OPTIMAL USE OF SUNLIGHT ALL YEAR ROUND

ReduSystems®

YEAR-ROUND SYSTEM

Apply, combine and remove coatings every season for optimal use of sunlight

TOP QUALITY

Top quality is what guides us, in our products, in our services and in our partners

SHARING KNOWLEDGE

We share our knowledge about products, application and practical experience

INNOVATIVE TECHNOLOGY

We are continuously working on innovation, also in relation to existing products.

ENVIRONMENTALLY AWARE

We are committed to become a fully sustainable business

AN OPTIMAL CLIMATE IN ALL SEASONS

In recent years, the number of innovative ReduSystems solutions has grown rapidly. Now it is possible to control the light in all seasons. For that reason, we are your partner all year round to optimise light and climate in the greenhouse.

SPRING SUMMER AUTUMN WINTER

Not long ago, coating the greenhouse cover meant keeping the light out. We started by improving traditional chalk. The arrival of ReduSol was a huge step forward in greenhouse cultivation. For the first time, there was a coating that provided shading in a controlled manner, was wear-resistant but also easy to remove. ReduSol marked the start of a series of innovative products, always based on the latest scientific research.

SOLUTIONS FOR ALL SEASONS

Initially, we developed all the products as an independent solution. But gradually, we started working on an integrated system of coatings. These can be combined and enhance each other.

Now we have solutions for all seasons. Light and heat-resistant coatings in the summer. These could possibly be combined with diffuse coatings, which are also very useful in spring and autumn. During darker periods - winter, early spring, late autumn - improving the amount of light entering the greenhouse is now possible.

ReduSystems generated a revolution in coatings: from chalk to light controlling coatings.

'FROM CHALK TO LIGHT CONTROLLING COATINGS'

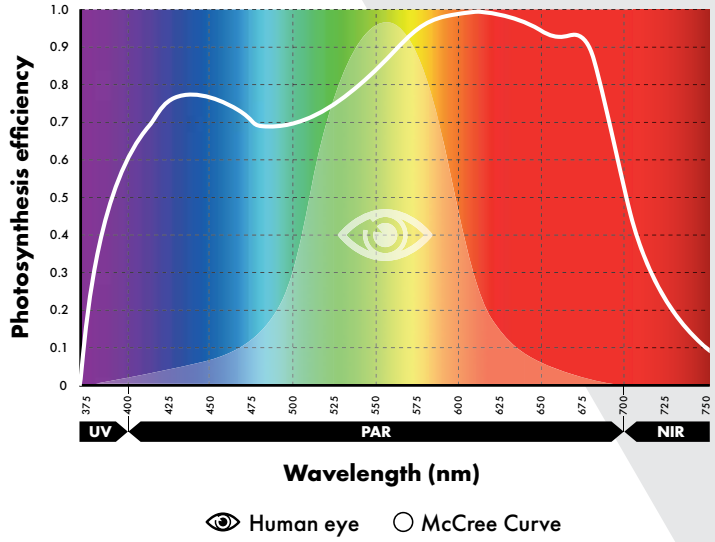
ReduSystems®

THE IMPORTANCE OF THE RIGHT GREENHOUSE CLIMATE

Sunlight is packed with energy. The plant uses this for two purposes: photosynthesis and photomorphogenesis. The light that leads to growth and production is called PAR light (Photosynthetic Active Radiation). In addition, the individual light colours all influence the development and shape of the plant. This is known as photomorphogenesis. Coatings enable you to control the incidence of certain light colours and thus the shape or development of the crop.

CONTROLLING WITH LIGHT

The trajectory of PAR light is almost identical to that of visible light. But while our eyes are very sensitive to certain colours, the plant uses the entire spectrum. The McCree curve shows the photosynthesis efficiency for the colours. There are peaks in red and blue, but the whole spectrum is important.



