sunmaster™
by PLASTIKA KRITIS

INSTRUCTIONS OF PLACEMENT AND USE OF GREENHOUSE FILMS

Film handling, installation and maintenance, as well as growing techniques have an important effect on lifetime and other properties of the film. Please study the following instructions and recommendations so that you gain the most out of your investment.

Greenhouse Construction



Metal tubes must be clean, free of rust and sharp edges and, preferably, hot-galvanized. The angles of the tubes must permit uniform tensioning of the film. Wires used to support the film should be galvanized and must be replaced when showing rust.

Film Storage and Installation

- The film must be stored horizontally, in its original packaging, in a shaded and cool area, protected from direct sunlight.
- Before installing the film remove the packaging and inspect the roll to make sure there are no damages from transportation, particularly at the two sides. In case of any visible damages please avoid installing the film, take pictures of the damage and inform our distributor.
- It is recommended to cut a piece (8” x 8”) with manufacturer's identification and keep it aside along with the label of the roll.
- Covering of the greenhouse must be done on mild days, at an ambient temperature between 50-72°F (10-22°C).
- Great attention should be given to prevent harming or tearing of the film during installation.
- The film must be well tensioned, but not excessively. If the film is not correctly tightened, it will flutter on windy days. "Flapping" on the structure is a frequent reason of greenhouse film failure, as it deteriorates its mechanical properties.
- Excessive tensioning of the film may decrease its elasticity and tear during winter when the film shrinks due to low temperatures.
- When using ropes or belts to secure the film on the structure, we recommend to check them on a regular basis and to adjust if necessary.
- The film should be supported by arches, slats, locking channels or other means in close distances. In areas with strong winds, it is recommended that this distance does not exceed 5 feet. All fitting clips should be clean and in good condition.
- In case of double inflated greenhouses, air pressure must be distributed uniformly and maintained constant to sustain film tension.
- Avoid direct contact of the film with PVC pipes/profiles/clips, which contain plasticizers that can deteriorate the film.

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Ongoing Maintenance after Installation

- Immediately after cladding, the surface of the film should be painted, wherever in contact with metal, with a white opaque acrylic water-soluble paint to reflect sun rays and control overheating on these areas. This measure prevents the development of high temperatures at the point of contact with the frame and should be maintained and renewed as required throughout the lifetime of the film. Do not use oil-based paints. Protective tapes that have been developed for this purpose can also offer adequate protection. No warranty on the lifetime of the film is valid if this instruction is not followed (with the exception of double inflated greenhouses where this is not possible).
- Holes or tears must be repaired immediately with special adhesive tape. Avoid using PVC tape.
- When necessary, the film should be re-stretched between seasons and after strong winds. Water pockets on the film are signs of a lack of tension or an insufficient frame.
- Application of a special shading material on the film during summer is useful. Make sure such shading material does not contain chemicals that can affect the quality of the film.

Use of Chemicals in the Greenhouse

- Pesticides and fumigants containing sulphur or halogens, or their derivatives, may cause early deterioration of the film by interacting with the UV-stabilizers and "blocking" their action. It is very important to avoid spraying or spreading chemicals close to the film and to prevent accumulation of chemicals on the contact points of the film with the frame. The greenhouse should be adequately ventilated after each application of chemicals. In double inflated greenhouses it is recommended to use outside air between the two layers. If this is not possible, make sure that inflator turbines do not introduce pesticides between the two layers by avoiding placing them near or over the plant canopy. Sulphur burning can have a detrimental effect on the life of greenhouse films stabilized with Hindered Amines (HALS). In such conditions, films stabilized with Nickel organic complexes or chemical resistant HALS should be chosen.
- Ensure that end-of-season cleaners-disinfectants for greenhouse structures as well as whitewash removal products do not contain harmful chemicals that can deteriorate the plastic film.
- To prevent premature failure of the film by fumigants, it is recommended to cover the soil during soil disinfection with impermeable films (VIF/TIF).
- In case of premature degradation due to contamination with chemicals, if the presence of such chemicals in the film exceeds certain limits (as mentioned in the guarantee or specifications for each type of film), the guarantee on the lifetime of the film is not valid.

Anti-condensate effect

Anti-condensate (or anti-dripping) films have a specific side that should “face” the ground. The effect will function for 12-24 months, depending on the type of film, the climatic conditions of the area, the type of greenhouse and other factors. The roof of the greenhouse should have an inclination of at least 30° for the anti-dripping property to function properly.

Anti-condensate films form a thin layer of water that run down the sides and the gutters of the greenhouse. When there are wires or ropes to support the film on the frame, the thin layer of water that is formed is likely to be interrupted by the wires and flow down vertically. In such a case, the wires should be either reduced or placed in such a way that water droplets fall in the passage-ways instead of falling on the crop.

