Harvest®

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HARVEST is a total herbicide/desiccant used in agriculture and horticulture for the control of grass and broad-leaved weeds and desiccation pre-harvest in a wide range of crop and non-crop situations.

MAFF 07321

A soluble concentrate formulation containing 150 g/L (13.52% w/w) glufosinate-ammonium

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

Bayer CropScience Limited,
230 Cambridge Science Park,
Milton Road Cambridge CB4 0WB
Telephone: 01223 226500

For 24 hour emergency information contact Bayer CropScience Limited
Telephone: 0800 220876

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 CLOTHING (COVERALLS), SUITABLE PROTECTIVE GLOVES, RUBBER BOOTS AND FACE PROTECTION (FACESHIELD) when handling the concentrate.
WEAR SUITABLE PROTECTIVE CLOTHING (COVERALLS), SUITABLE PROTECTIVE GLOVES AND FACE PROTECTION (FACESHIELD) when adjusting and maintaining equipment.
WEAR SUITABLE PROTECTIVE CLOTHING (COVERALLS) SUITABLE PROTECTIVE GLOVES, RUBBER BOOTS AND FACE PROTECTION (FACESHIELD) when applying by hand held equipment.
However, engineering controls may replace personal protective equipment if a COSHH assessment shows they provide an equal or higher standard of protection.
TAKE OFF IMMEDIATELY all contaminated clothing.
WHEN USING DO NOT EAT, DRINK OR SMOKE.
WASH CONCENTRATE from skin or eyes immediately.
AVOID ALL CONTACT WITH SKIN, EYES AND MOUTH.
DO NOT BREATHE SPRAY.
WASH HANDS AND EXPOSED SKIN before eating and drinking and after work.
IF YOU FEEL UNWELL, seek medical advice (show the label where possible).

Environmental Protection

DO NOT CONTAMINATE SURFACE WATERS OR DITCHES with chemical or used container.
KEEP LIVESTOCK out of treated areas until foliage of any poisonous weeds, such as ragwort, have died and become unpalatable.
RISK TO NON-TARGET INSECTS OR OTHER ARTHROPODS. For advice on risk management see Directions for use

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.
WASH OUT CONTAINER THOROUGHLY, empty washings into spray tank and dispose of safely.
DO NOT RE-USE THIS CONTAINER for any purpose.

GB05701375g rP2a

HARVEST

Contains 150 g/L (13.52% w/w) glufosinate-ammonium

TOXIC

MAY IMPAIR FERTILITY
POSSIBLE RISK OF HARM TO THE UNBORN CHILD
HARMFUL IN CONTACT WITH SKIN AND IF SWALLOWED
RISK OF SERIOUS DAMAGE TO EYES
DANGER OF SERIOUS DAMAGE TO HEALTH BY PROLONGED EXPOSURE THROUGH INHALATION AND IF SWALLOWED

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Wear suitable protective clothing, gloves and eye/face protection.
Avoid exposure – Obtain special instructions before use.
In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).
To avoid risks to man and the environment, comply with the instructions for use.

IMPORTANT INFORMATION

FOR USE ONLY AS AN AGRICULTURAL/HORTICULTURAL AND FORESTRY HERBICIDE/DESICCANT

Crop:	For use in a wide range of agricultural and horticultural situations - See DIRECTIONS FOR USE.
Maximum individual dose:	3.0-5.0 L product/ha, dependent on use.
Maximum number of treatments:	1-4 per crop, dependent on use
Latest time of application:	7 days before harvest, depending on the crop

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.

PROTECT FROM FROST

GB05657333f rP2a

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Bayer CropScience

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WASH OUT CONTAINER THOROUGHLY, empty washings into spray tank and dispose of safely.
DO NOT RE-USE THIS CONTAINER for any purpose.

