 leaves
<i>Sisymbrium thellungii</i>	Common mustard	2 leaves	3 leaves
<i>Spergula arvensis</i>	Corn spurry	3 cm high	5 cm high

**Table 2: WEEDS CONTROLLED IN THE WESTERN, SOUTHERN AND EASTERN CAPE: Application of 3.5 g BRUSH-OFF® plus 8 g GLEAN® - refer to APPLICATION TABLE A. Control of the weeds listed in Table 1 above plus the following weeds in Table 2. Also refer to corresponding 'NOTES'.**

BOTANICAL NAME	COMMON NAME	TIMING OF APPLICATION
<i>Amaranthus spinosus</i>	Thorny pigweed	Post-emergence, but not later than 4 weeks post-emergence of the weeds.
<i>Cenia turbinata</i>	Goose daisy	
<i>Emex australis</i>	Spiny emex	Under risk conditions as described in 3.1 and 3.2 (use restrictions) application should take place not later than two weeks post emergence of the weeds
+ <i>Foeniculum vulgare</i>	Fennel	
* <i>Fumaria muralis</i>	Fumitory	
<i>Medicago polymorpha</i>	Burclover	
<i>Plantago lanceolata</i>	Narrow-leaved ribwort	
<i>Poa annua</i>	Winter grass	
<i>Sonchus oleraceus</i>	Spiny sow thistle	
- <i>Vicia hirsuta</i>	Tiny purple vetch	
- <i>Vicia sativa</i>	Broad leaved purple vetch	

**NOTE:** Suppression of *Lolium temulentum* (darnel) can be obtained provided **BRUSH-OFF®** plus **GLEAN®** is applied before the two-leaf stage of this weed.

\* Erratic control of *Fumaria muralis* may occur, but more constant control may be expected if the application is made to young plants (maximum two true leaves)

+ Suppression of *Foeniculum vulgare* (fennel) can be obtained with a post-emergence application provided the application is made not later than four weeks post emergence of the weeds.

Suppression of *Vicia hirsuta* (**tiny purple vetch**) and *Vicia sativa* (broad-leaved purple vetch) can be obtained with a post-emergence application provided the application is made not later than four weeks post-emergence of the weeds. Due to a long germination period these weeds can germinate after the application of **BRUSH-OFF®** plus **GLEAN®** in which case they will not be controlled.



**APPLICATION TABLE B: ONLY FOR THE SUMMER RAINFALL REGION**

CROP	RATE OF PRODUCT/ha	REMARKS
<p><b>Ground application and Aerial application:</b> ONLY DRYLAND WHEAT (<i>Triticum aestivum</i>)</p>	<p><b>10 g BRUSH-OFF® plus 10 g GLEAN® plus 300 ml SPECTRA AID S /100 l spray mixture</b></p>	<p>Apply as a post-emergence spray when the cereal crop is in the 2-5 leaf stage onwards, but before the crop canopies and after the weeds have emerged but have not exceeded the maximum recommended stage as indicated below in Table 3.</p> <p><b>The addition of MCPA @ 500 ml/ha or 2,4-D ESTER @ 100 ml/ha must be added to the BRUSH-OFF® plus GLEAN® tank mixtures for improved control of <i>Fallopia convulvulus</i>, <i>Polygonum aviculare</i> and <i>Senecio consanguineus</i>. The above mentioned tank mixtures also serve as an anti-resistance strategy. Refer to the MCPA /2,4-D ESTER labels for specific use restrictions on cereals. NOTE: See also use restrictions No: 3.1, 3.2, &amp; 3.3. Refer also notes below.</b></p>

**NOTES:**

- Do not apply if the crop is growing under stress, such as drought, excessive moisture, etc.
- Moderate chlorosis and/or shortening of straw length may occur after application but yields will not be adversely affected. DO NOT exceed the recommended dosage rate.
- Best results are obtained whilst weeds are actively growing under moist conditions during the period of control.
- Established weeds not killed by cultivation and showing signs of re-growth will not be controlled.
- For mixing instructions refer to '**DIRECTIONS FOR USE**'.

