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# Shading agents and diffuse coatings

How do you choose the right product?

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about shading  
agents**



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# The use of shading agents and diffuse coatings

Many crops are not capable of enduring full sun, high temperatures or both of them. A shading agent and/or diffuse coating offer a solution. By making use of these means, a greenhouse can easily be provided with a light-reflection layer in the summertime. The reflection of this light also leads to a reduction of heat within the greenhouse. Peaks in the greenhouse's climate can be prevented and full protection of the crop is ensured for the entire season.

But what products are offered? What product is best suitable for your cultivation? And how should this specific product be used? In order to help you out, our product specialist shading agents has answered the frequently asked questions in this whitepaper. If you have any questions after reading this whitepaper, please feel free to [contact our specialist!](#)

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# What is a shading agent?

When making use of a shading agent, a layer of chalk is placed on the outside of the greenhouse's roof. Thanks to this layer, the sunlight that shines on the greenhouse is reflected, resulting in a lower greenhouse temperature. The use of a shading agent is recommended to ensure protection of the crop against stress and burning.

A very important role is played by the roof-ridge when it comes to the crop's protection. This is because the sun is present on this part of the greenhouse the entire day. For the best result, the roof-ridge should always be covered in chalk as well as possible, in order to prevent damage to the layer of shading agent. However, this part of the greenhouse is seen as the most vulnerable to rain, hail and wind. This should be taken into account when choosing a shading agent: will you pick a longwearing product of high quality which only needs to be applied once, or will you pick a slightly less longwearing product which offers an economic advantage?



# Types of shading agents

Different circumstances in terms of radiation and temperature are demanded by various crops. These different demand can be met by making use of the correct shading agent. Q3 White, Q4 White are examples of liquid shading agents, while Shadefix and Whitefix are examples of powder shading agents.

## Q3 White



**Q3 White** is a shading agent with medium durability and lifespan. Due to this, the product can be used in different ways:

- When a short period of shading with a shading percentage of 65% or less, is desired
- When a longer period of shading with a shading percentage of 65% or higher, is desired
- When layers of chalk are applied several times a year
- For applying chalk to the greenhouse's front

## Q4 White



**Q4 White** is a longwearing product with a long lifespan, also with low dosages. Because of this, Q4 White is suitable for use for longer periods of shading with a lower shading percentage than 65%.

## Shadefix



**Shadefix** is an effective shading agent, which protects the crop for a period of 3 to 4 months. This powder shading agent can be applied on glass or polycarbonate tunnels and acrylics and has an adjustable shading percentage.

## Whitefix



**Whitefix** is an inexpensive shading agent, that can be used when shading should be applied every two months. It can be applied on glass or polycarbonate tunnels and acrylics. Also, it has an adjustable shading percentage.