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

Weed Control

Harvest controls annual and perennial, grass and broad-leaved weeds mainly by contact action after uptake by the leaf and other aerial parts of the plant. The speed of activity is influenced by weather and plant growth conditions. Activity is quickest under warm moist conditions when the target weeds are actively growing. Under optimum growing conditions, initial effects are seen as yellowing within 2-3 days and kill is usually complete within 10-14 days. Although speed of activity may be affected during less favourable growing conditions (cold/dry), efficacy is unaltered.

Desiccation

Harvest can also be used to desiccate the crops listed below. Application is normally made at the onset of senescence.

RESTRICTIONS

Crops

On crops for processing, consult your processor before use.

Weather

DO NOT spray if rain is imminent or likely within 6 hours of application and DO NOT apply to wet foliage if run-off is likely to occur. DO NOT apply Harvest for potato desiccation under exceptional wet weather conditions (more than 40 mm rain within 5 days prior to desiccation) or under water saturated soil conditions.

Soils

Harvest is degraded after contact with the soil.

Crops can normally be drilled or planted immediately after spraying with Harvest or sprayed post-drilling but pre-emergence.

However, on sands, very light or immature peat soils, spraying should be carried out at least 3 days before drilling or planting and no less than 3 days before expected crop emergence.

Cultivations

Cultivations may begin 4 hours after application of Harvest. For the best control of creeping perennial grasses, cultivations should be delayed as long as possible. Harvest will continue to act on weeds after cultivation giving thorough, lasting control.

DO NOT use on broadcast crops.

WEEDS CONTROLLED

Harvest will control grass and broad-leaved weeds.

Annual weeds

Annual grasses and broad-leaved weeds are killed by a single application. Harvest has no residual soil activity and will control only weeds which have emerged at the time of application.

Perennial weeds
Perennial non-rhizomatous grasses (e.g. perennial rye-grass, rough meadow-grass) and broad-leaved weeds are usually well controlled with a single application. Common couch, docks, nettles and other deep-rooted perennials may require two applications of Harvest for control during the growing season.

CROP DESICCATION/HARVEST AID
Harvest can be used to desiccate potatoes (winter and spring oilseed rape, dry harvested peas (not seed), winter and spring field beans and linseed to facilitate ease of harvesting.

Potatoes (not seed) should be treated only after the onset of natural senescence. Weeds present at the time of application will also be well controlled. Crops destined for use as seed should only be treated with Harvest following the removal of haulm with a flail.

The following is the definition of natural senescence in potatoes as published in the potato growth stage key by Jefferies and Lawson, (reference – Ann. Appl. Biol. (1991), 119, 387-389).

"During the growth of the potato plant the lower leaves may turn yellow and fall from the plant, but this is a consequence of shading by the upper leaves rather than senescence of the plant. The onset of natural senescence is marked by the leaves in the upper third of the haulm beginning to show signs of yellowing. (Yellowing can also be caused by other factors so make sure the potatoes are past their peak of growth and that for example temporary drought or insect damage is not the causal agent). If potatoes are treated before the onset of natural senescence damage to the tubers may occur".

CROP SPECIFIC INFORMATION

Non-cropped land – including fallows and uncropped headlands.

Grassland destruction – permanent grassland and rotational grass.

Pre-cropping situations – stubble, cultivated land and before/after drilling or planting but before crop emergence of potatoes, oilseed rape, combining peas (excluding seed crop), field bean, linseed and all other edible or non-edible crops.

During or after set-aside – green cover on land temporarily removed from production.

Weed control
Potatoes (not seed crops), top fruit (pome, stone, nut), soft fruit (strawberries, cane fruit, currants and small berries), vines, forestry, pre-emergence in sugar beet and vegetable crops.