**Table 3: WEEDS CONTROLLED IN THE SUMMER RAINFALL REGION: 10 g BRUSH OFF® plus 10g GLEAN® - refer to APPLICATION TABLE B.**

The following weed species are normally controlled if sprayed from seedling up to the stage indicated. Weeds must be actively growing under **moist** conditions:

BOTANICAL NAME	COMMON NAME	MAXIMUM WEED STAGE AT APPLICATION
<i>Amaranthus spp.</i>	Pigweed	6 leaves
<i>Chenopodium album</i>	White goosefoot	5 cm tall
<i>Helianthus annuus</i>	Volunteer sunflower	6 leaves
<i>Sisymbrium thellungii</i>	Common wild mustard Climbing	4 leaves
<i>Fallopia convulvulus</i>	knotweed	5 cm tall
<i>Polygonum aviculare</i>	Prostrate knotweed	5 cm ranks
<i>Raphanus raphanistrum</i>	Wild radish	3 - 4 leaves
<i>Spergula arvensis</i>	Corn spurry	5 cm tall
<i>Senecio consanguineus</i>	Ragwort	4 leaves
<i>Tribulus terretris</i>	Devil's thorn	10 cm diameter

**NOTE:** Weeds germinating after the application of **BRUSH-OFF®** plus **GLEAN®** will not be controlled.

## **USE RESTRICTIONS: USES ON INVADER PLANTS**

1. Where *Pinus* and *Eucalyptus* species are to be planted into areas treated with **BRUSH-OFF®**, the following waiting periods must be observed:  
Coppice and cut stump applications: 8 weeks.  
*In the event of areas treated with **BRUSH-OFF®** being transplanted to other tree species (seedlings) a withholding period of 12 months after application is recommended.*  
*The above mentioned conditions are only valid if the recommended rate of **BRUSH-OFF®** has been used.*
2. Under no circumstances should unused spray mixture be kept overnight.
3. Use only water of which the quality is suitable for overhead irrigation. Avoid water with a conductivity exceeding 1,0 mS/cm, a resistance of less than 300 ohm and pH higher than 8.
4. Do not use **BRUSH-OFF®** in combination with any other chemicals other than mentioned on the label without consulting your technical adviser.

## **DIRECTIONS FOR USE (NON-AGRICULTURAL USES)**

## **USE ONLY AS DIRECTED**

1. A dosage rate variation of up to 7,5 % can occur if the measuring cup supplied is used to measure out the required dosage rate. For total accuracy the dosage rate must be weighed out.
2. **PRE-MIXING:**  
Mix the required amount of **BRUSH-OFF®** with a small amount of water to form a smooth cream without any remaining granules.
3. **MIXING:**  
Half fill the spray tank with water and add the creamed product to the tank. Add the required quantity of surfactant whilst agitating constantly and then fill the spray tank with water.
4. **GROUND APPLICATION:**
  - Use only on actively growing plants as a full cover leaf spray thoroughly wetting all foliage to the point of run off. Avoid run-off onto the soil.
  - Use a knapsack sprayer fitted with a solid cone nozzle and maintain a constant spray pressure of between 200 and 250 kPa during application.
  - Mark areas to be treated accurately so that no duplication takes place – especially with knapsack applications.
  - The product has a slow action and green leaves may still be present up to 6 months after application.
  - Do not apply the product over the top of newly planted trees and avoid spray contact with leaves or any other plant parts of desired trees/plants.

**Note: The addition of a surfactant is essential.**

## **5. AERIAL APPLICATION:**

Aerial application of **BRUSH-OFF®** 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 Pesticides). 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 be met:

- Volume: A spray mixture volume minimum of 100 litres water 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.
- Droplet coverage: 30 to 40 droplets per cm<sup>2</sup> must be recovered at the target area.
- Droplet size: A droplet spectrum with a VMD of 300 to 350 microns is recommended. Limit the production of fine droplets less than 150 microns (high drift and evaporation potential) to a minimum.
- Flying height: Maintain the height of the spray boom at 3 to 4 metres above the target. Do not spray when aircraft dives, is in a climb or when banking
- Use suitable atomising equipment that will produce the desired droplet size and coverage, but which will ensure the minimum loss of product. The spraying system must produce a droplet spectrum with the lowest possible "Relative Span".

- Position all the atomisers within the inner 60 to 75 % of the wingspan to prevent droplets from entering the wingtip vortices.
- The difference in temperature between the wet and dry bulb thermometers, of a whirling hygrometer, should not exceed 8 °C.
- Stop spraying 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.
    - Ensure 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 and that relevant data will be compiled in a logbook and kept for future reference.
- Do not spray under excessively high temperatures.
  - **Approaching the target from both directions will reduce shading and improve coverage.**

**BRUSH-OFF®** is a highly active herbicide that in very small quantities, when used incorrectly, can cause serious damage to crop seedlings or deciduous fruit trees and grape vines during the budding and early season growth stages. When aurally applied under the following conditions it can cause serious damage as far as 3-5 kilometers from the nearest flight path of the aircraft: cloudy weather with relative humidity above 80 % and low air movement of less than 5 km per hour. Where such conditions prevail, aerial application should not be carried out where crop seedlings or deciduous fruit trees and grape vines in budding or early development stages are present within 5 kilometers of the nearest flight path.