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the  
video



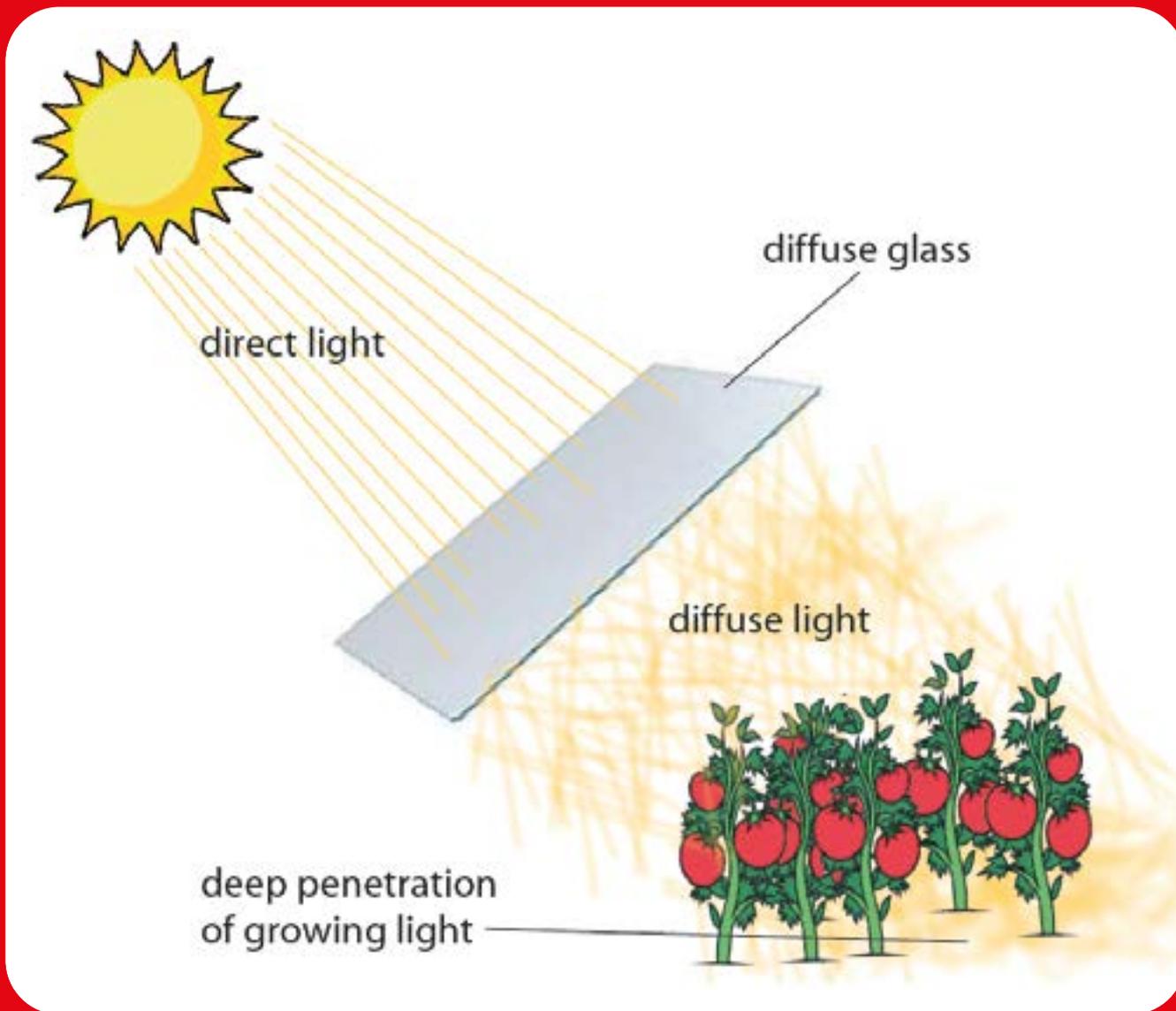
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# What is a diffuse coating?

A diffuse coating is a shading agent that can be used on the greenhouse's roof in order to create **diffuse light**. Diffuse light is light that is shattered, ensuring the light to spread throughout the entire greenhouse. Diffuse light can be obtained in different manners, such as applying a diffuse coating. This is the easiest, most flexible and cheapest manner. Therefore, it is the most used manner.

## Diffuse light has several advantages:

- No shadow caused by construction or hanging materials in the greenhouse
- The ability of the light to get 'deeper' into the crop
- Possibility of a higher CO<sub>2</sub> concentration, because windows can remain closed
- Decreased amount of crop stress due to the absence of direct sunlight
- Lower plant temperature for continuous growth
- Higher production and better quality of the crop



Diffuse coatings are believed to offer a solution to crops that are in need of a lot of light, but cannot stand high temperatures. Within summer, a greenhouse can be equipped with a layer that does allow growth light from passing, and lowers warmth at the same time. Like this, the circumstances in which the crops are grown is improved and the plants are no longer in “survival”. With the application of diffuse coatings the process of photosynthesis and plant growth remain.

The amount of radiation and the number of ours of sun, are factors that influence the effectivity of a diffuse coating. Moreover, this new climate within the greenhouse results in the question for a renewal of the CO<sub>2</sub>-dosing, an adjusted fertilizer strategy, adjusted shading on the inside and ventilation.

# Types of diffuse coatings

Diffuse coatings are developed for crops that demand a lot of light, but do need some protection against warmth and direct sunlight. Within this group of crops, many different needs can be listed in terms of light and temperature. Some cultivations, such as chrysanthemum and gerbera are capable of bearing light, but not as much as other crops like bell peppers and cucumbers. For this, several diffuse coatings are developed that differ in terms of light distribution (Haze) and light transmission.