Desiccation/Harvest aid

Potatoes	Winter and Spring oilseed rape
Dry harvested peas (not seed crops)	Winter and Spring field beans
Linseed	

Rates of use and timing
For optimum results, apply when weeds have at least 2 expanded leaves and are actively growing. Crops for desiccation should be sprayed 10-21 days before harvesting (see recommendation tables)

CROP/ TECHNIQUE	APPLICATION RATE Litres/ha	WATER VOLUME Litres/ha	TIMING	INSTRUCTIONS
NON-CROPPED LAND e.g. fallows	3.0 or 5.0	200-400	Apply up to 2 treatments between 1 March and 30 September when weeds are actively growing.	Where perennial species are present, the higher rate should be used. (For application using a knapsack sprayer, see APPLICATION). Avoid spray drift onto adjacent crops.
Uncropped headlands	3.0 or 5.0	200-400	Apply in May/June to prevent weeds invading the field.	Apply as a strip treatment between hedge and crop. Do not spray hedge bottoms.
PRE-CROPPING SITUATIONS Post-harvest or spring clean-up of annual weeds on stubble, cultivated land and before/after drilling or planting but before crop emergence.	3.0	200-400	Apply one treatment to actively growing weeds between 1 March and 30 September.	Ploughing or other cultivations can follow 4 hours after spraying. Drilling or planting can follow immediately after spraying except on light land. (See CONDITIONS OF USE).
GRASSLAND DESTRUCTION	3.0 or 5.0	200-400	Apply before winter dormancy occurs.	Use the higher rate to control well-established perennial swards. Fields which have been heavily grazed should show active regrowth before spraying. Plough from the day after spraying. For perennial weed control, see also notes under 'Cultivations' and 'Perennial Weeds'.
CROPS - WEED CONTROL Potatoes (not seed)	3.0	200-400	Apply pre-emergence.	For residual weed control, tank-mix with Afalon®.

Top fruit (pome, stone and nut), soft fruit (cane fruit, currants and small berries), vines, forestry	3.0 or 5.0	200-400	Apply up to 3 treatments between 1 March and 30 September	Where perennial species are present the higher rate should be used. Do not allow spray to contact dormant or green buds, suckers, damaged or green bark and foliage or young trees which have had 'feathers' trimmed from the lower stem until the pruning has healed/lignified over. Where young trees are grafted onto a rootstock ensure both the graft and any area of stem which may come into contact with the spray solution is lignified. For residual weed control tank-mix with approved formulations of Simazine. (See COMPATIBILITY). For soft fruit and vines apply inter-row (not directly to the crop).
Strawberries	3.0 or 5.0	200-400	Apply up to 2 treatments between 1 March and 30 September.	For weed and runner control in strawberries, apply through guarded no-drift sprayers. Cut the stolons from the main plant before spraying.
Sugar beet and vegetable crops (pre-emergence	3.0	200-400	Adopting the stale seedbed technique, apply just before crop emergence or transplanting except on light land. (See CONDITIONS OF USE).	Do not spray if the crop has emerged
DESICCATION/ HARVEST AID Potatoes (all crops, including seed, **"Flail" technique)**	3.0	200-400	Remove the haulm by flailing, when tubers have reached the desired size (determined by test digs). Leave stems of approximately 15-20 cm. Apply Harvest after flailing and preferably within 24 hours to prevent re-growth. Allow skins to set if tubers are to be stored.	**Harvest can be used on all varieties except Kerrs Pink** for use either as seed or ware. Harvest can also be used during dry conditions with no risk of increase in incidence of naturally occurring internal vascular browning. Maintain a full fungicide programme until desiccation is complete to prevent tuber blight. Ensure dry, well ventilated conditions when in store.

