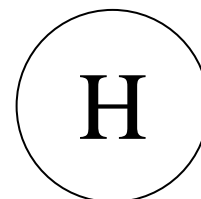


FRONT LABEL

# LockStar



A herbicide for the pre-emergence and early post-emergence control of annual and perennial weeds on natural surfaces not intended to bear vegetation, permeable surfaces overlying soil, and hard surfaces (railway ballast only).

MAPP 19101

A water dispersible granule formulation containing 360 g/kg diflufenican and 10 g/kg iodosulfuron-methyl-sodium, a sulfonylurea.

Pack size: (net)

Batch number:

The (COSHH) Control of Substances Hazardous to Health Regulations may apply to the use of this product at work.

**Authorisation holder**

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**Marketing Company**

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Telephone: 00800 1020 3333 or nearest National Poisons Information Centre

## SAFETY PRECAUTIONS

### Operator Protection

Engineering control of operator exposure must be used where reasonably practicable in addition to the following personal protective equipment:

WEAR SUITABLE PROTECTIVE GLOVES AND FACE PROTECTION (FACESHIELD) when handling the product.

However, engineering controls may replace personal protective equipment if a COSHH assessment shows they provide an equal or higher standard of protection.

WASH HANDS AND EXPOSED SKIN before eating and drinking and after work.

IF SWALLOWED, seek medical advice immediately and show this container or label.

### Environmental Protection

Do not contaminate water with the product or its container. (Do not clean application equipment near surface water / Avoid contamination via drains, farmyards and roads).

Extreme care must be taken to avoid spray drift onto non-target plants outside the target area.

**Hand-held use:** Since there is a risk to aquatic life from use, direct spray must not be allowed to fall within 2 m of the top of the bank of any static or flowing waterbody or the top of a ditch which is dry at the time of application. Spray must be aimed away from water.

**Vehicle-mounted boom sprayer:** To protect aquatic organisms, respect an unsprayed buffer zone to surface water bodies as specified for the crop. HORIZONTAL BOOM SPRAYERS MUST BE FITTED WITH THREE STAR DRIFT REDUCTION TECHNOLOGY. Low drift spraying equipment must be operated according to the specific conditions stated in the official three star rating for that equipment as published on HSE Chemicals Regulation Directorate's website. Maintain three star operating conditions until 30 m from the top of the bank of any surface water bodies.

DO NOT ALLOW DIRECT SPRAY from horizontal boom sprayers to fall within the distance specified for the crop to the top of the bank of a static or flowing water body, or within 1 m of the top of a ditch which is dry at the time of application. Aim spray away from water. NOTE: BUFFER ZONES OF MORE THAN 5 M CANNOT BE REDUCED UNDER THE LOCAL ENVIRONMENT RISK ASSESSMENT FOR PESTICIDES (LERAP) SCHEME.

The statutory buffer zone must be maintained and the distance recorded in Section A of the LERAP record form. The LERAP record form must be kept available for three years.

**Track-dedicated low-drift application system:** Do not allow direct overspray of static or flowing surface waters from track-dedicated application equipment.

### Storage and Disposal

KEEP AWAY FROM FOOD, DRINK AND ANIMAL FEEDINGSTUFFS.

KEEP OUT OF REACH OF CHILDREN.

KEEP IN ORIGINAL CONTAINER, tightly closed, in a safe place.

EMPTY CONTAINER COMPLETELY and dispose of safely.

PROTECT FROM FROST.

RINSE CONTAINER THOROUGHLY by using an integrated pressure rinsing device or manually rinse three times. Add washings to sprayer at time of filling and dispose of safely.

Cleaning of MPV apparatus must only be conducted by trained personnel at Environment Agency approved sites. Clean thoroughly after use using a wetting agent or proprietary tank cleaner with 2 rinses.

## LOCKSTAR

A water dispersible granule formulation containing 360 g/kg diflufenican and 10 g/kg iodosulfuron-methyl-sodium, a sulfonylurea.



### Warning

**Causes serious eye irritation.**

**Very toxic to aquatic life with long lasting effects.**

Wear protective gloves/ protective clothing/eye protection/face protection.

If eye irritation persists: Get medical advice/attention.

Collect spillage.

Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty containers which can be disposed of as non-hazardous waste.

Contains disodium maleate. May produce an allergic reaction.

To avoid risks to human health and the environment, comply with the instructions for use.

