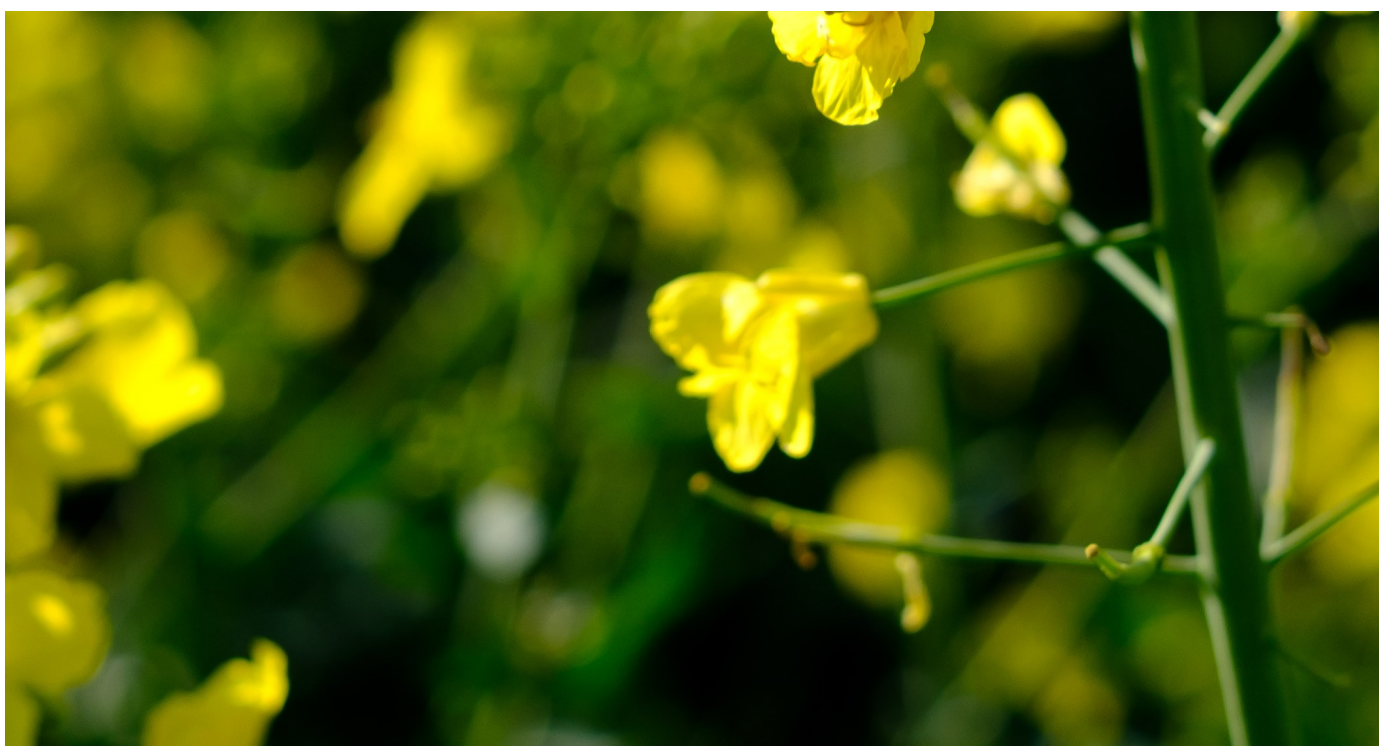




# Seed Coating Polymers



We Maximise Nature's Potential™



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# Introduction

Germain's Seed Technology is one of the world's leading independent seed enhancement technology companies and has been serving the industry for over 145 years. Since 1990's Germain's Seed Technology has been owned by Associated British Foods (ABF).

Germain's specialises in priming, pelleting, filmcoating and seed health technologies. These technologies help enhance and optimise the natural potential of the seed. We at Germain's are recognised as one of the industry leaders in seed enhancement technologies.