DESICCATION/ HARVEST AID Potatoes **(NOT seed – ware crops only)**	3.0 With late maturing crops with extensive top growth, a second application may be required. This second application should be made when desiccation of the leaf canopy is sufficient to allow good penetration and cover of the entire haulm, normally 7 days after the first application.	200-400	Apply after the onset of senescence 14-21 days before harvest. Allow skins to set if tubers are to be stored	In dense haulm situations, use higher water volumes. Do not treat crops intended for seed in this way, or where it is intended to retain a seed fraction for home use. **Harvest can be used on all varieties except Kerrs Pink.** Harvest can also be used during dry conditions with no risk of increase in incidence of naturally occurring internal vascular browning. Maintain a full fungicide programme until desiccation is complete to prevent tuber blight. Ensure dry, well ventilated conditions when in store.
Winter oilseed rape, Spring oilseed rape	3.0	300-400	Apply one treatment per crop when most of the pods in the centre third of the stem are yellow and the majority of seeds within are reddish to dark brown in colour, usually 14-21 days before harvest.	Use the higher water volume if growth is dense, especially if the crop has lodged. Weeds present will also be controlled.
Dry harvested peas (not seed)	3.0	200-400	Apply when crop is mature (i.e. has an overall yellow appearance), usually 10-14 days before harvest. Bottom pods should be yellow/brown and seeds hard. Top pods should be fleshy, pitted and turning yellow. Peas should have a moisture content of 45% or less.	Do not treat crops intended for seed or where it is intended to retain a seed fraction for home use. Treated haulm may be fed to livestock from 7 days after spraying. Weeds present will also be controlled.
Winter field beans, Spring field beans	3.0	200-400	Apply when crop is mature (i.e. stems brown and pods black), usually 10-14 days before harvesting.	Weeds present will also be controlled.

Linseed	3.0	400	Apply when 95% of the bolls are brown usually at least 14 days before harvest.	Weeds present will also be controlled.
During set-aside Green cover on land temporarily removed from food production e.g. set-aside. Where this product is to be applied to land taken out of production as part of a grant aided scheme users must ensure that use complies with the management rules of that scheme.	3.0 or 5.0	200-400	Before weed seed head production.	Where perennial species are present, the higher rate should be used. Certain noxious weeds such as thistles, ragwort and docks by spot treatment, as allowed within set-aside regulations. Avoid spraying within 6m of the field boundary to reduce effects on non-target insects or other arthropods.
After set-aside	3.0 or 5.0	200-400	Not before 15 July unless derogation granted	Where perennial species are present, the higher rate should be used. Before weed seed head production. This can be delayed by mowing or topping.

Volume and pressure

Conventional volume

Volume: 200-400 litres of water/ha

Pressure: 2-3 bar

Spray quality: **MEDIUM**

Use the higher volume where target weeds are large or populations dense, when desiccating dense crops or when destroying established grassland. Additional wetters should not be used. Spray drift onto adjacent crops should be avoided.

Knapsack sprayer

To apply Harvest by knapsack sprayer, use 0.25 litres in 20 litres of water. Do not spray to run-off but ensure even coverage. Apply to 500 square metres. Additional wetters should not be used.

Latest time of application/Number of treatments

Crop/Situation	Latest time of application	Maximum number of treatments
Potatoes (not seed)*	7 days before harvest^	4 per crop
Potatoes (all crops including seed) 'Flail' techniques	7 days before harvest^	1 per crop
Winter and spring oilseed rape** Dry harvested peas** Winter and spring field beans** Linseed**	7 days before harvest^	2 per crop
Non-cropped land (including any pre-planting use and land temporarily removed from production)		2 per year
Top fruit (pome, stone, tree-nuts), grapevines, soft fruit (cane fruit, currants, small berries), forestry.	30 September***	3 per year
Strawberries	30 September***	2 per year
Pre-drilling, pre-planting and pre-emergence in any other crop	Pre-crop emergence	1 per crop
Grassland destruction	Before winter dormancy	1 per year

* Including two desiccant uses.

** Including one desiccant use.

*** For weed control uses apply between 1 March and 30 September.

^ These intervals relate only to the statutory latest possible application dates under the Control of Pesticides Regulations 1986. Refer to the crop recommendation tables for details of the intervals required to achieve desiccation.