### Directions for use

#### FOR USE AS A PROFESSIONAL HERBICIDE

Situation:	For use on natural surfaces not intended to bear vegetation, permeable surfaces overlying soil, and hard surfaces (railway ballast only).
Maximum individual dose:	0.5 kg product/ha.
Maximum number of treatments:	1 per year.
Latest time of application:	End of June.
Aquatic buffer zone distance:	Hand-held use with coarse nozzles – 2 metres. Vehicle-mounted use with three-star nozzles – 6 metres.

#### Other specific restrictions:

This product must only be applied to natural or permeable surfaces such as gravel or railway ballast. Do not apply to any non-permeable man-made surfaces.

Use on hard surfaces refers to railway ballast only.

For hand-held use: To minimise spray drift, the product must be applied using a nozzle capable of producing a coarse quality spray.

For horizontal boom sprayer use: Low drift spraying equipment must be operated according to the specific conditions stated in the official three star rating for that equipment as published on HSE Chemicals Regulation Division's website. These operating conditions must be maintained until the operator is 30m from the top of the bank of any surface water bodies. Buffer zones greater than 5m are NOT eligible for buffer zone reduction under the LERAP scheme.

For spray train use: Do not apply more than one application per year of diflufenican-containing products. Do not allow direct overspray of static or flowing surface waters from track dedicated application equipment.

**READ THE LABEL BEFORE USE. USING THIS PRODUCT IN A MANNER THAT IS INCONSISTENT WITH THE LABEL MAY BE AN OFFENCE. FOLLOW THE CODE OF PRACTICE FOR USING PLANT PROTECTION PRODUCTS.**

## **DIRECTIONS FOR USE**

**IMPORTANT:** This information is approved as part of the Product Label. All instructions within this section must be read carefully in order to obtain safe and successful use of this product.

### **GENERAL INFORMATION**

LockStar is a water dispersible granule formulation containing 360 g/kg diflufenican and 10 g/kg iodosulfuron-methyl-sodium. LockStar is a pre- and early post-emergence herbicide for control of a wide range of annual and perennial grasses and broad-leaved weeds for up to 4 months on non-crop areas (permeable surfaces overlying soil) such as: gravel paths and driveways, porous surfaces alongside roadways and fence lines, porous strips of land adjacent to buildings, industrial sites, timber yards, farm yards, oil and gas storage sites, power stations, electric sub-stations, beneath pylons, around street/park obstacles and furniture, porous areas near to trees and shrubs and other natural surfaces where vegetation is not desirable, and railway ballast.

LockStar is applied to give pre- and early post-emergence weed control up to the 2-leaf stage of the weeds. One application of LockStar can be made in each year between the beginning of February and the end of June. LockStar can be applied during cold weather. However application to frozen ground should be avoided.

LockStar is to be dispersed in water (0.5 kg in 300 - 500 L) and should be applied using hand-held applicators or vehicle mounted sprayer. A drift shield may be used. For application to railway ballast, a track dedicated low drift application system may also be used.

LockStar will not provide control of established deep rooted perennial weeds such as dandelion, thistle, dock and nettles.

### **RESTRICTIONS**

Since there is a risk to aquatic life from use, direct spray from hand-held equipment must not be allowed to fall within 2 m of the top of the bank of any static or flowing waterbody or the top of a ditch which is dry at the time of application. Do not allow direct spray from horizontal boom sprayer to fall within 6 m of the top of the bank of a static or flowing water body, or within 1 m of the top of a ditch which is dry at the time of application. Spray must be aimed away from water.

Direct spray from the train sprayer must not be allowed to fall within 5 m of the top of the bank of a static or flowing water body. Do not allow direct overspray of static or flowing surface waters.

Applications should not be made to plants growing under stress conditions, such as drought or waterlogging, as reduced levels of control may result.

Do not spray in windy weather.

Extreme care must be taken to avoid drift onto non-target plants, this includes: all green plant parts such as leaf surfaces, young bark or suckers of valued plants. Failure to do so may result in permanent damage or plant death.

Where LockStar has been applied to sites that are subsequently to be cleared or grubbed, a period of at least 6 months should elapse between treatment and the sowing and planting of subsequent crops. In addition, the soil should be deeply cultivated or dug afterwards to ensure thorough mixing in order to remove any risk of damaging subsequent crops or planting.

Where LockStar or other products containing diflufenican are applied in successive years, levels of diflufenican will build up in the soil. Even where soils are thoroughly dug there may be a risk of damage to subsequent plantings.

Care should be taken when applying LockStar as heavy rain following application may wash the herbicide onto sensitive areas such as newly sown grass and areas about to be planted. Where the soil organic matter content is greater than 10%, or for example where leaves have collected or where a mat of organic matter has built up, pre-emergence activity will be reduced.

For maximum persistence of activity the area treated should not be cultivated or raked following application.