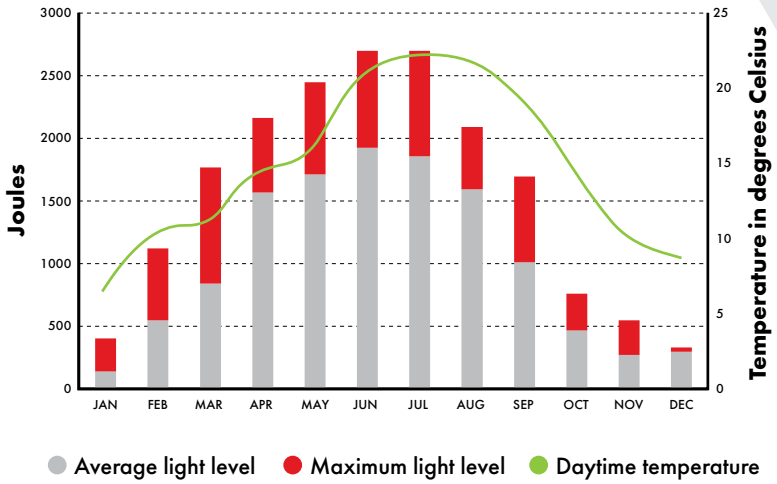
EVERY CROP IS DIFFERENT

Every crop has its own preferences for light and climate. Light-loving crops like roses, tomatoes, peppers and cucumbers need a lot of light, but also need protection from peaks. Then there are crops that love shade, for example many potted plants and orchids. Solid shading is then a good idea.

EVERY LOCATION IS DIFFERENT

Light levels vary every day, every season and at every location in the world. On a dark winter's day, you may only get 100 joules of solar energy. In the summer, that might be 2,500 joules or more. The outdoor temperature can also fluctuate, from below 0 °C to well above 40 °C. With a coating, you are flexible in choosing the right moment to apply or remove the coating to achieve the optimal balance in the crop.

CLIMATE IN THE WESTLAND (NETHERLANDS)



YEAR-ROUND SYSTEM IMPROVES GREENHOUSE CLIMATE

ReduSystems is the global leading brand in developing coatings and cleaners for greenhouse cultivation. The products control the incidence of natural light and heat to optimise the climate for the crop in every season - from a cooler climate in summer and more light in winter, to diffuse light and changing the light spectrum.

SHADING
Shading agents reduce the temperature in the greenhouse by reflecting light and/or heat.

DIFFUSION
Diffuse coatings scatter the sunlight while maintaining a high light level.

SPECIALTIES
Specialties are intended for specific crops or control purposes.

TRANSMISSION
Transmission coatings raise the light level in the greenhouse.

REFLECTION
Reflective coatings optimise the reflection within the greenhouse.

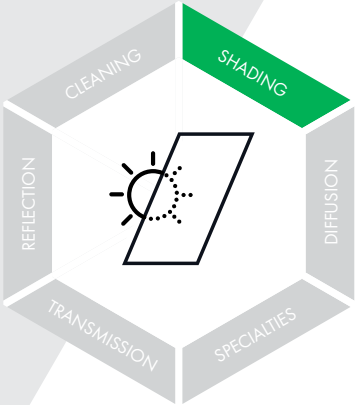
CLEANING
Cleaning agents ensure a perfectly clean greenhouse cover.

ReduSystems®

Shading agents reduce the temperature in the greenhouse by reflecting light and/or heat. They are a good way to improve the greenhouse climate if there is too much light or heat for the crop. The choice of agent depends on the crop requirements and the local climate.

REDUCING THE GREENHOUSE TEMPERATURE

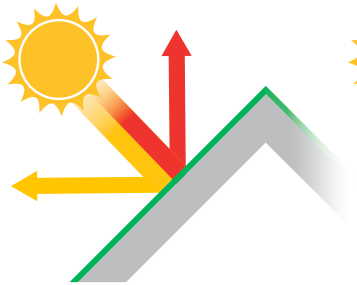
SHADING



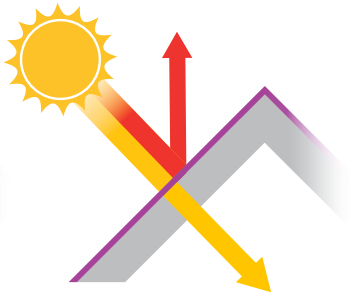
SHADING ACCORDING TO NEED

Every shading agent has its own strong features. The agent that best suits your situation mainly depends on the crop and sometimes the variety. ReduSol provides shading from some of the sunlight across the whole spectrum. However, if the crop is suffering from heat, but it could still convert light into production, ReduHeat is a better choice. This coating shades the plants from infrared light, which warms up the plants, and lets more grow light through. The extent of shading depends on the number of buckets of product applied.

