

ReduSystems®

Removable greenhouse coatings

INNOVATIVE COATINGS FOR OPTIMISING SOLAR RADIATION AND HEAT



mardankro

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Every detail counts when it comes to optimising the greenhouse climate. Good examples are reducing excess heat radiation and optimising the amount of natural growth light in the greenhouse. Important factors that have an immediate effect on the yield and quality of your crop. So why not choose the best products available?

ReduSystems is a line of innovative, environmentally sound products with one common objective: the best possible greenhouse climate. The ReduSystems line includes liquid coatings that contain photoselective pigments or high-grade chalk. ReduSystems coatings can manipulate solar radiation so that your crop will get the required amount of growth light.

All liquid coatings in the ReduSystems line can be removed with a special cleaning product.

ReduSystems mean innovative products that respond to what the global horticulture industry wants: products that are easy and economical to use and reliable results. In Mardenkro's laboratory, and in cooperation with internationally recognised research centres and universities, new ReduSystems products that provide crops with perfect conditions are continually being developed. ReduSystems provides you with the right products for controlling the climate under all weather conditions to create the ideal growing conditions for your crop.



ReduSol®

**FOR A WEAR-RESISTANT,
REMOVABLE COATING WITH
AN ADJUSTABLE SHADING EFFECT**



A wear-resistant shading coat that can be removed after use provides you with possibilities to manage your crop and protect against excess heat radiation.

WHAT IS REDUSOL?

ReduSol is the liquid shading product that you can use for applying a homogeneous, wear-resistant shading coat that protects against solar radiation. ReduSol can be applied in both thin and thick coats to glass, acrylate, polycarbonate and plastic film. The greatest advantage of ReduSol is that it can be removed. You can start the shading season in the spring with a thin coat of ReduSol. A thicker coat can easily be achieved later in the season by spraying an additional amount of ReduSol. ReduSol is highly wear-resistant and can be removed easily and safely with ReduClean after the season.



DOSAGE REDUSOL

For 1 acre, the following approximate amounts apply:

TO COVER ABOUT 1 ACRE:		
MIXTURE RATIO REDUSOL : WATER	GALLONS OF REDUSOL	SHADING EFFECT (%)
1:2.5	54	78
1:4	40	72
1:5	32	67
1:9.5	20	44

- The values above were measured under laboratory conditions when the product was applied manually and serve as an indication only.
- The shading effect includes greenhouse covering materials and structural components.

ADVANTAGES OF REDUSOL

- Easy to remove with ReduClean.
- Shading effects of up to 80% (depending upon the concentration).
- White, even shading coat for proper reflection.
- Easy to apply.
- Highly resistant to frost and rain.
- Increased light transmission during rain.
- Diffuses light.

ReduSol is available in 20-kg (approximately 4 gallons) buckets.

HOW TO USE IT

Add ReduSol to clean water while stirring. Apply ReduSol to a dry, clean surface at a low humidity and an outside temperature of at least 41 degrees Fahrenheit. ReduSol can be applied manually with a spray pump, with a spray machine or from a helicopter or aeroplane. When using a dilution ratio of 1:5, one bucket will be sufficient for approximately 5,400 square feet. Adding Mardenkro Black can increase the shading effect even more.

The shading coating's resistance to the weather is decreased by a higher dilution factor.





THINGS TO KEEP IN MIND

- ReduSol contains no environmentally harmful ingredients. The Royal Decree on Greenhouse Horticulture (Regulation 2, section 1, d) of 21 February 2002 stipulates that it is legal to release rinse water into surface water if ReduClean is used on ReduSol.
- To minimise visual pollution, releasing the rinse or rainwater beneath the surface of the water is recommended.
- To prevent a temporary change in the pH value of the basin, closing the water basin before applying or removing ReduSol is recommended.

- To ensure that ReduSol can be removed later, you should never use it in combination with any shading agents other than ReduHeat or Mardenkro Liquid Spray Chalk.
- The use of roof sprinkler systems spraying water containing calcium, iron or other pollutants can adversely affect the removal of ReduSol.

For more information about ReduSol, visit www.redusystems.com



ReduHeat®

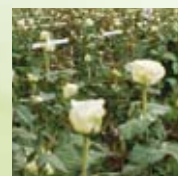
OPTIMAL BENEFIT FROM GROWTH LIGHT AND SIGNIFICANT REDUCTION OF HEAT RADIATION



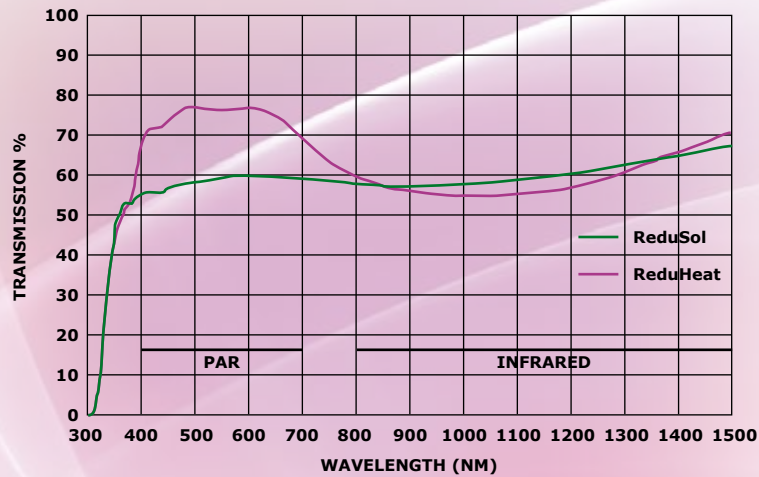
PAR (Photosynthetic Active Radiation) is the most important type of light for growing crops. But you want to provide shading against heat while retaining the light required for crop growth.