For maximum pre-emergence and residual activity from LockStar please ensure good coverage of the spray swath, Overdosing should be avoided.

**DO NOT APPLY LOCKSTAR OVER DRAINS OR IN DRAINAGE CHANNELS, GULLIES OR SIMILAR STRUCTURES FOR MOVING WATER.**

### **WEEDS CONTROLLED**

Strains of some annual weeds (e.g. black-grass, wild-oats, and Italian rye-grass) have developed resistance to herbicides which may lead to poor control. A strategy for preventing and managing such resistance should be adopted. This should include integrating herbicides with a programme of cultural control measures. Guidelines have been produced by the Weed Resistance Action Group (WRAG) and copies are available from the AHDB, CPA, your distributor, crop adviser or product manufacturer.

The presence of populations resistant to ALS-inhibiting herbicides may lead to unacceptable levels of control. To reduce the risk of developing resistance or where resistance to sulfonylurea herbicides is suspected, applications should be made to young, actively growing weeds.

Key aspects of the LockStar resistance management strategy are:

- ALWAYS follow WRAG guidelines for preventing and managing herbicide resistant grass and broad-leaved weeds.
- IDEALLY apply LockStar pre-emergence or to young actively growing weeds up to the 2 leaf stage.
- DO NOT use LockStar as the sole means of grass weed or broad-leaved weed control in successive years.
- ALWAYS rotate use of grass and broad-leaved weed herbicides with non-ALS modes of action.
- ALWAYS monitor weed control effectiveness and investigate any odd patches of poor grass or broad-leaved weed control. If unexplained contact your agronomist or technical advisor, who may consider a resistance test appropriate.
- Only one application of LockStar may be made per year.

LockStar controls susceptible annual and perennial weeds if applied pre- or early post-emergence up to the 2-leaf stage of the weeds, as directed in **Rates of Use**. Effectiveness using three star drift reduction technology may be reduced.

## **On natural surfaces not intended to bear vegetation, permeable surfaces overlying soil**

### **Grass weeds:**

Annual meadow-grass (*Poa annua*)

Perennial rye-grass from seed (*Lolium perenne*)

Cock's-foot (*Dactylis glomerata*)

### **Broad-leaved weeds:**

Black nightshade (*Solanum nigrum*)

Mayweeds (*Matricaria* sp.)

Bristly oxtongue (*Helminthotheca echinoides*)

Mouse-ear hawkweed (*Pilosella officinarum*)

Canadian fleabane (*Erigeron canadensis*)

Narrow-leaved ragwort (*Senecio inaequidens*)

Common field speed-well (*Veronica persica*)

Perennial sow-thistle (*Sonchus arvensis*)

Common groundsel (*Senecio vulgaris*)

Prickly sow-thistle (*Sonchus asper*)

Common purslane (*Portulaca oleracea*)

Ribwort Plantain (*Plantago lanceolata*)

Common Stork's-bill (*Erodium cicutarium*)

Rosebay willowherb (*Chamerion angustifolium*)

Cut-leaved crane's-bill (*Geranium dissectum*)

Scarlet pimpernel (*Anagallis arvensis*)

Dandelion (*Taraxacum officinale*)

Shepherd's purse (*Capsella bursa-pastoris*)

Dove's-foot cranes-bill (*Geranium molle*)

Smooth sow-thistle (*Sonchus oleraceus*)

Fat hen (*Chenopodium album*)

Sowthistles (*Sonchus* sp.)

Field pansy (*Viola arvensis*)

Spotted spurge (*Chamaesyce maculate*)

Greater plantain (*Plantago major*)

Tussock hawkweed (*Hieracium lachenalii*)

Hairy bitter-cress (*Cardamine hirsuta*)

White clover (*Trifolium repens*)

Knotgrass (*Polygonum aviculare*)

Willowherbs (*Epilobium* sp.)

Lesser trefoil (*Trifolium dubium*)

Yarrow (*Achillea millefolium*)

## **On hard surfaces (railway ballast only)**

### **Grass weeds:**

Annual meadow-grass (*Poa annua*)

### **Broad-leaved weeds:**

Bristly oxtongue (*Helminthotheca echinoides*)

Mayweeds (*Matricaria* sp.)

Creeping thistle (*Cirsium arvense*)

Ribwort (*Plantago lanceolata*)

Cut-leaved cranesbill (*Geranium dissectum*)

Rosebay willowherb (*Chamerion angustifolium*)

Dandelion (*Taraxacum officinale*)

Shepherd's purse (*Capsella bursa-pastoris*)

Dove's-foot cranesbill (*Geranium molle*)

Sow-thistles (*Sonchus* sp.)