MIXING

Add the recommended quantity of Harvest to the spray tank half-filled with the required volume of clean water. Add the remainder of the water with the sprayer agitation system working gently. Agitate gently before and during spraying.

DO NOT leave the sprayer standing with chemical in it.

On completion of spraying, drain sprayer and wash out thoroughly using water with the addition of a suitable detergent.

COMPATIBILITY

All the requirements or restrictions on other product labels must be adhered to when mixing Harvest. Continuous agitation must be maintained.

Weed control

Harvest is compatible with the following: Sencorex WG†

† pre-crop emergence only

RESISTANCE

Certain weeds may develop resistance to Bayer CropScience products. Since such circumstances are beyond our control, Bayer CropScience will be under no liability for any resulting loss or damage whatsoever.

Section 6 of the Health and Safety at Work Act

Additional Product Safety Information (This section does not form part of the approved product label). The product label provides information on a specific pesticidal use of the product; do not use otherwise, unless you have assessed any potential hazard involved, the safety measures required and that the particular use has "off-label" approval or is otherwise permitted. The information on this label is based on the best available information including data from test results.

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

HARVEST Version 2 / GB Revision Date: 10.11.2010 102000012341

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Trade name	HARVEST
Product code (UVP)	06470025
Usage	Herbicide
Company	Bayer CropScience Limited, 230 Cambridge Science Park, Milton Road, Cambridge CB4 0WB
Telephone	+44(0)1223 226500
Telefax	+44(0)1223 426240
Responsible Department	Email: ukinfo@bayercropscience.com
Emergency telephone number	0800-220876 (UK 24 hr) +44(0)1603-242424 (Overseas 24 hr)

2. HAZARDS IDENTIFICATION

Risk advice to man and the environment

May impair fertility.
Possible risk of harm to the unborn child.
Harmful: danger of serious damage to health by prolonged exposure if swallowed.
Harmful in contact with skin and if swallowed.
Risk of serious damage to eyes.

3. COMPOSITION//INFORMATION ON INGREDIENTS

Chemical nature

Soluble concentrate (SL) contains
Glufosinate-ammonium 150 g/l

Hazardous components

Chemical Name	CAS-No. / EC-No.	Symbol(s)	R-phrase(s)	Concentration [%]
Glufosinate ammonium	77182-82-2 278-636-5	T	R60, R20/21/22, R48/20/22, R63	13.50
Alkylethersulfate, sodium salt	68891-38-3 50002348	Xi	R38, R41	> 10.00
1-Methoxy-2-propanol	107-98-2 203-539-1		R10, R67	> 1.00 - < 15.00

For the full text of the R-phrases/ Hazard statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

Inhalation

If symptoms persist, call a physician. Move to fresh air. Keep patient warm and at rest.

Skin contact

Take off contaminated clothing and shoes immediately. Wash off immediately with soap and plenty of water. If symptoms persist, call a physician.

Eye contact

Wash off immediately with plenty of water for at least 15 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Get medical attention if irritation develops and persists.

Ingestion

Do NOT induce vomiting. Keep at rest. Rinse mouth. Call a physician or poison control center immediately.

Notes to physician

Symptoms

Vomiting, Diarrhoea, Abdominal pain, Tremors, Hypotension, muscular weakness, Unconsciousness, Coma, Convulsions, respiratory failure, Nausea, Tachycardia

Symptoms

Symptoms may be delayed.

Risks

Watch victim for at least 48 hours because of possible delayed signs of poisoning.