## Our vision:

**“We Maximise Nature's Potential”**

Germain's focusses on four main areas: sugar beet, field crops, horticulture and flowers. We have over 200 dedicated experts strategically spread across two continents, who are committed to sharing and applying their knowledge and expertise.

We are seed technology specialists who offer a variety of customised seed enhancement services to suit a variety of different needs. We have a portfolio of seed coating technologies that are available for third party usage, these including:

- Powder blends
- Pelleting polymers
- Film coating polymers

All of which can be applied to a wide range of product species.



# Seed Coating Technology



Seed coatings can fulfil a range of purposes, including:

- Adding weight to very light or fluffy seeds, such as grasses
- Increasing the size of very small or fine seeds, such as some flower and tobacco seeds. In order to increase the size of undersize seed for specific scale or planting requirements, such as sunflower and corn maize
- Improving the size and shapes of uneven or elongated seeds, such as sugar beet, lettuce and carrot for greater precision of planting
- Applying seed treatments to protect the seed and seedling from pest and diseases, in a safe and accurate manner for the applicator and end user

## Germain's Seed Coating Technology Systems

Our systems are comprised of a package of technologies, materials, skills, know-how, quality control and technical support - that are required to carry out successful seed treatment, coating and pelleting operations.

# Seed Coating Polymers

Seed Coating Polymers are used in the filmcoating process. The filmcoating process consists of the application of a thin water permeable polymer based coating layer onto the seed, seed coating or pellet. Polymers are available in a range of colours, coverage qualities, opacities and finishes such as matt, shine and sparkle.

## Main Uses of Filmcoating:

- Minimisation of dust from coatings
- Precise and accurate distribution of agrochemical treatments
- Product Identification
- Seed applied crop protection
- Increased market appeal adding value to the seed
- Ability to check seed placement
- Binders and glues to hold powder coatings

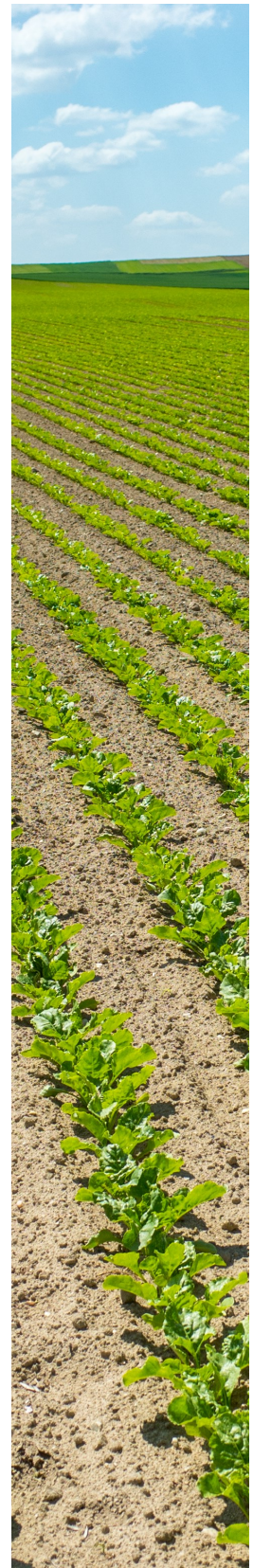
Our polyselect™ brand seed coating polymer ranges include aqueous premixes of polymer-binder, opacifier and dispersed pigment colour.

## Advantages of Polymers

A range of colours is available in each series, some also offering a neutral uncoloured version. Most are supplied in concentrated form, offering a variety of advantages, including:

- Better shelf life as a result of less settling out of components
- Greater flexibility of dilution at point of use
- Less water, resulting in reduced shipping cost and storage costs

There is a polyselect™ polymer coating for every application and every need.