REDUSOL



REDUHEAT



Light Heat

SHADING AGENTS LOWER THE TEMPERATURE IN THE GREENHOUSE BY REFLECTING LIGHT AND/OR HEAT

SPRING SUMMER AUTUMN WINTER

ReduSol®

ReduSol is a liquid shading agent that shades the greenhouse light and heat. The coating protects against excess stress.

- Choose your own shading percentage
- Wear and frost-resistant
- Higher light transmission in rain
- Suitable for glass and plastic greenhouse covers
- Easy to remove with ReduClean

ReduHeat®

ReduHeat is a removable coating that blocks out the heat rays (infra-red) of the sun. The transmission of growth light (PAR) remains high.

- Better yield and quality
- A better climate through less ventilation
- Even climate with no peaks
- Suitable for glass and plastic greenhouse covers
- Easy to remove with ReduClean

+ SprayChalk

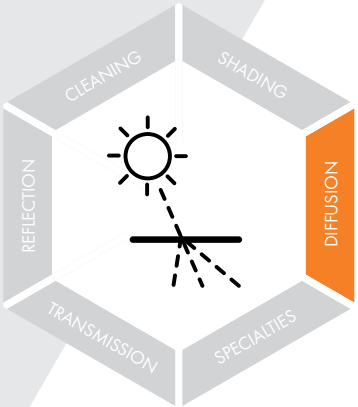
SprayChalk is a temporary coating that supplements other ReduSystems coatings during very hot summers.

- Choose your own shading percentage
- Disappears from the greenhouse cover after a few rain showers
- Suitable for glass and plastic greenhouse covers

A diffuse coating ensures that the light is distributed better in the greenhouse, both horizontally and vertically. There are no more light and dark areas. Due to the evenness of the light, the crop experiences less stress and grows better. In addition, the light penetrates deeper into the crop.

UNIFORM LIGHT LEVEL IS BEST FOR THE CROP

DIFFUSION



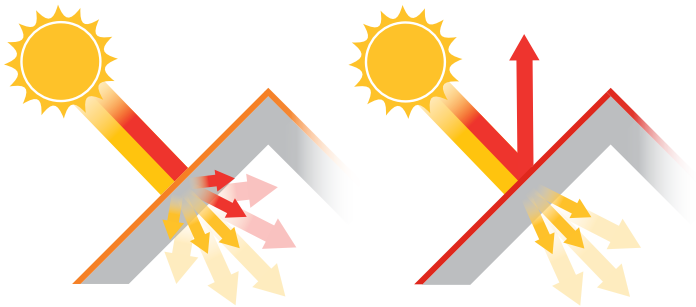
DIFFUSE COATINGS SCATTER THE SUNLIGHT WHILE MAINTAINING A HIGH LIGHT LEVEL

SPRING SUMMER AUTUMN WINTER

BETTER PHOTOSYNTHESIS

A diffuse coating distributes the incoming light. This leads to the top of the crop getting a bit less light, the middle leaves more. Net photosynthesis therefore increases, which leads to potentially more production. When the light levels are high, the top leaves are nearly at their maximum growth potential, more light would not make much difference. However, the leaves further down in the crop become much more active if they receive more light.

REDUFUSE **REDUFUSE IR**



Light Heat

ReduFuse®

ReduFuse distributes sunlight in the greenhouse. The even light distribution ensures optimal growth of the crop and thus potentially more production and better quality.

- Light penetrates deeper into the crop
- More photosynthesis in lower leaves
- Less stress in the crop
- Healthier crop, better quality
- More suitable for glass greenhouses
- Remove with ReduClean for diffuse coatings

ReduFuse® IR

ReduFuse IR distributes sunlight in the greenhouse and protects the crop from heat radiation. That improves growth and production.