WHAT IS REDUHEAT?

ReduHeat sets itself apart from other, more traditional shading agents due to its different ratio between light transmission and heat reflection. ReduHeat is a coating that contains a special pigment. This pigment has the ability to transmit growth light (PAR) while increasing the reflection of heat radiation (NIR). Another major advantage of ReduHeat is its adjustable shading effect. It gives you more freedom to control the climate inside your greenhouse.



TRANSMISSION SPECTRA COMPARISON BETWEEN REDUSOL AND REDUHEAT



- With the same temperature reduction (infrared range) as with ReduSol, ReduHeat achieves a higher light transmission.

ADVANTAGES OF REDUHEAT

- More photosynthesis and therefore more growth.
- Improved light penetration due to diffuse light.
- Reduced use of shade screens.
- ReduHeat is highly wear-resistant: one application is usually sufficient for the whole season.
- Easy to remove with ReduClean.
- Suitable for glass, acrylate, polycarbonate and plastic film.
- Requires less ventilation, resulting in a higher CO₂ content inside the greenhouse.
- Improved water management, less watering required.
- Additional cooling effect when combined with rooftop sprinklers.
- A more robust, healthier crop.
- Fewer vegetables lost to blossom-end rot and skin cracks.
- Retention of colour.
- A more even greenhouse climate, no stress peaks.
- A nicer working climate.



DOSAGE REDUHEAT

FOR 1 ACRE:			
MIXTURE RATIO REDUHEAT : WATER	GALLONS OF REDUHEAT	TRANSMISSION OF GROWTH LIGHT (PAR) IN %	TRANSMISSION OF HEAT RADIATION (NIR) IN %
1:2.5	60	60	46
1:3	50	64	50
1:3.5	45	68	54
1:4.5	37	72	62

- The above values were measured under laboratory conditions when the product was applied manually and serve as an indication only.
- The shading effect includes greenhouse covering materials and structural components.

Conclusion: The relative light gain in PAR is approximately 25%.

FOR WHICH CROPS IS REDUHEAT WELL SUITED?

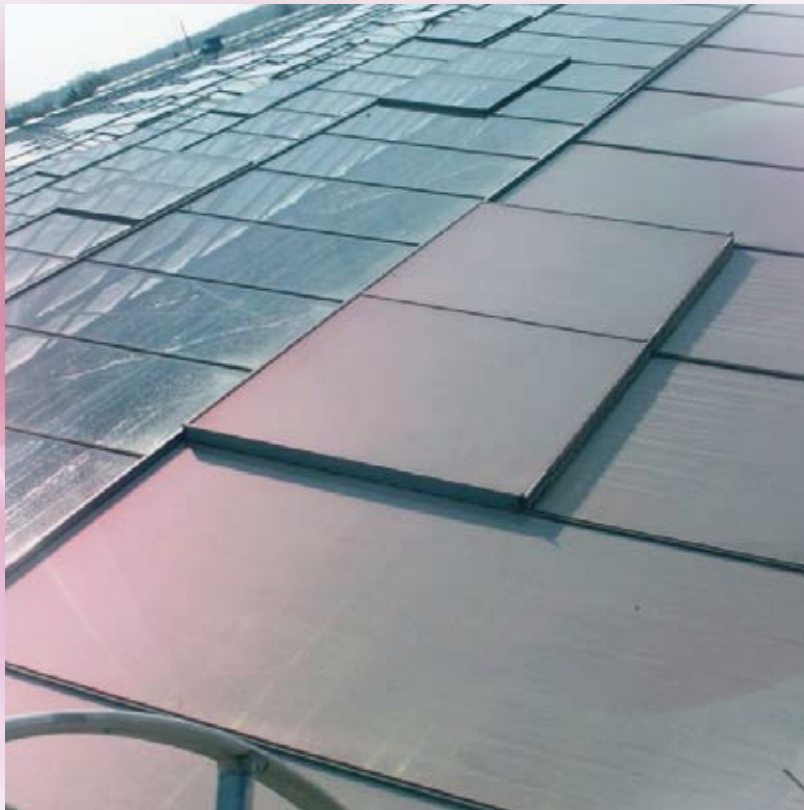
- For crops that have high light requirements (rose, alstroemeria, freesia, chrysanthemum, lily, etc.).
- In all situations requiring less than 60% of the light to be blocked.
- To create diffuse light accompanied by minimum loss of light for traditionally unshaded crops (tomato, sweet pepper, cucumber, strawberry, etc.).
- For crops that need a constant light level and sufficient heat reflection during the season, ReduHeat can be combined with ReduSol. Applying a thin coat of ReduHeat early in the season and then applying a coat of ReduSol later provides a higher degree of shading with relatively more growth light (PAR). Such a procedure achieves an optimum shading effect throughout the season for such crops as orchid and anthurium.