# Seed Coating Polymers



Germain's polyselect™ polymers have been tested and used through side-vented drum coaters, continuous coaters and rotary batch seed treaters. The amount of materials required depends on a number of factors including:

- Type of seed-treatment equipment
- Species, colour, size and surface texture of the seed
- Cosmetic quality required
- Loading of active and inert solids required

Although the polymers can be used undiluted, some formulations are designed to be diluted with water prior to use. The level of dilution depends on the seed type and the equipment being used.

## Rapid and Easy Use

Our range of polymers is designed to offer rapid and easy clean down between uses, therefore minimising impact on logistics of production.

Your Germain's representative will be happy to provide guidance with the usage of any of the polyselect™ polymers.

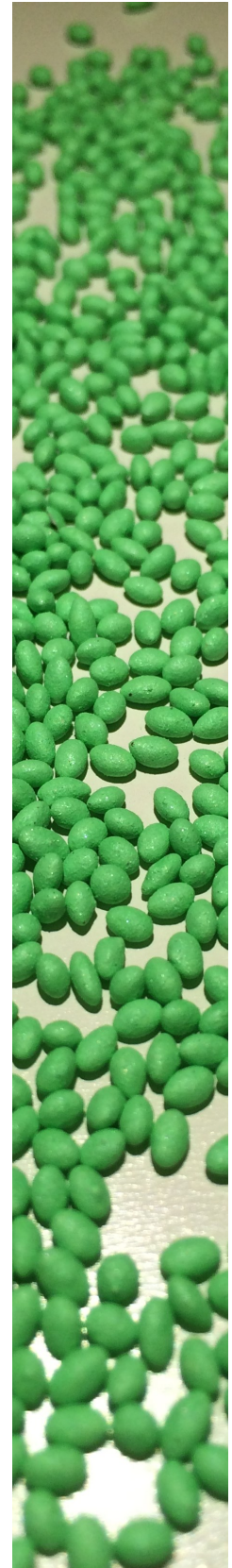
## Guidelines for Usage Rates

There are many possible variations to the materials that can be used; the Germain's representative will be able to guide you through application rates suited for your seed and equipment.

A preliminary trial is always recommended, as this allows specific tailoring to individual seed requirements. Trials will enable a valuable check on ease of use, cosmetic quality and finish required for the final product specification.

# Summary Table polyslect™

polyslect™ Range	Main Usage	Properties	Addition Rates of Seed Treatment	Appearance
100 Series	Encrustment, Increasing seed weight, Improvement of plantability	Easy to pour, Low opacity, high binding	Low	Matt
300 Series	Seed film-coating polymer, binding of seed applied treatments e.g. fungicides and pesticides	Dilution rate is dependant on specific application, binding capacity is required	Medium & High	Matt
500 'Sparkle' Series	Seed film-coating polymer, seed colourant	High opacity, high coverage, low binding capacity	Low	Sparkle/ Metallic soft colour finish
500 'Shine' Series	Seed film-coating polymer, seed colouring and binding	High opacity, high coverage, low to medium binding capacity	Low	Shine/Satin bright colour finish
500 'Matt' Series	Seed film-coating polymer, seed colouring and binding	High opacity, high coverage, low to medium binding capacity	Low	Matt/ Flat solid bright colour finish
700 Series	Seed colouring, wide range of cosmetic expectations, sensitive seed coating applications	Ideal for cost sensitive applications Including mobile treaters	Low, Medium & High	Matt/Flat solid colour finish



# polyselect™ 100 Series



## Main usage

- For encrustment work, polyselect™ 100 is the polymer of choice and is used extensively in this area.
- The application of build-up of solids, such as seed coating and pelleting materials to increase seed weight and improve plantability

## Product colours and codes

polyselect™ 100 is available in a range of standard colours, as well as an uncoloured neutral version.