By 'playing' with the level of light distribution, the so-called 'Haze factor', an optimal balance in the use of light and protection of (too much) light is created. This because light transmission is at cost of light distribution. A high Haze factor means a lower light transmission. And on the other hand, a higher light transmission means a lower light distribution.

## D-Fuse



**D-Fuse** is meant for crops that tolerate a lot of light, but also need protection from it. With this product a protection of 2 to 3% is offered, in combination with a high Haze factor of 86% light distribution.

## D-Gree



**D-Gree** is aimed at crops that demand quite some light, but that are also really sensitive to warmth. Special pigments that let through growth light are added to this diffuse coating, that at the same time reflect Near-infrared spectroscopy (NIR) light. It has a shading of 15-20% PAR light, 46% NIR light and a Haze factor of 93%, which results in a cooler greenhouse climate. When dealing with a lot of heat, diffuse coatings are believed to offer a solution. Think of greenhouses lacking shading screens and fumigation, greenhouses within warmer climates or lower greenhouses.

## D-Fuse Extra



**D-Fuse Extra** can be used in crops that need light, but at the other hand need some extra protection from the sun's radiation. For this, a higher Haze factor was added to this product, namely 95%. The light permeability is set in order to offer a better protection to these crops: 9 to 11% of the light is shaded.

A photograph of a greenhouse interior. In the foreground, there are several tall, green tomato plants with some small yellow flowers. The plants are supported by a network of white and yellow strings. The background shows the metal frame of the greenhouse and the translucent covering. The sky is visible through the covering. The overall scene is bright and well-lit.

# Shading agents vs. diffuse coatings

Many differences in characteristics and functioning of shading agents and diffuse coatings can be named. Therefore, the differences are clearly listed below.

## Shading agents for reflection

With the use of shading agents, the excess of sunlight is reflected which leads to a cooler climate. Thanks to a more stable climate, stress and damage of fruits caused by burning are prevented. Peaks in the greenhouse's climate are limited, so that full protection of the crop is ensured during the entire season.

## Diffuse coatings for transmission

Diffuse coatings are aimed at letting through a high amount of light, but also making sure this light is diffused/divided over the all the crops in the greenhouse. Like this, light is even received by the bottom parts of the plants and shade is prevented. Due to diffuse coatings, the light is used optimally which leads to a higher growth. Within floriculture longer stalks are seen, where a better balance and improved quality and production are seen as the effect within vegetable cultivations.

# Combination shading agents and diffuse coatings

The different characteristics of shading agents and diffuse coatings can be combined. In summertime, an increased radiation of the sun is a fact, which asks for a better protection of the crop. In order to meet both requirements, a layer of shading agent (chalk) can be applied over a layer of diffuse coating. Like this, the excess of sunlight is reflected by the shading agent, so that the crop can grow healthily in the warmest time of the year. This under ideal circumstances regarding light and temperature.

	Shading agent	Diffuse coating
Reflects the excess of sunlight	✓	✗
Decreases temperature	✓	✗
Adjustable shading percentages	✓	✗
Prevents shadow	✗	✓
Lowers the plant temperature	✗	✓
Even division of temperature within the crop	✗	✓
(More) transparent in times of rain	✗*	✓

\* *Temperzon T74 does have this characteristic.*



# Cleaning the greenhouse's roof

After spring and summer with high temperatures and high radiation of the sun, the greenhouse should be cleaned in autumn. This, in order to let the crop benefit from the natural and available light maximally. Therefore, the greenhouse's roof should be cleaned timely, by removing the shading agent or diffuse coating. Below, some tips for easy removal are listed.

1. A shading agent or diffuse coating can best be removed with a [remover](#). Attention: Temperzon T74 cannot be removed with this product.
2. Spray the greenhouse according to the recommended dosage on the packaging. This will lead to the layer of shading 'breaking'. Attention: always use the solution of remover within 6 hours after mixing it.
3. Equally apply the remover to the greenhouse's roof. It is possible to make use of a [greenhouse cleaner](#).
4. Make sure to plan the moment of spraying before rain. The shading agent or diffuse coating will wash off easily with some rain. When no rain is expected, a second time of removal can be need.
5. In order to prevent the change of the pH-value in the silo water, the water basin should be closed when making use of a remover.

# Let's improve together.



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## Do you have any questions after reading this whitepaper?

Then please contact product specialists