Under certain circumstances, anti-condensate films can assist the formation of mist (fog) in early morning and during sunset. Mist diminishes light available for photosynthesis and creates favorable conditions for the development of certain pathogens. To prevent such undesirable outcome, if mist occurs the greenhouse should be heated and/or ventilated immediately. For greenhouses which are not well ventilated and/or heated select anti-dripping films with special anti-mist function.

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EVO AC® films

EVO AC® 8-layer films are equipped with a novel condensation management system that lasts longer than that of traditional anti-condensate films and does not cause the formation of mist (fog). To ensure its proper function, it is imperative to avoid scratching its surface on the arches or on the ground when installing it on the greenhouse.

Special UV-blocking films for improved pest and disease management and reduction of blackening on red rose petals

The effect is expected to last 1-2 seasons. Different pests and diseases can respond differently to this function of the film. For a more effective control of insects and virus transmission, the use of anti-insect nets and biological or chemical control measures are recommended. The reduction of fungal diseases can be more successful if other factors creating favourable conditions for their development (excess relative humidity, bad ventilation) are well controlled.

Although, UV-blocking films are used successfully in many parts of the world, trials should be undertaken for each particular greenhouse and crop prior to their generalized adoption, to avoid the risk of undesirable side effects, in the following cases:

- When bumble-bees are used for pollination
- When biological control with beneficial insects is taking place
- When growing crops whose commercial value is dependent on the colour (e.g. eggplants, certain ornamentals which require deep coloration). Never use such films to grow red salads.

Pollinators

Our films (with the exception of UV-blocking types) are designed to allow plenty of UV light for bees and bumble-bees to orient themselves and perform pollination effectively. In the unlike event of reduced bee activity after a new film is installed, we recommend to:



Pay careful attention to the instructions of the supplier of pollinators, particularly as regards to the proper location of hives. Open flight doors 1-1.5 hours after the hives have been placed in the greenhouse.



Check conditions that may affect pollination such as the quality of pollinators and the use of harmful pesticides. Avoid injection of CO_2 near the hives.



Adjust the temperature & humidity in the greenhouse: 50-80% relative humidity and temperature of 62-77°F (17- 25°C) are the ideal conditions for pollinators.

Trouble-shooting

For any question or problem you may have regarding the placement or use of our films, please do not hesitate to contact us or our local partner.

For notification of a defective product or premature failure, certain steps should be followed for the claim to be investigated, as indicated by our Quality Assurance standards.

Attention: Above instructions are given in good faith based on our experience, however, they might not address every particular aspect. Since the mechanism of action of the anti-condensate and anti-fogging effect as well as the reduction of insects, fungal diseases and blackening is complicated and depends on many parameters that are outside our control (climatic conditions, greenhouse type, etc.), NO warranty is given regarding the duration or effectiveness of these functions and we do not promise, nor undertake any liability for compensation or restitution for any damage relevant to these functions.

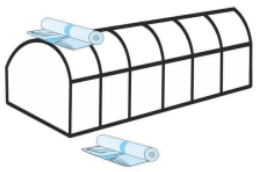
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INSTRUCTIONS OF PLACEMENT

Good practice:

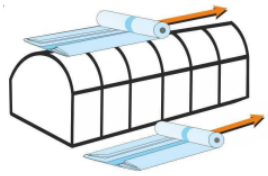
Fix the edge of the film on one side of the greenhouse.

01



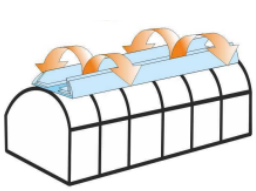
Unroll the whole length of the film either on the greenhouse roof or on the ground by moving the roll towards the other side, **without unfolding the film.**

02



Unfold the film and fix it on the greenhouse.

03

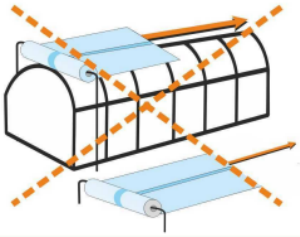


a.

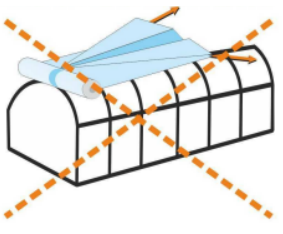


b.

What to avoid:



Do not fix the roll on one side of the greenhouse and unroll it by pulling the edge of the film towards the other side. By doing so, any sharp object on the structure or on the ground might cause a long scratch or even tear the whole length of the film. If this is your only option, make sure that the structure or the ground - whichever is the case - is free of any sharp objects (wires, stones, wood or metal pieces) that could harm the film.



Do not unroll and unfold the film simultaneously. By doing so it is possible to cause the internal folds to bundle and tear under the pressure you exert. **This is particularly important in the case of 8-folded films!**

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