Blue	139C
Green	149C
Kelly Green	146C
Yellow	159C
Red	129C
Orange	169C
Violet	179C
Neutral	100C

## Properties

- Easy to pour, co-polymer with low viscosity
- Low opacity
- High solids binding capacity
- Concentrated formulations for ease of handling

## Recommended application rates

- Best used diluted with water in a 1:1 to 1:3 ratio
- Dilution rate is dependant on specific application and the amount of solids binding capacity required

**Note:** polyselect™ 100 series is not recommended for high quality colour cosmetic requirements



# polyselect™ 300 Series

## Main usage

- polyselect™ 300 is a seed film-coating polymer
- It is designed for the binding of seed applied treatments such as pesticides and fungicides, requiring medium to high binding of solids e.g. high rates of solids in the treatment mix

## Product colours and codes

polyselect™ 300 is available in a range of standard colours, as well as an uncoloured neutral version.

Blue	339C
Green	349C
Red	329C
Yellow	359C
Violet	379C
Neutral	300C

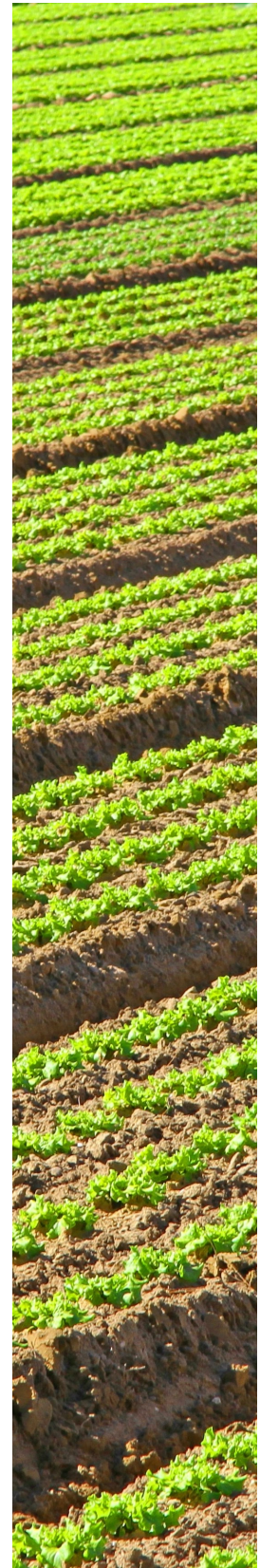
## Properties

- Low opacity
- High binding capacity
- Matt finish
- Concentrated formulations for ease of handling

## Recommended application rates

- Dilution rate is dependant on specific application and binding capacity required

Your Germains representative will be able to guide you through this series based on your seed, other additives and equipment used in your process.



# polyselect™ 500 'Sparkle' Series



## Main usage

- polyselect™ 500 'Sparkle' is a seed film-coating polymer
- Designed for seed colouring and binding of treatments to seed, requiring low binding of solids e.g. liquid formulations, low rates of formulations

## Product colours and codes

polyselect™ 500 'Sparkle' is available in a range of standard colours, as well as an uncoloured neutral version.

Blue Sparkle	539C
Green Sparkle	549C
Yellow Sparkle	559C
Orange Sparkle	569C
Violet Sparkle	579C
Light Red Sparkle	529C
White Sparkle	511C
Neutral Sparkle	500C

## Properties

- High opacity, high coverage quality
- Low binding capacity
- Sparkle has an obvious metallic look to the finish
- Concentrated formulations for ease of handling
- Dilution rate is dependent on specific application and binding capacity required

Your Germains representative will be able to guide you through this series based on your seed, other additives and equipment used in your process.

# polyselect™ 500 'Shine' Series

## Main usage

- polyselect™500 'Shine' is a seed film-coating polymer
- Designed for seed colouring and binding of treatments to seed, requiring low binding of solids e.g. liquid formulations, low rates of formulations

## Product colours and codes

polyselect™ 500 'Shine' is available in a wide range of standard colours.

