klar®

AMERILUX INTERNATIONAL

AUTHORIZED DISTRIBUTOR

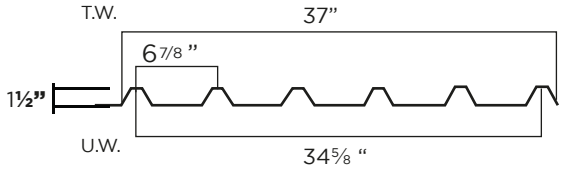


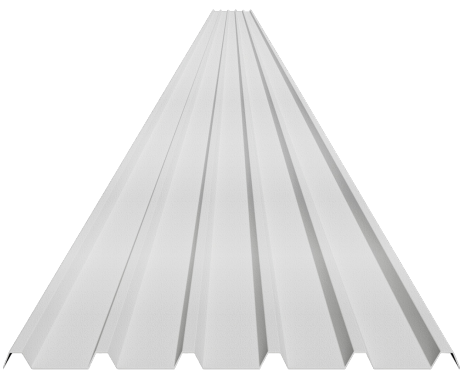
Klar Exterior Installation Guide



1. PRODUCT PRESENTATIONS

Klar TK6S Ag Plus

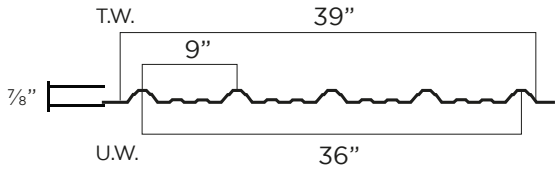


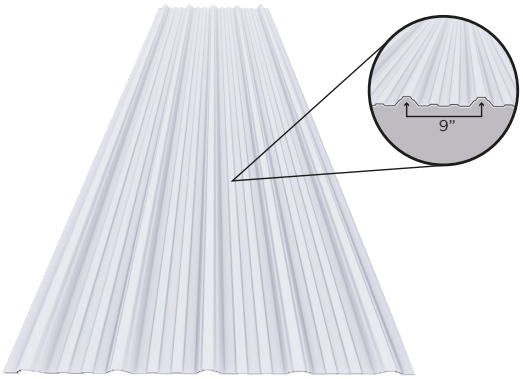


Lengths and widths: +/- 0.39 in tolerance

*Some profiles available by special order

Klar TK9 AG





Lengths and widths: +/- 0.39 in tolerance

*Some profiles available by special order

2. PHYSICAL AND MECHANICAL PROPERTIES

Properties	Unit	TK6S Ag Plus	TK6S Ag Plus	TK6S Ag Plus	TK9 Klar AG	TK9 Klar AG
Thickness*	mm	2	2.5	3.0	2	2.5
Specific weight	lib/sqft	0.92	1.14	1.33	0.68	0.68
Radius of curvature	ft	40			20	
Ridge height	in	1 4/8			7/8	
Transverse overlap	Ridge	1				
Longitudinal overlap	in	10				
Thermal conductivity	W/m.k	0.155				
Pitch	%	2/12				
Temperature range	Fº	14-13				

*The thickness of the panel may vary by +/-10%. For greater thicknesses and specific requirements, consult with your Klar executive or advisor.
Thicknesses available: 1.5mm ,2mm, 2.5mm, 3mm, 3.5mm. Please contact AmeriLux for more details.

3. SPAN TABLE

Load (lib/sqft)			Span (ft)			
Corrugation	**Color**	**Thickness**	**2**	**3**	**4**	**5**
TK6S	White	3	45	41	37	27
		2.5	39	35	31	23
		2	33	29	25	16
TK9	White	2	16	—	—	—
		2.5	21	—	—	—
	Colors	2.5	16	—	—	—