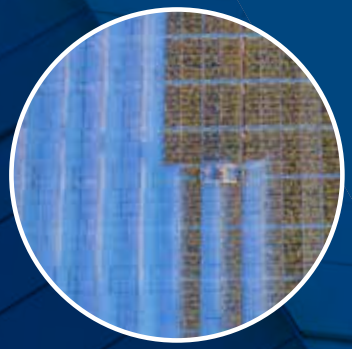
- High reflection of heat radiation
- Lower temperature in the greenhouse
- Less stress in the crop
- Suitable for glass and plastic greenhouse covers
- Remove with ReduClean for diffuse coatings

+ SprayChalk

SprayChalk is a temporary coating that supplements other ReduSystems coatings during very hot summers.

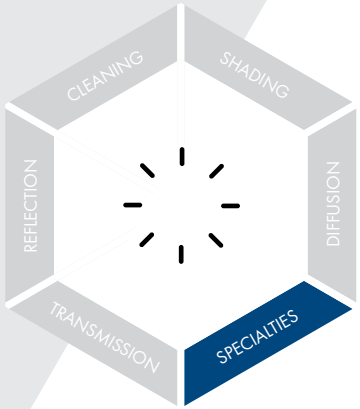
- Choose your own shading percentage
- Disappears from the greenhouse cover after a few rain showers
- Suitable for glass and plastic greenhouse covers

ReduFlex coatings change the ratio of light colours within the PAR section. This makes it possible to control the plant's growth. ReduFlex Blue is the first practical application in this series. This ensures more stem length for roses.



LIGHT COLOUR CONTROLS SHAPE AND DEVELOPMENT

SPECIALTIES



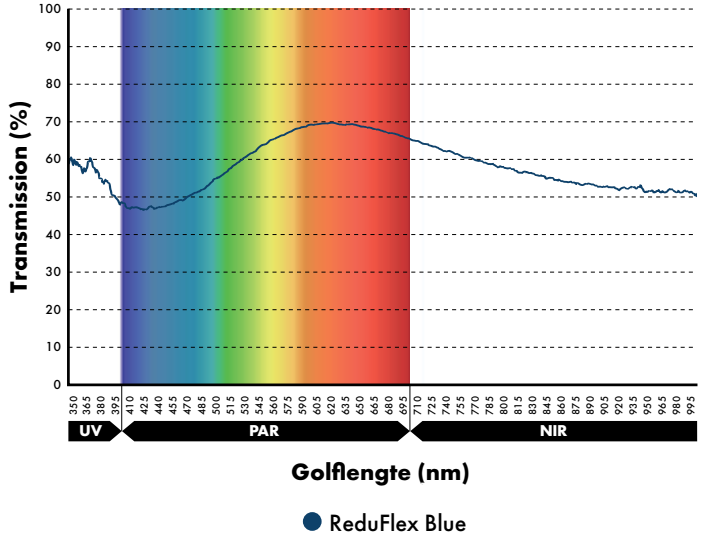
SPECIALTIES ARE INTENDED FOR SPECIFIC CROPS OR CONTROL PURPOSES

SPRING SUMMER AUTUMN WINTER

CONTROLLING WITH LIGHT COLOUR

ReduFlex Blue partially reflects the blue light. As a result, the ratio between the light colours changes. With certain crops that are sensitive to this it increases stem length. This is often much desired for cut flowers like roses.

As the graph shows, the transmission of UV and infrared is also reduced. The first prevents damage like the blackening of rosebuds. The latter inhibits excessive warming, similar to ReduHeat.



ReduFlex

ReduFlex is the basis for photo-selective coatings. Added pigments can reduce any desired light colour.

- Flexible playing with light colours
- Customised solutions possible
- Scientific knowledge still growing in this field
- Suitable for glass and plastic greenhouse covers

ReduFlex BLUE

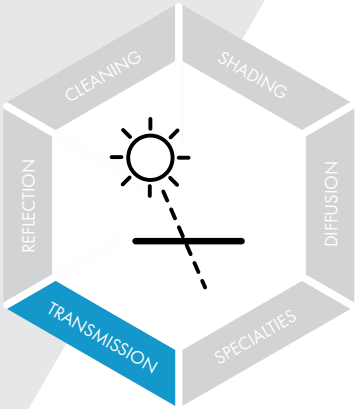
ReduFlex Blue is a removable photo-selective coating that reflects blue light and heat radiation. That results in longer stems in roses.