Blue Shine	530C
Light Green Shine	540C
Dark Green Shine	541C
Yellow Shine	550C

## Properties

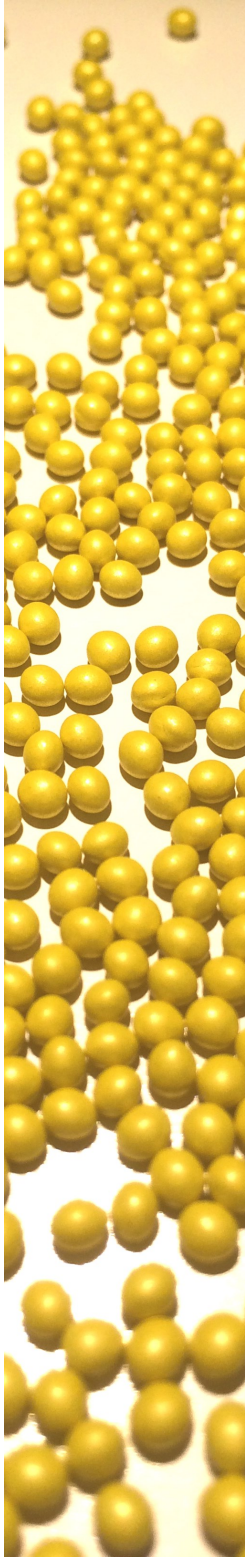
- Satin finish, with bright colours
- High opacity, high coverage quality
- Low to medium binding capacity
- Concentrated formulations for ease of handling
- Dilution rate is dependent on specific application and binding capacity required

Your Germains representative will be able to guide you through this series based on your seed, other additives and equipment used in your process.



# polyselect™

## 500 Matt Series



### Main usage

- polyselect™ 500 'Matt' is a seed film-coating polymer
- Designed for seed colouring and binding of treatments to seed, requiring low binding of solids e.g. liquid formulations, low rates of formulations

### Product colours and codes

polyselect™ 500 'Matt' is available in a range of standard colours, as well as an uncoloured neutral version.

Blue Matt	535C
Green Matt	545C
Yellow Matt	555C
Red Matt	525C

### Properties

- Flat, matt finish, with bright colours
- High opacity, high coverage quality
- Low to medium binding capacity
- Concentrated formulations for ease of handling
- Dilution rate is dependent on specific application and binding capacity required

Your Germain's representative will be able to guide you through this series based on your seed, other additives and equipment used in your process.

# polyselect™

## 700 Mix & Match Series

### Main usage

- Seed colouring to fit a wide range of cosmetic expectations
- Seed treatments requiring low to high binding capacity
- Economically sensitive seed coating applications

### Product colours and codes

The pack contains a high binding capacity polymer, uncoloured, and a choice of colour pigments.

Blue	739C
Green	749C
Red	725C

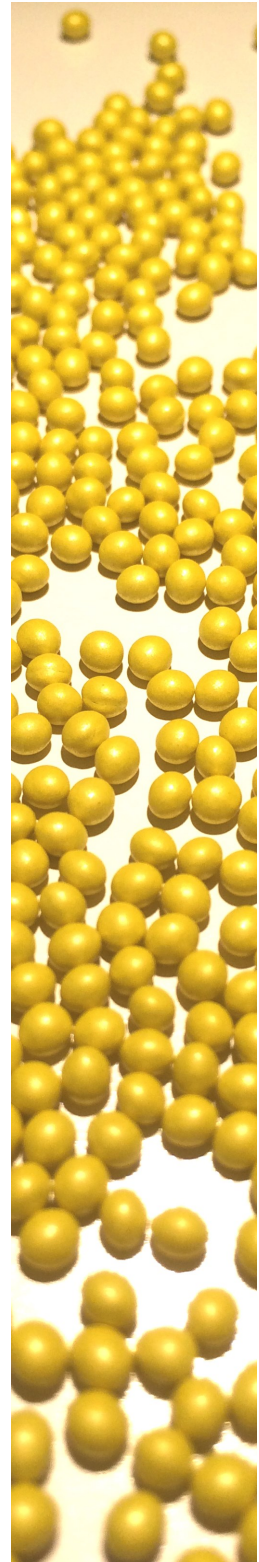
### Properties

- Colour prepared to own requirements
- High binding capacity
- Concentrated formulations for ease of handling

### Recommended application rates

- Dilution rate is dependant on specific application and binding capacity required

Your Germains representative will be able to guide you through this series based on your seed, other additives and equipment used in your process.