## RATES AND APPLICATION:

TARGET SPECIES	RATE	REMARKS
<b>1. Gum coppice</b> <i>(E.grandis)</i> Knapsack application	80 g per 100 ℓ water	<b>Timing:</b> Application may be made all year round. Avoid spraying under very cold conditions in the winter. <b>Plant Height:</b> Apply to active growing coppice between 0,5 and 2 m high. <b>Surfactant:</b> Addition of a registered surfactant will improve efficacy. <b>Application:</b> Apply to thoroughly wet all foliage but avoid run-off. <b>Important:</b> Avoid run-off onto the soil. <b>Regrowth:</b> If regrowth occurs, follow-up treatments on a spot spray basis may be necessary. Also refer to NOTES 1 & 2 below.
<b>2. Gum coppice</b> <i>(E.grandis)</i> Aerial application  a. Mature coppice from 2nd rotation onwards  b. Regenerated or seedling trees	200 g <b>BRUSH-OFF®</b> + 3 ℓ <b>ROUNDUP</b> per ha  150 g <b>BRUSH-OFF®</b> + 3 ℓ <b>ROUNDUP</b> per ha	<b>COPPICE REQUIREMENTS:</b> <b>Timing:</b> Application may be made all year round. Avoid spraying under very dry or cold conditions as efficacy may be reduced. <b>Plant Height:</b> Coppice and/or seedlings must be between 1,5 and 1,8 m high. Ensure all viable buds have sprouted. <b>Regrowth:</b> Manual spot-spraying may be necessary where regrowth occurs, at the following rate: <b>BRUSH-OFF®</b> at 80 g/100 ℓ water plus wetter. <b>AERIAL APPLICATION REQUIREMENTS:</b> <b>Conditions:</b> Only spray under conditions ideal for aerial application. Even a slight breeze will cause shading due to drift. <b>Application Volume:</b> A MINIMUM water volume of 100 ℓ/ha must be used. Higher water volumes will improve efficacy. <b>Swath Direction:</b> Approaching the target from both directions will improve coverage and reduce shading. <b>Surfactant:</b> Not necessary. See “Aerial Application” under <b>DIRECTIONS FOR USE</b> above for detailed requirements. Also refer to NOTES 1 & 2 below.
<b>3. Gum cut stump</b> <i>(E.grandis)</i>	180 g per 100 ℓ water	<b>Timing:</b> Application should be directed at the cambium layer of the stump <b>within two hours of felling</b> . Preferably apply <b>immediately</b> after felling. <b>Volume:</b> Apply 15-20 ml of spray mixture per 10 cm stump diameter (measured at ground level). A minimum of 15 ml of spray mixture must be applied to each 10 cm stem in the case of multi-stem trees. <b>Method:</b> Use a low pressure knapsack sprayer, a hand-held applicator or dosing gun. <b>Surfactant:</b> Addition of a registered surfactant will improve efficacy. <b>Important:</b> Avoid run-off onto the soil. Application later than two hours after felling will result in reduced efficacy. Also refer to NOTES 1 & 2 below.
<b>4. American Bramble</b> <i>(Rubus cuneifolius)</i> Knapsack application	25 g per 100 ℓ water	<b>Timing:</b> A single application to be made during the active growing period (October to April) and preferably during the late summer (January to end April) but before the onset of winter. <b>Target:</b> Apply to the foliage of actively growing plants. <b>Ground Application:</b> Ensure thorough coverage of the foliage, but avoid run-off. Apply in 200–400 ℓ per ha depending on height, growth habit of the plants and density of the infestation. <b>Surfactant:</b> Add <b>SPECTRA AID S</b> (Reg. No. L7141 Act No. 36 of 1947) at registered rates. <b>Regrowth:</b> A follow-up spot treatment may be necessary during the third season after application. Also refer to NOTES 1 & 2 below.