- Better quality due to less blackening of buds
- Longer stems in roses
- Lowers the greenhouse temperature by shading from heat radiation
- Prevents overly high plant and bud temperatures
- Suitable for glass and plastic greenhouse covers
- Easy to remove with ReduClean

During a certain part of the year, light is the limiting factor for production. More light in the greenhouse is therefore very welcome. Transmission coatings ensure that more light enters the greenhouse. It increases production, improves product quality and reduces problems with diseases. They can be combined with other ReduSystems coatings.

OPTIMAL USE OF NATURAL LIGHT

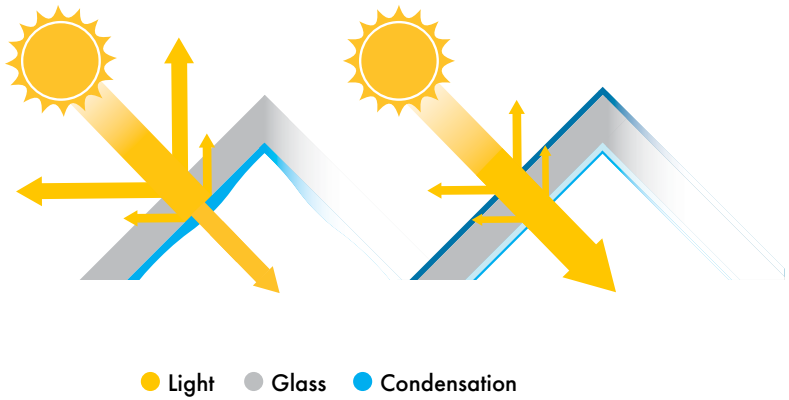
TRANSMISSION



OPTIMAL LIGHT IN THE GREENHOUSE

During the dark season, you want as much light as possible in the greenhouse. The light incidence can be improved on both the outside of the greenhouse cover and the inside.
A certain percentage of the sunlight is always reflected by the greenhouse cover. AntiReflect reduces that reflection so that more light reaches the crop. That boosts production and reduces energy consumption. In addition, the inside of the glass is often wet through condensation. Big drops prevent light from entering by 8% in glass and 20% in plastic. A thin water film can actually improve the amount of light that enters. AntiCondens ensures such a fine distribution of the water.

ANTIREFLECT + ANTICONDENS



TRANSMISSION COATINGS INCREASE THE LIGHT LEVEL IN THE GREENHOUSE

SPRING SUMMER AUTUMN WINTER

AntiReflect

AntiReflect improves light incidence. The application of this coating on the outside of the greenhouse cover reduces the reflection from the glass so that more sunlight enters the greenhouse. That is particularly welcome in autumn, winter and spring.

- Improves light incidence by 2.5 to 3%
- Lasts for two years
- Greenhouse cover stays cleaner
- Combination with other ReduSystems coatings and ReduClean is an option
- Only suitable for glass

AntiCondens

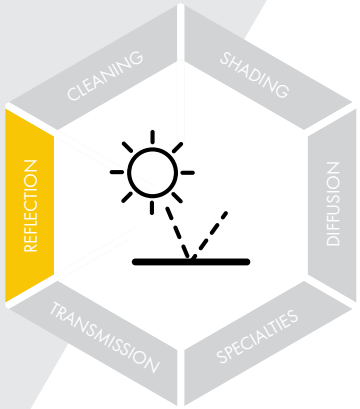
AntiCondens is intended for the inside of the greenhouse cover. The coating ensures a water film and prevents formation of large drops of condensation. This improves light incidence.

- Improves light incidence up to 8% with glass and up to 20% with plastic
- Improves production and saves energy
- Stops falling droplets and reduces diseases pressure (Botrytis)
- Wear-resistant, remains intact throughout the season
- Available for glass and plastic

During a part of the year, you want to protect the crop from excess light. But in other seasons, more light is needed. Reflection coatings are among the coatings that ensure that more light reaches the crop.