## Finishing Powder

Finishing powders are used to absorb any excess liquid adhering to the surface of the seed after treatment. This allows seed to singulate and flow freely after treatment, in the absence of a post-treatment drying stage.

If too little powder is applied to the seed, the seeds will stick together. If too much powder is applied, there may be excess dust, which could cause a handling problem and exceed local dust emission regulation. Prior trials will help to determine the correct balance.

## Application Rates

Application rate is dependent on a variety of factors :

- Total seed surface area to be covered
- The amount of liquid applied in the mix
- The cosmetic effect desired
- Concentrated formulations for ease of handling
- Dilution rate is dependent on specific application and binding capacity required

As a guide, for most seed types the required amount of finishing powder is in the range of 10g – 25g / kg seed.

## Product Codes

Matt	FP001
Shine	FP002
Pearl	FP003

## Build-up and pelleting blends

Blended powders are specifically tailored to perform build-up, encrustations and pelleting, which work in harmony with the biological and mechanical requirements of the seed.

# polyselect™ FAQ

## Frequently Asked Questions

### How are polyselect™ Polymers packaged?

We provide a variety of packaging options to suit all logistical situations, including:

- 1000 kg (Intermediate Bulk Container)
- 25 and 210 kg plastic drums
- 10 kg plastic bottles

Note: Standard packaging for North America:

- 1000 kg (Intermediate Bulk Container)
- 210 kg fibre drums
- 20 kg plastic drums

### How long can polyselect™ Polymers be stored?

Our polymers are designed to remain stable in storage for one year period from the manufacturers date on the label.

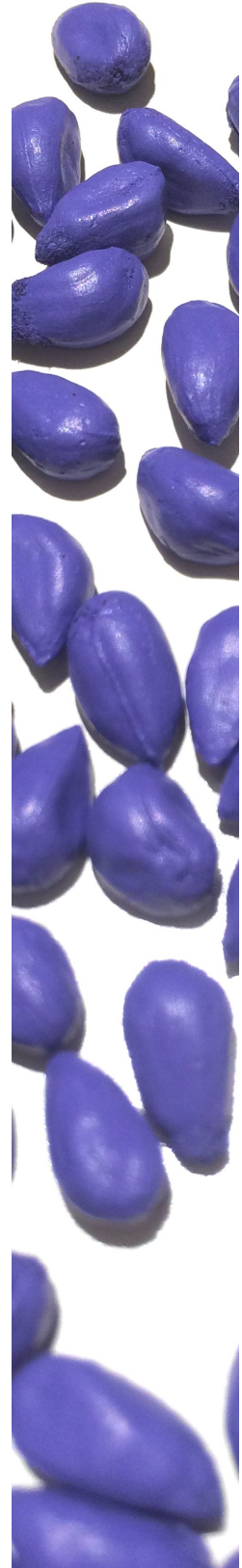
Polymers should always be stored in original or suitable containers, which are sealed, away from direct sunlight, and in temperature ranges of minimum 5°C/41°F to a maximum of 40°C/104°F. Under no circumstances must the material be allowed to freeze.

### Which machine should I use with polyselect™ Polymers?

polyselect™ Polymers are specially formulated to perform equally well in continuous coaters, rotary batch coaters and side vented drum coaters.

