



SUNTUF[®] Plus

Greenhouse Applications



SUNTUF® Plus Greenhouse Applications



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Introduction

SUNTUF Plus provide the best nurturing conditions possible for plants and workers. It was the first corrugated polycarbonate sheet introduced to the commercial greenhouse market with proven results over twenty years ago. Since then, SUNTUF Plus has become an industry standard which all other corrugated polycarbonate products for the agricultural market are compared to. The SUNTUF Plus product range includes various types and features, which were specifically designed for commercial greenhouse roofing.



SUNTUF® Plus Main Benefits



Clarity and Condensation Control

Natural, clear SUNTUF sheet exhibits the clarity of glass, transmitting up to 90% of natural PAR light. SUNTUF Plus also prevents condensation drip and its related drawbacks due to an integrated feature that helps maintain its high light transmission.

Impact Strength

Manufactured from polycarbonate, SUNTUF is virtually unbreakable and is extremely resistant to impact, hailstones and loads.

Low Weight

Light in weight, SUNTUF sheets are easy to handle and install.

Weather Resistance

SUNTUF resist wind, hail and extreme temperatures from -50°C to +120°C. An integrated UV protective layer allows SUNTUF to retain its transparency without yellowing over the course of a long lifetime of service.

10 Year Warranty

SUNTUF is warranted to retain its attractive appearance over its long lifetime with minimum maintenance.

Protection

SUNTUF does not allow harmful UV radiation to penetrate, and meets the highest flammability standards in its field.

SUNTUF® Plus Product Range

Product	Description
SUNTUF® Plus	Corrugated polycarbonate sheet with integrated UV protective layer on the exterior side and anti-condensation treatment applied to the interior side.
SUNTUF® Plus UV2	Corrugated polycarbonate sheet with integrated UV protective layer on both sides and anti-condensation treatment applied to the interior side.
SUNTUF® Plus Embossed*	Corrugated polycarbonate sheet that exhibit 20% diffusion of the light.
SUNTUF® Plus Diffused*	Corrugated polycarbonate sheet that transmits a selected 85% of the light energy while exhibiting 100% diffusion of the light.

*Also available with co-extruded UV protective layer on both sides.

SUNTUF® Plus for Every Plant or Crop

Clear

Optimum for low light regions or where high clarity is essential



90% light transmission
0% Diffusion



Embossed

Offers high light transmission and good diffusion for excellent flexibility



90% light transmission
20% Diffusion



Diffuser

Combines even light spread with high light transmission



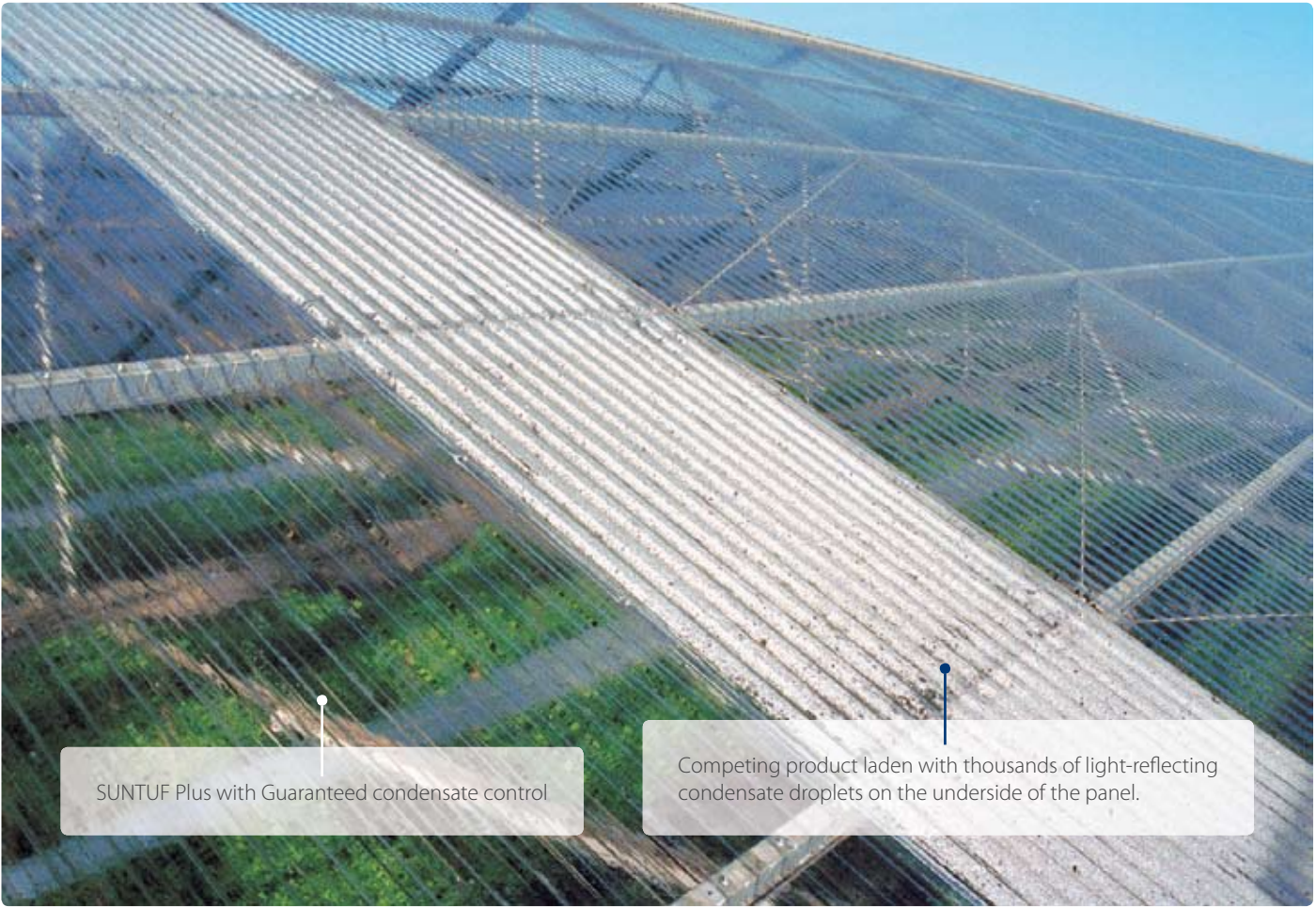
85% light transmission
100% Diffusion



Guaranteed Condensation Control (Anti-Fog)