Field bindweed (*Convolvulus arvensis*)

Willowherbs (*Epilobium* sp.)

Lesser trefoil (*Trifolium dubium*)

Well-developed or established weeds (greater than 2 true leaves) will not be controlled.

## SUSCEPTIBILITY OF NON-TARGET SPECIES

Trials have been conducted to evaluate the susceptibility of ornamental plants which could be exposed to spray drift during application. The following deciduous trees, shrubs and conifer species are resistant to the product when applied as recommended. Transient effects such as discoloration or chlorosis may occur if spray drift comes in to direct contact with the foliage, but this should have no long-lasting adverse effect on the plants.

Alder ( <i>Alnus glutinosa</i> )	Himalayan birch ( <i>Betula utilis</i> )
American alder ( <i>Alnus incana</i> )	Horse chestnut ( <i>Aesculus hippocastanum</i> )
American red oak ( <i>Quercus rubra</i> L.)	Italian alder ( <i>Alnus cordata</i> )
Ash-leaved maple ( <i>Acer negundo</i> )	Large-leaved linden ( <i>Tilia platyphyllos</i> )
Bull bay ( <i>Magnolia grandiflora</i> )	London plane ( <i>Platanus hybrida</i> )
Canoe birch ( <i>Betula papyrifera</i> )	Magnolia sp.
Common rowan ( <i>Sorbus aucuparia</i> )	Norway maple ( <i>Acer platanoides</i> )
Crab apple ( <i>Malus sylvestris</i> )	Pussy willow ( <i>Salix caprea</i> )
Elms ( <i>Ulmus</i> L. spec.)	Quercus L. spec.
English oak ( <i>Quercus robur</i> )	Red gum ( <i>Liquidambar styraciflua</i> )
European ash ( <i>Fraxinus excelsior</i> )	Silver birch ( <i>Betula pendula</i> )
European beech ( <i>Fagus sylvatica</i> )	Small-leaved linden ( <i>Tilia cordata</i> )
Evergreen oak ( <i>Quercus ilex</i> L.)	Sycamore ( <i>Acer pseudoplatanus</i> )
Field maple ( <i>Acer campestre</i> )	Tulip tree ( <i>Liriodendron tulipifera</i> L.)
Ginkgo	White oak ( <i>Quercus pubescens</i> )
Gleditsia L. spec.	
Alder buckthorn ( <i>Rhamnus frangula</i> )	Juneberry ( <i>Amelanchier canadensis</i> )
Blackthorn ( <i>Prunus spinosa</i> )	Privets ( <i>Ligustrum spectabilis</i> )
Cherry laurel ( <i>Prunus laurocerasus</i> )	Prunus ornamental species
Chokeberry ( <i>Aronia prunifolia</i> )	Prunus sp.
Common box ( <i>Buxus sempervirens</i> )	Red-flowered currant ( <i>Ribes sanguineum</i> )
Common holly ( <i>Ilex aquifolium</i> L.)	Rhododendron L. spec.
Common lilac ( <i>Syringa vulgaris</i> )	shrubby cinquefoil ( <i>Potentilla fruticosa</i> )
Dogwoods ( <i>Cornus spectabilis</i> )	Siberian pea tree ( <i>Caragana arborescens</i> )
Elaeagnus sp.	Snowberry ( <i>Symphoricarpos</i> )
European hazel ( <i>Corylus avellana</i> )	Spindle ( <i>Euonymus europaeus</i> )
Forsythia ( <i>Forsythia x intermedia</i> )	Spiraea sp.
Garden privet ( <i>Ligustrum ovalifolium</i> )	Spiraea x vanhouttei
Golden currant ( <i>Ribes aureum</i> )	Viburnum tinus L.
Hibiscus L. spec.	White beech ( <i>Carpinus betulus</i> )
Holly-leaved barberry ( <i>Mahonia aquifolium</i> )	Wild privet ( <i>Ligustrum vulgare</i> )
Japanese barberry ( <i>Berberis thunbergii</i> )	Wintercreeper ( <i>Euonymus fortunei</i> )
Austrian pine ( <i>Pinus austriaca</i> )	Nordmann fir ( <i>Abies nordmanniana</i> )
Chinese juniper ( <i>Juniperus media</i> )	Northern white cedar ( <i>Thuja occidentalis</i> )
Chinese thuja ( <i>Thuja orientalis</i> )	Norway spruce ( <i>Picea abies</i> )
Colorado spruce ( <i>Picea pungens</i> )	Picea sp.
Lawson's false cypress ( <i>Chamaecyparis lawsoniana</i> )	Scots pine ( <i>Pinus sylvestris</i> )
Leyland cypress ( <i>Cupressocyparis leylandii</i> )	Western red cedar Excelsa ( <i>Thuja plicata excelsa</i> )

**List of sensitive ornamental plants:** spray drift may cause significant damage, such as necrosis, discoloration, chlorosis or stunting of European yew (*Taxus baccata*), *rosa*, *cotoneaster* and *crataegus* species.