### How quickly can I get my order of polyselect™ products?

We aim to dispatch orders of our standard range of polymer and colour blends within 15 days of receipt of order. Customised orders may take considerably longer, however dispatch dates will always be discussed and confirmed.



## Frequently Asked Questions

### Is there anything I should do prior to using polyselect™ Polymers?

Storage, transport, and any interrupted use of the polymer will cause some settling of contents, particularly solids within the polymer. It is therefore very important to ensure that before each use, polyselect™ polymers are thoroughly stirred.

The following are re-blending guidelines, as each user will have different equipment at their disposal:

- The ideal disperser blade is about one third of the diameter of the container to be mixed and the height of contents to be mixed should be less than three times the diameter of the blade
- The blade should be positioned approximately at half mark of the total height to be mixed
- The polymer blend should be mixed thoroughly, as fast as possible, whilst preventing splashing and uptake of air into the mix
- The recommended mixing time is approximately 10 minutes, and agitation must continue until polyselect™ is ready to be used
- Agitation during use is recommended, but may not be required on a continual basis
- If large containers of polyselect™ are being divided up into smaller units, the largest container must be fully stirred first, prior to transfer of the blended polymer into smaller units. Once repackaged, the smaller packages must also be stirred before use

### What do I do about cleaning down the coating machine?

Each coating machine should be cleaned down immediately after use, or between treatments, using cold, clean water.

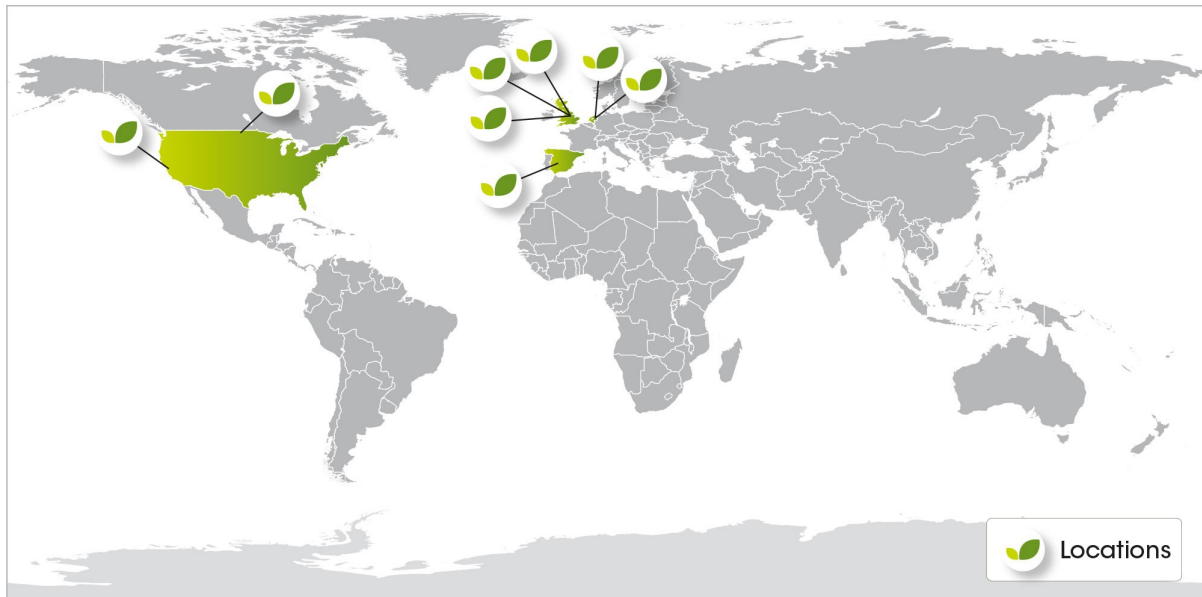
### What about waste?

Liquid waste should be disposed of in compliance with the local waste disposal regulations, as well as recommendations stated on agrochemical manufacturer's labels, and our SDS documents.





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