GUIDE INCOMING LIGHT TO THE CROP

REFLECTION



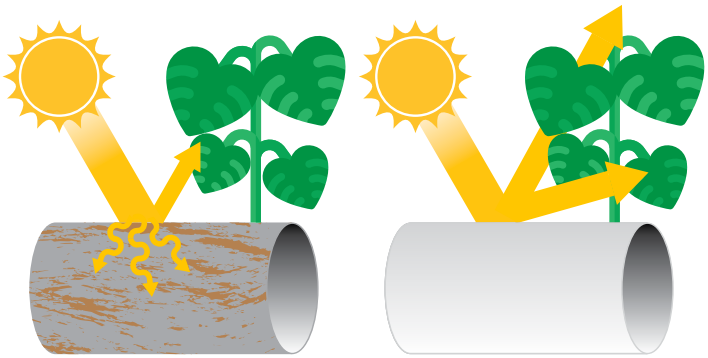
REFLECTIVE COATINGS OPTIMISE THE REFLECTION WITHIN THE GREENHOUSE

SPRING SUMMER AUTUMN WINTER

AS WHITE AS POSSIBLE

Anything in the greenhouse that is dark and rough absorbs light while anything that is white and smooth reflects it, so that it can benefit the crop. Therefore, it is a good idea to make everything as white as possible: white plastic on the ground, white structural parts, white crop gutters or growing tables and white painted heating pipes. In addition, white parts do not heat up as quickly, so that the greenhouse cools down more easily at night.

PIPEPAINT



Light Rusty pipe White painted pipe

PROTECTION, REFLECTION, ENERGY SAVING

PipePaint is a water-based paint with three functions. The first function provides protection from rust. Secondly, the paint improves the reflection of light on the heating pipes by up to 50%. The third function is an improvement of the heat transfer by as much as 10%.
Because PipePaint is water-soluble, there is no need to be concerned about fumes that could harm the crop or people. For all crops, painting during cultivation can be done without harming the crop.

PipePaint

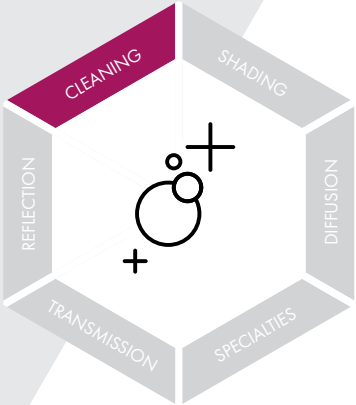
PipePaint makes heating pipes highly reflective. This ensures that the maximum amount of light reaches the crop. The coating also protects the pipes from corrosion. Good coverage, short drying time.

- Prevents premature corrosion of the heating pipes
- 10% more heat radiation resulting in considerable energy savings
- Reflects light so that it reaches the crop
- Very wear-resistant in greenhouse conditions

The ReduSystems cleaning agents ensure a perfectly clean greenhouse cover, on both the outside and inside. Problem-free removal of contamination but also of coatings that are no longer required. Dirty glass not only causes loss of light. A layer of dirt also provides a hiding place and breeding ground for diseases. Fungi, bacteria and viruses survive more easily when the glass is dirty.

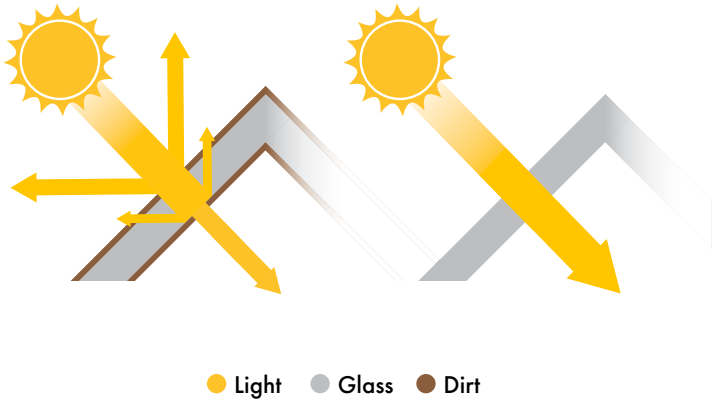
GREENHOUSE COVER IN OPTIMAL CONDITION

CLEANING



CLEAN GLASS = BETTER TRANSMISSION
ReduSystems coatings have been developed to ensure that they are wear-resistant. This means that they must be actively removed at the end of the season when they are no longer needed. ReduClean ensures that the coating dissolves. The rain then washes away the dissolved coating of the greenhouse cover.