HOW TO USE IT

Stir ReduHeat briefly and then add it to clean water while stirring. Apply ReduHeat to a dry surface. In order to get an effective layer, it is important to spray during dry weather conditions. ReduHeat can be applied manually with a spray pump, with a spraying machine or from a helicopter or aeroplane. The table above shows the amount of ReduHeat to be used to get the required shading effect.

ReduHeat is available in 15-kg (approximately 3.4 gal) buckets.





THINGS TO KEEP IN MIND

- ReduHeat contains no environmentally harmful ingredients. The Royal Decree on Greenhouse Horticulture (Regulation 2, section 1, d) of 21 February 2002 stipulates that it is legal to release rinse or rainwater into surface water if ReduClean is used on ReduHeat.
- To prevent a temporary change in the pH value of the basin, closing the water basin before applying or removing ReduHeat is recommended.
- To ensure that ReduHeat can be removed later, you should never use it in combination with any shading agents other than ReduSol or Mardenkro Liquid Spray Chalk.
- The use of roof sprinkler systems spraying water containing calcium, iron or other pollutants can adversely affect the removal of ReduHeat.

For more information about ReduHeat, visit www.redusystems.com



ReduClean®

FOR EASY REMOVAL OF REDUSOL AND REDUHEAT FROM YOUR GREENHOUSE



After having enjoyed the benefits of ReduSol or ReduHeat for a full season, it is time to remove the product from your greenhouse. You can do this with ReduClean.

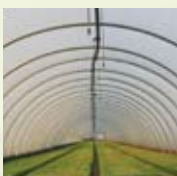
WHAT IS REDUCLEAN?

ReduClean is a cleaning product specifically developed to remove ReduSol and ReduHeat. It can easily be applied to all greenhouse materials: glass, acrylate, polycarbonate and plastic film. After applying ReduClean, rain will be sufficient to remove the layers for a clean result. ReduClean is economical and safe for users. The result: a clean greenhouse.

HOW TO USE IT

Dilute ReduClean with clean water. The mixing ratio is 1 part of ReduClean to 7 parts of water. Using 26.4 gallons of ReduClean (4 large cans) will be sufficient for approximately 1 acre. Add ReduClean to the water while stirring and apply the diluted product during dry weather conditions by spraying on a dry greenhouse. Ensure that the shading coat is fully moistened. With certain types of plastic film, it is advisable to check if immediate rinsing is necessary. For an immediate clean result, rinse with generous amounts of water.

Note: ReduClean removes only ReduSol and ReduHeat.





THINGS TO KEEP IN MIND

- To prevent a temporary change in the pH value of the basin, closing the water basin while removing ReduSol and ReduHeat with ReduClean is recommended.
- To ensure that ReduSol or ReduHeat is removed by ReduClean, ReduSol and ReduHeat should never be used with other shading agents (except for Mardenkro Liquid Spray Chalk).
- The Royal Decree on Greenhouse Horticulture (Regulation 2, section 1, d) of 21 February 2002 stipulates that it is legal to release rinse or rainwater into surface water if ReduClean is used on ReduSol or ReduHeat.
- To minimise visual pollution, releasing the rinse water beneath the surface of the water is recommended.
- ReduSystems products do not cause any damage to commonly available greenhouse materials. For coated greenhouse glass, you are advised to contact Mardenkro.

ReduClean is available in 10 litre (2.6 gal) and 25 litre (6.6 gal) containers.

For more information about ReduClean, visit www.redusystems.com



MARDENKRO. INVENTING SOLUTIONS FOR A QUARTER OF A CENTURY



Mardenkro is a supplier for today's horticulture industry. As a specialist in solutions for regulating solar radiation and heat, our products ReduSol and ReduHeat have been the basis for our international reputation in more than 50 countries. With these ReduSystems products, Mardenkro offers growers throughout the world ways to optimise the regulation of climate conditions in their greenhouses. We also provide solutions for other greenhouse related issues with products that are both economical in use and highly profitable.

Mardenkro is a company that responds to the needs of its market. With our many years of experience, we know the kinds of requirements that products have to satisfy. These products are developed by interacting closely with the growers themselves.

Customised recommendations ensure the best possible application of products. As an involved partner for growers, Mardenkro makes a substantial contribution to the profitability of greenhouse horticulture. The company's main office is located in Baarle-Nassau, The Netherlands. This is also where the laboratory and its testing facilities are located along with the company's sales, storage and shipping departments. Mardenkro distributes its products globally via a network of distributors and branch locations in Canada, China, Japan and Kenya. Mardenkro is ISO 9001 certified. Mardenkro develops environmentally responsible products that are of excellent quality. To meet these criteria, all raw materials, semi-manufactured products and final products are subjected to thorough inspection previous to release.

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