Do not apply LockStar around or under shrubs of the *Rosacea* family.

Application around or under other species not listed here is not recommended.

## SITUATION SPECIFIC INFORMATION

### Use Areas

LockStar may be used in non-crop areas against weeds in open soil and against weeds growing in gravel or other porous surfaces. Examples of suitable use areas include gravel paths and driveways, porous surfaces alongside roadways and fence lines, porous strips of land adjacent to buildings, industrial sites, timber yards, farm yards, oil and gas storage sites, power stations, electric sub-stations, beneath pylons, around street/park obstacles and furniture, porous areas near to trees and shrubs and other natural surfaces where vegetation is not desirable. LockStar may also be used on railway track, railway sidings and other ballast areas of rail infrastructure.

LockStar must not be used on non-porous man made surfaces, for example paved areas, concrete or tarmac car parks and footpaths.

LockStar may be used on porous surfaces such as gravel ONLY where the underlying surface is soil. Do not use if an impermeable membrane lies between the gravel and the soil. The product must not be used on gravel where the underlying surface is concrete, tarmac or any other non-porous surface, or in situations where there is potential for run-off into surface waters.

### Rates of Use

EQUIPMENT	AREA	PRODUCT REQUIRED	WATER VOLUME	Spray Quality ( Nozzle)	Buffer Zone
Knapsack	100m <sup>2</sup>	5 g	3 - 5 L	Coarse  *Hypro Polijet AN0.6 or similar	2 m
Vehicle mounted sprayer	1 ha	0.5 kg	300 – 500 L	Three-star drift reduction nozzles	6 m
Track dedicated low drift application system	1 ha	0.5 kg	300 – 500 L	Coarse  Radiarc nozzle or similar	-

\*Hypro Polijet AN0.6 nozzle provided gives, subject to calibration: a coarse spray with a flow rate of 0.6 L/min at 1 bar, giving 225 L/ha at 4kph walking speed, swath width of 40 cm, 40 cm nozzle height

### Application Timing

Apply in early spring to weed-free soil (latest 2-leaf stage of any weeds present). Apply at any time from February until the end of June. 24 hours of dry weather are required immediately following application for optimum control.

### **MIXING AND SPRAYING**

Half fill the spray tank with clean water and start gentle agitation. Add the required quantity of LockStar. Top up to the required volume with water and agitate to ensure the granules are dissolved. Use immediately.

**WASH OUT THE SPRAYER THOROUGHLY AFTER USE, USING A WETTING AGENT OR PROPRIETARY TANK CLEANER WITH TWO RINSES, AS TRACES OF LOCKSTAR MAY CAUSE HARM TO OTHER SUSCEPTIBLE PLANTS SPRAYED LATER.**

### **Equipment**

#### **Hand-held (natural surfaces not intended to bear vegetation, permeable surfaces overlying soil and railway ballast)**

Use a knapsack sprayer or tank and lance fitted with a coarse nozzle using a pressure of around 1-2 bars to provide a coarse spray. Use of anti-drift nozzles or the use of a protector shield to avoid any drift is recommended.

**NOZZLE:** Hypro Polijet AN0.6 nozzle gives, subject to calibration: a coarse spray with a flow rate of 0.6 L/min at 1 bar, giving 225 L/ha at 4kph walking speed, swath width of 40 cm, 40 cm nozzle height, or use similar nozzles that give coarse spray. Good and even coverage of foliage and soil is essential for optimum activity.

#### **Vehicle-mounted applications (natural surfaces not intended to bear vegetation, permeable surfaces overlying soil)**

Use a vehicle-mounted boom sprayer fitted with three-star drift reducing nozzles and a pressure of around 1-2 bars to provide a coarse spray. Good and even coverage of foliage and soil is essential for optimum activity.

#### **Spray-train applications to railway ballast**

Application to railway ballast may also be made via a spray train using a low drift, train-mounted nozzle. Good and even coverage of foliage and ballast is essential for optimum activity.

### **COMPATIBILITY**

LockStar may be tank-mixed with other plant protection products providing that the application timing is correct for both LockStar and the partner(s) in the mixture. For further information on the authorisation status of mixture partners, consult the manufacturer.

(Acknowledgements & trademarks etc.)