Treatment

Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. In case of ingestion gastric lavage should be considered in cases of significant ingestions only within the first 2 hours. However, the application of activated charcoal and sodium sulphate is always advisable. Forced alkaline diuresis and hemodialysis may be considered. There is no specific antidote. In case of convulsions, a benzodiazepine (e.g. diazepam) should be given according to standard regimens. If not effective, phenobarbital may be used. Contraindication: atropine. Oxygen or artificial respiration if needed. Keep respiratory tract clear. ECG - monitoring (Electrocardiogram). EEG - monitoring (Electroencephalogram). Monitor: respiratory, cardiac and central nervous system. Keep under medical supervision for at least 48 hours.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Water spray
Foam
Carbon dioxide (CO2)
Dry powder

Extinguishing media which should not be used for safety reasons

High volume water jet

Specific hazards during fire fighting

In the event of fire the following may be released:
Carbon monoxide (CO)
nitrogen oxides (NOx)
Oxides of phosphorus
Sulphur oxides

Special protective equipment for fire-fighters

In the event of fire, wear self-contained breathing apparatus.

Further information

Remove product from areas of fire, or otherwise cool containers with water in order to avoid pressure being built up due to heat.
Whenever possible, contain fire-fighting water by diking area with sand or earth.
Do not allow run-off from fire fighting to enter drains or water courses.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment.
Remove all sources of ignition.
Environmental precautions
Do not allow to get into surface water, drains and ground water.
If spillage enters drains leading to sewage works inform local water company immediately.
If spillage enters rivers or watercourses, inform the Environment Agency (emergency telephone number 0800 807060).

Methods for cleaning up

Keep in suitable, closed containers for disposal.
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

Additional advice

Information regarding safe handling, see section 7.
Information regarding personal protective equipment, see section 8.
Information regarding waste disposal, see section 13.

7. HANDLING AND STORAGE

Handling

Advice on safe handling

No specific precautions required when handling unopened packs/containers; follow relevant manual handling advice.
Ensure adequate ventilation.

Storage

Requirements for storage areas and containers

Store in original container.
Keep containers tightly closed in a dry, cool and well-ventilated place.
Keep away from direct sunlight.
Protect from freezing.

Advice on common storage

Keep away from food, drink and animal feedingstuffs.

Temperature tolerance	min.	max.
	0 °C	40 °C

Suitable materials

HDPE (1000L IBC)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Refer to COSHH assessment (Control of Substances Hazardous to Health (Amendment)Regulations 2004). Engineering controls should be used in preference to personal protective equipment wherever practicable. Refer also to COSHH Essentials.

Components with workplace control parameters

Components	CAS-No.	Control parameters	Update	Basis
Glufosinate ammonium	77182-82-2	0.9 mg/m3 (TWA)		OES BCS*
1-Methoxy-2-propanol	107-98-2	375 mg/m3 / 100 ppm (TWA)	2007	EH40 WEL
1-Methoxy-2-propanol	107-98-2	560 mg/m3 / 150 ppm (STEL)	2007	EH40 WEL
1-Methoxy-2-propanol	107-98-2	375 mg/m3 / 100 ppm (TWA)	12 2009	EU ELV
1-Methoxy-2-propanol	107-98-2	568 mg/m3 / 150 ppm (STEL)	12 2009	EU ELV

*OES BCS: Internal Bayer CropScience “Occupational Exposure Standard”

Personal protective equipment

In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

Respiratory protection

No personal respiratory protective equipment normally required. Respiratory protection should only be used to control residual risk of short duration activities, when all reasonably practicable steps have been taken to reduce exposure at source e.g. containment and/or local extract ventilation. Always follow respirator manufacturer’s instructions regarding wearing and maintenance.

Hand protection

Wear CE Marked (or equivalent) nitrile rubber gloves (minimum thickness 0,40 mm). Wash when contaminated. Dispose of when contaminated inside, when perforated or when contamination outside cannot be removed. Wash hands always before eating, drinking, smoking or using the toilet.

Eye protection

Wear goggles conforming to EN166 (Field of Use 5 or equivalent).

Skin and body protection
Wear standard coverall and type 6 suit. Wear two layers of clothing wherever possible. Polyester/cotton or cotton overalls should be worn under chemical protection suit and should be professionally laundered frequently.

Hygiene measures
Remove soiled clothing immediately and clean thoroughly before using again.
Keep working clothes separately.
Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.
When using, do not eat, drink or smoke.