It is important to have clean glass all year round. Dust, soot, rust, desert sand and drops of crop protection agents make it dirty on the inside and outside. This causes some light loss. GS-4 effectively removes the contamination.



CLEANING AGENTS ENSURE A PERFECTLY CLEAN GREENHOUSE COVER

SPRING SUMMER **AUTUMN** **WINTER**

ReduClean®

ReduClean has been specially developed to easily remove ReduSystems coatings from the greenhouse cover. For the use of a Dosatron® pump and for diffuse coatings, there are special ReduClean versions: ReduClean DT and ReduClean for diffuse coatings.

- ReduClean makes ReduSystems coatings water-soluble Rain then washes away the coating
- Suitable for any greenhouse cover: glass and all types of plastic
- The removal agent leaves AntiReflect intact

GS-4

GS-4 is a cleaning agent specially developed for glass-houses. It effectively removes all contamination. GS-4 Xtra is a double-concentrated version of GS-4.

- Cleaning without damaging or roughening the glass
- Acts without brushing. The dirt disappears simply by spraying the surface and then rinsing with water
- Does not contain hydrogen fluoride gas and is therefore safer for people and the planet

APPLYING COATINGS

For the best crop result, a coating must be applied to the greenhouse cover as evenly as possible. An uneven layer may cause growth differences in the crop. The weather during application also has an impact on the result. The coating must have enough time to dry but drying too fast produces a suboptimal result.

MACHINE (PREFERABLY)

A machine gives the most even finish. The machinery can be adjusted precisely to the type of product.

- Even spray pattern: the coating has an even thickness
- No loss of product caused by excessive spraying
- Flexibility, ability to only coat one side of the greenhouse
- Without loss of spray, saving of up to 10%
- Brushing beforehand ensures optimal transmission of light and adherence to the greenhouse cover
- Very safe working method

MANUAL

Most of our products can be applied manually with a spray gun. The quality and characteristics of the equipment then help determine the result.

- Good alternative if application with a machine or helicopter is not an option
- Possible with all coatings except AntiReflect
- An even spray pattern depends on the flow speed, dilution of the liquid and the settings of the spray gun
- Improve safety with fall protection

HELICOPTER OR PLANE

Application by helicopter or plane is also an option, as long as various conditions are met. The pilot must have experience and know-how; the equipment must be high quality and well maintained.

- Suitable for large areas of greenhouse cover
- Particularly suitable for ReduSol
- An even spray pattern requires flying over the cover several times
- Spray loss requires extra product
- Choosing a very experienced pilot has great benefits

More information is available on our website

REDUSYSTEMS.COM →

CUSTOMISED TO YOUR BUSINESS

Our team of advisors work all over the world. They know the crops, the region and the local climate. They can therefore give the best advice about the right coating or combination of coatings. Shading from light or heat when the crop requires it; providing and distributing more light if possible. Always aimed at achieving optimal production and quality.

THE RANGE OF OPTIONS IS GROWING
ReduSystems is continuously working on expanding its product range. To make the right choice, it's important to establish which part of the light spectrum needs adjustment and in which season this is required.

PROPER USE OF COATINGS
There is an ideal coating for every situation. Based on the crop, location and climate, the ReduWizard on the ReduSystems website calculates the best solution for your situation. The ReduWizard is loaded with weather data from all over the world, based on local weather stations. We have also determined climate requirements per crop for the optimal production. Simply enter location, crop and greenhouse properties to receive customised advice.

'TOGETHER WITH YOU, WE WILL FIND A CUSTOMISED SOLUTION'

Use the ReduWizard for your personalized advice

REDUSYSTEMS.COM →

ReduSystems®

ReduSystems® is the global leading brand in developing coatings and cleaners for greenhouse cultivation. The products control the incidence of natural light and heat to optimise the climate for the crop in every season - from a cooler climate in summer and more light in winter, to diffuse light and changing the light spectrum.

Do you want to make optimal use of sunlight all year round?

REDUSYSTEMS.COM →

ReduSystems is a brand of Lumiforte®

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