<p><b>5. Bracken Fern</b> (<i>Pteridium aquilinum</i>) Knapsack application</p>	<p>20 g per 100 ℓ water</p>	<p><b>Timing:</b> A single application to be made during the active growing period (October to April) and preferably during the late summer (January to end April) but before the onset of winter. <b>Target:</b> Apply to the foliage of actively growing plants. <b>Ground application:</b> Ensure thorough coverage of the foliage but avoid run-off. Apply in 200–400 ℓ per ha depending on height, growth habit of the plants and density of the infestation. <b>Surfactant:</b> Add <b>SPECTRA AID S</b> (Reg. No. L7141 Act 36 of 1947) at registered rates. <b>Regrowth:</b> Spot-spraying may be necessary where regrowth occurs in the following seasons. Also refer to NOTES 1 &amp; 2 below.</p>
<p><b>6. Trifid Weed</b> (<i>Chromolaena odorata</i>) Knapsack application</p>	<p>25 g per 100 ℓ water</p>	<p><b>Timing:</b> A single application to be made during the active growing period from spring to late summer (October–April) but before the onset of winter. <b>Target:</b> Apply to the foliage of actively growing plants. <b>Plant height:</b> Plants should be 0,5-0,75 m high at application and actively growing. Plants taller than 0,75 m should be slashed and regrowth treated when 0,5–0,75 m high. <b>Ground application:</b> Ensure thorough coverage of the foliage but avoid run-off. Apply in 200–400 ℓ per ha depending on height, growth habit of the plants and density of the infestation. <b>Surfactant:</b> Add <b>SPECTRA AID S</b> (Reg. No. L 7141 Act No. 36 of 1947) at registered rates. <b>Regrowth:</b> Spot-spraying may be necessary where regrowth occurs. Also refer to NOTES 1 &amp; 2 below.</p>
<p><b>7. Bankrupt Bush</b> (<i>Stoebe vulgaris</i>) Knapsack &amp; tractor application</p>	<p>25–50 g per 100 ℓ water</p>	<p><b>Timing:</b> A single application to be made during the active growing period (October to April) and preferably during the late summer (January to end April) but before the onset of winter. <b>Target:</b> Apply to the foliage of actively growing plants. Removing the dead foliage of <i>Stoebe vulgaris</i> by means of slashing or burning before application will improve uptake of the <b>BRUSH-OFF®</b> resulting in better control. Slashing can however result in the release of ample seed, which will have to be controlled the following season. <b>Ground application:</b> Ensure thorough coverage of the foliage, but avoid run-off. Apply in 250–400 ℓ per ha depending on height, growth habit of the plants and density of the infestation. <b>Surfactant:</b> Add <b>SPECTRA AID S</b> (Reg. No. L7141 Act No. 36 of 1947) at registered rates. <b>Plant Height:</b> Use 25 g/100 ℓ when treating plants of up to 0,75m high that have adequate green foliage for uptake. Use 50 g/100 ℓ when the plants are &gt;0,75 m in height, or have many dead branches that may intercept the spray mixture and thereby limit coverage and/or absorption of the active ingredient. <b>Regrowth:</b> Spot-spraying must be done the following year in the event of regrowth. Also refer to NOTES 1 &amp; 2 below.</p>
<p><b>8. Pom-pom weed</b> (<i>Campulotinium macrocephalum</i>) and <b>Verbena</b> (<i>Verbena bonariensis</i>) Knapsack &amp; tractor application</p>	<p>25 g per 100 ℓ water</p>	<p><b>Timing:</b> A single application to be made during the active growing period (October to April) and preferably during the late summer (January to end April) but before the onset of winter. <b>Target:</b> Apply to the foliage of actively growing plants. <b>Ground application:</b> Ensure thorough coverage of the foliage, but avoid run-off. Apply in 200–400 ℓ per ha depending on height, growth habit of the plants and density of the infestation. <b>Surfactant:</b> Add <b>SPECTRA AID S</b> (Reg. No. L7141 Act No. 36 of 1947) at registered rates. <b>Regrowth:</b> Spot-spraying may be necessary where regrowth occurs. Also refer to NOTES 1 &amp; 2 below.</p>

<p><b>9. Red Sesbania</b> (<i>Sesbania punicea</i>) Knapsack application</p>	<p>25 g per 100 ℓ water</p>	<p><b>Timing:</b> Application to be made during the active growing period, well before the onset of winter senescence. Late summer applications would give the best control.  <b>Target:</b> Apply to the foliage of actively growing plants.  <b>Ground application:</b> Ensure thorough coverage of the foliage, but avoid run-off. Apply in 200–400 ℓ per ha depending on height, growth habit of the plants and density of the infestation.  <b>Surfactant:</b> Add <b>SPECTRA AID S</b> (Reg. No. L7141 Act No. 36 of 1947) at 300 ml per 100 ℓ spray mix .  Also refer to NOTES 1 &amp; 2 below.</p>
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**NOTES:**

1. **BRUSH-OFF®** will control desirable broadleaf plants/trees if accidentally treated during application. Only apply **BRUSH-OFF®** as directed applications on the target species in the vicinity of desirable broadleaf trees or plants. **BRUSH-OFF®** will not kill grasses and sedges accidentally treated during application.
2. No broadleaf plants can be planted in areas where the above - mentioned target species have been controlled with **BRUSH-OFF®** for a minimum period of 12 months.

**TRADEMARKS ACKNOWLEDGED:**

ROUNDUP	- Monsanto (Pty) Ltd
<b>SPECTRA AID S</b>	- Spectrum Research Services
GLEAN	- FMC Corporation and Affiliates