Protective measures
Avoid contact with skin and eyes.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid
Colour	blue to blue green
Odour	weakly pungent

Safety data

pH	6.8 - 7.8 at 100 % (23 °C)
Boiling point/boiling range	ca. 99 °C at 1,013 hPa Test conducted with a similar formulation.
Flash point	ca. 57 °C The product does not sustain combustion.
Autoignition temperature	ca. 405 °C
Density	ca. 1.11 g/cm³ at 20 °C
Surface tension	ca. 29 mN/m at 40 °C
Impact	Sensitivity not impact-sensitive
Explosivity	Not explosive

10. STABILITY AND REACTIVITY

Conditions to avoid	Extremes of temperature and direct sunlight.
Materials to avoid	Bases
Hazardous Decomposition Products	ammonia
Thermal decomposition	> 200 °C , Heating rate: 10 K/min Test conducted with a similar formulation.
Hazardous reactions	Stable under recommended storage conditions.

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	LD50 (rat) 1,730 mg/kg
Acute inhalation toxicity	LC50 (rat) 2.97 mg/l Exposure time: 4 h Determined in the form of a respirable aerosol. During intended and foreseen applications, no respirable aerosol is formed.
Acute dermal toxicity	LD50 (rat) 593 mg/kg
Skin irritation	Slight irritant effect - does not require labelling. (rabbit)
Eye irritation	Severe eye irritation. (rabbit)
Sensitisation	Non-sensitizing. (guinea pig) OECD Test Guideline 406, Buehler test

Assessment repeated dose toxicity
Glufosinate-ammonium was well tolerated in the rat but less well tolerated in the dog in subchronic studies.

Assessment Mutagenicity
Glufosinate-ammonium was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

Assessment Carcinogenicity
Glufosinate-ammonium was not carcinogenic in lifetime feeding studies in rats and mice.

Assessment Toxicity to Reproduction
Implantation loss occurred at high dose levels in a rat multigeneration study with Glufosinateammonium.
There were no effects on male fertility.

Assessment teratogenicity
Tests in the rat and rabbit indicate that exposure to high dose levels of Glufosinateammonium may result in embryotoxicity.

Further information
The toxicological data refer to a similar formulation.

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

Biodegradability	The single components are biologically degradable.

Ecotoxicity effects

Toxicity to fish	LC50 (Oncorhynchus mykiss (rainbow trout)) 13.4 mg/l Exposure time: 96 h Test conducted with a similar formulation.
Toxicity to aquatic	EC50 (Water flea (Daphnia invertebrates magna)) 17.8 mg/l Exposure time: 48 h Test conducted with a similar formulation.
Toxicity to aquatic plants	EC50 (Selenastrum capricornutum) 71.3 mg/l Exposure time: 72 h Test conducted with a similar formulation.
Toxicity to bacteria	EC50 (Activated sludge) > 1,000 mg/l Exposure time: 3 h The value mentioned relates to the active ingredient glufosinateammonium.

13. DISPOSAL CONSIDERATIONS

Product

In accordance with current regulations and, if necessary, after consultation with the site operator and/or with the responsible authority, the product may be taken to a waste disposal site or incineration plant.
Advice may be obtained from the local waste regulation authority (part of the Environment Agency in the UK).

Contaminated packaging

Small containers (< 10 l or < 10 kg) should be rinsed thoroughly using an integrated pressure rinsing device, or, by manually rinsing three times.
Add washings to sprayer at time of filling.
Dispose of empty and cleaned packaging safely.
Large containers (> 25 l or > 25 kg) should not be rinsed or re-used for any other purpose.
Return large containers to supplier.
Follow advice on product label and/or leaflet.