SUNTUF Plus, with its unique condensation control, allows up to 30% more light transmission during peak condensation periods. SUNTUF Plus also reduces disease resulting from condensation dripping. For greenhouses with retractable roofs, SUNTUF Plus is offered with anti-condensation treatment on both sides.

SUNTUF® Plus	Other Corrugated Panels
92% Light Transmission 30% more PAR light 45% more infrared energy	70% Light Transmission Condensation droplets act like parabolic mirrors and reflect away valuable PAR and infrared light



Project Gallery

Over a million square meters of SUNTUF Plus sheets have been installed during the past 25 years in numerous projects around the globe. A few of them are presented in the following pages.



Double sloped roof and walls - Southern Italy



Arched Roof Greenhouse - USA



Arched Roof - China

Project Gallery (Continued)



Arched roof Vegetable Greenhouse - Negev (Israeli Desert)



Gothic Roof Greenhouse - China



Arched roof ,Garden Center - Israel



Arched Roof Greenhouse - Antalya, Turkey

Project Gallery (Continued)



Xinjiang, western China

No snow accumulation on the SUNTUF roof enables more daylight in the greenhouse



Xinjiang, western China

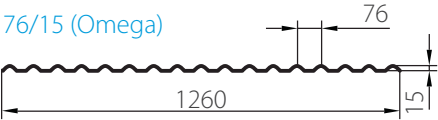
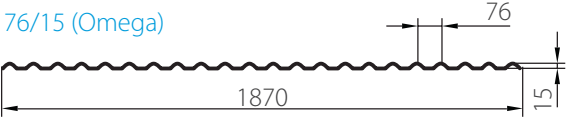
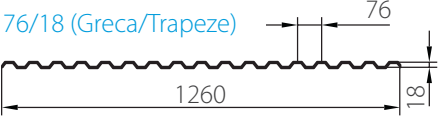
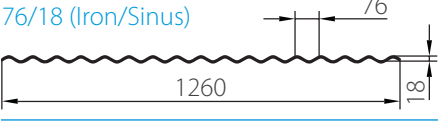
Quick, safe and easy installation of SUNTUF Plus sheets.



Green House - China

Greenhouse with double sloped roof and walls.

SUNTUF® Plus Standard Profiles

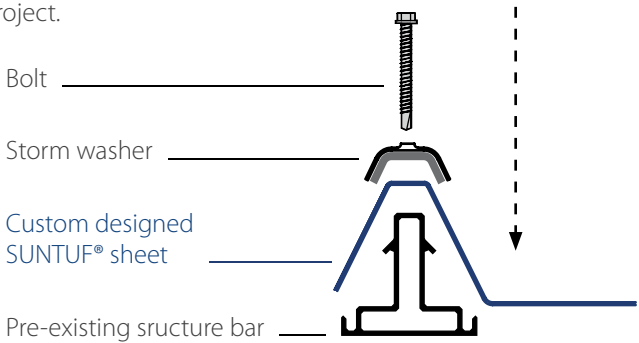
Profile	Thickness mm	Depth mm	Overlap	Trimmed Width	Net Coverage
76/15 (Omega)	0.8	15	1 Corr.	1260	1210
76/15 (Omega)	0.8	15	1 Corr.	1870	1820
76/18 (Greca/Trapeze)	0.8	16	1 Corr.	1260	1210
76/18 (Greca/Trapeze)	0.8	16	1 Corr.	1870	1820
76/18 (Iron/Sinus)	0.8	16	1 Corr.	1260	1210

Custom SUNTUF® Plus Profile for Glass Replacement - Case Study

Since SUNTUF's unique profile matching technology was introduced in 2004, Palram looked for new ways to implement it for the customer's benefit. Two Italian greenhouse owners turned to Palram in search of long term roofing solution after heavy hail storms shattered 5000 sqm of their greenhouses glass glazing panels: Albani E. Ruggieri (located north-west of Rome, project executed in 2007) and De Fillipo (located south of Naples, project executed in 2010). Both customers required a fast, reliable and cost-effective roofing solution that would resist high wind and impact caused by hail and debris. SUNTUF profile matching technology was used to tailor specific corrugation profiles for each project. The sheets were designed to fit preexisting aluminum glazing bars, which resulted in a very simple re-installation for both customers. Technical support for the projects included profile-specific installation guides, project-specific accessories and on-site support.

Glass Replacement - Installation Concept

Fitting of the profile made for the Albani E. Ruggieri greenhouse project.



Custom Made SUNTUF Plus for Glass Replacement Project - Southern Italy

Glass Replacement (Continued)



Custom Made SUNTUF Plus for Glass Replacement Project - Southern Italy

View from the outside during installation. Upper row still fitted with glass, middle row fitted with custom made SUNTUF Plus panels.



Custom Made SUNTUF Plus for Glass Replacement Project - Southern Italy

View from the outside.



Custom Made SUNTUF Plus for Glass Replacement Project - Southern Italy

View from the outside after project completion.



Custom Made SUNTUF Plus for Glass Replacement Project - Southern Italy

View from the inside.