Waste key for the unused product

020108 agrochemical waste containing dangerous substances

14. TRANSPORT INFORMATION

ADR/RID/ADNR

UN-Number	*2902*
Labels	6.1
Packaging group	III
Hazard no.	60
Description of the goods	PESTICIDE, LIQUID, TOXIC, N.O.S. (GLUFOSINATE-AMMONIUM SOLUTION)
Tunnel Code	E

This classification is in principle not valid for carriage by tank vessel on inland waterways.
Please refer to the manufacturer for further information.

IMDG

UN-Number	*2902*
Labels	6.1
Packaging group	III
EmS	F-A , S-A
Description of the goods	PESTICIDE, LIQUID, TOXIC, N.O.S. (GLUFOSINATE-AMMONIUM SOLUTION)

IATA

UN-Number	*2902*
Labels	6.1
Packaging group	III
Description of the goods	PESTICIDE, LIQUID, TOXIC, N.O.S. (GLUFOSINATE-AMMONIUM SOLUTION)

UK 'Carriage' Regulations

UN-Number	*2902*
Labels	6.1
Packaging group	III
Hazard no.	60
Emergency action code	2X
Description of the goods	PESTICIDE, LIQUID, TOXIC, N.O.S. (GLUFOSINATE-AMMONIUM SOLUTION)

15. REGULATORY INFORMATION

This product has been classified/labelled in accordance with The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009: CHIP 4 and any subsequent amendments which apply in both the United Kingdom and Northern Ireland.

Classified as hazardous for supply/use.

Hazardous components which must be listed on the label:
- Glufosinate ammonium

Symbol(s)

T	Toxic

R-phrase(s)

R60	May impair fertility.
R63	Possible risk of harm to the unborn child.
R21/22	Harmful in contact with skin and if swallowed.
R48/22	Harmful: danger of serious damage to health by prolonged exposure if swallowed.
R41	Risk of serious damage to eyes.

S-phrase(s)

S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S53	Avoid exposure - obtain special instructions before use.

CLASSIFICATION ACCORDING TO SPECIFIC UK REGULATIONS:

The labelling information below is that which has been approved under 'The Control of Pesticides Regulations 1986' and/or 'Part III of the Food and Environment Protection Act 1985' and/or 'Plant Protection Product Regulations 1999' and any subsequent amendments and may differ from that indicated by any toxicological and/or other testing otherwise indicated in this 'Safety Data Sheet'.

Symbol(s)

T	Toxic

R-phrase(s)

R21/22	Harmful in contact with skin and if swallowed.
R41	Risk of serious damage to eyes.
R48/20/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R60	May impair fertility.
R63	Possible risk of harm to the unborn child.

S-phrase(s)

S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S53	Avoid exposure - obtain special instructions before use.

Exceptional labelling

To avoid risks to man and the environment, comply with the instructions for use.
Restricted to professional users.

Further information

WHO-classification: II (Moderately hazardous)

16. OTHER INFORMATION

Further information

Text of R-phrases mentioned in Section 3

R10	Flammable.
R20/21/22	Harmful by inhalation, in contact with skin and if swallowed.
R38	Irritating to skin.
R41	Risk of serious damage to eyes.
R48/20/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R60	May impair fertility.
R63	Possible risk of harm to the unborn child.
R67	Vapours may cause drowsiness and dizziness.

The above information is intended to give general health and safety guidance on the storage and transport of the product. It is not intended to apply to the use of the product for which purposes the product label and any appropriate technical usage literature available should be consulted and any relevant licenses, consents or approvals complied with. The requirements or recommendations of any relevant site or working procedure, system or policy in force or arising from any risk assessment involving the substance or product should take precedence over any of the guidance contained in this safety data sheet where there is a difference in the information given. The information provided in this safety data sheet is accurate at the date of publication and will be updated as and when appropriate. No liability will be accepted for any injury, loss or damage resulting from any failure to take account of information or advice contained in this safety data sheet.
Reason for Revision: New safety data sheet according to Regulation (EC) 1272/2008. See Chapters 2, 3, 15.
This version replaces all previous versions.