4. GENERAL CHARACTERISTICS

FIRE RESISTANCE	DIN 4102 Classification, hardly flammable. In case of fire, flames have low propagation and reduced smoke emission. In addition, it does not generate thermal drip.
HIGH CORROSION RESISTANCE	Our panels can be subjected to saline, alkaline or acidic solutions with a concentration of less than 60% during a continuous 24-hour exposure. Unlike other coverings, they do not rust, avoiding problems due to water leaks and favoring water-exposed environments.
THERMAL INSULATION	Due to their low thermal conductivity, the transmission flow of external temperature (heat and cold) into a room is very low, improving efficiency and lowering your utility bills. The insulation coefficient is up to 25% higher than those of metal coverings.
MECHANICAL PERFORMANCE	Great adaptability to weather conditions within -10°C and 45°C.
EASY INSTALLATION	From being more user-friendly, not having sharp edges nor absorbing heat from the sunlight.
LEAD & RUBBER FREE	We guarantee our panels are manufactured using lead-free and rubber-free additives.
100% RECYCLABLE	Our materials are 100% recyclable and environmental friendly.
MORE THAN 20 YEARS OF USEFUL LIFE, FREE OF CRACKS	The upper layer contains UV protection, which allows having a great durability even outdoors, maintaining its color and properties.
INNOCUOUS	Using a proper cleaning and maintenance to avoid mold formation, our panels ensure high levels of innocuousness making our panels ideal for food plants, agriculture and pharma industries.

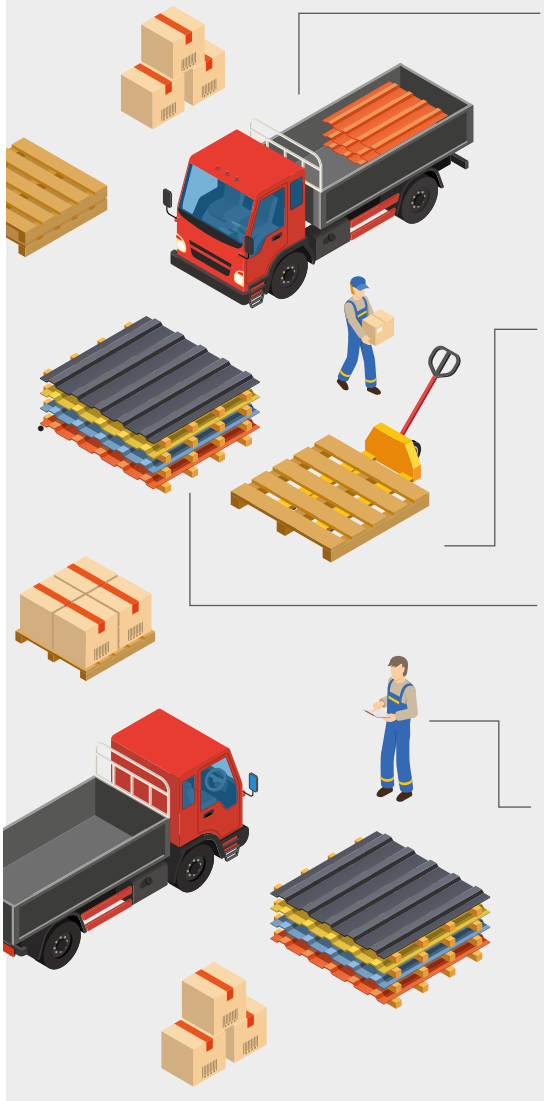
5. STRUCTURE MATERIALS

Whether you decide to use metal, wooden, or any other type of material structure for your Ag building, always make sure it is properly leveled all around its surface and gets properly attached to the ground. Get familiar with all implications of your building materials prior installation, including material performance under different temperature conditions (i.e., dilatation, etc), maximum weight withstand, appropriate distance between purlins (span), best hardware and sealants, and some other considerations as recommended by the manufacturers of those building materials.





6. TRANSPORTATION



As a first consideration for pickup or shipping, verify the transport unit has the appropriate dimensions to transport the panel size needed and properly secure panels in the truck bed. Any material damaged for this reason will not be covered by the warranty as damaged product.

Prior loading make sure the truck bed is free of oil, gravel and/or sharp elements that may damage the panels. It is recomended the use of wooden pallets -or similar- placed continuously along the entire length so that the load weight is evenly distributed.

Make sure there is separation between bundles in order to avoid friction and a potential damage to panels.

Avoid transporting other materials including metals, machinery, power tools, equipment, etc. in the same truck bed along with panels as prevention from accidental damage during the transfer of the unit.

During loading and unloading, a visual inspection must be carried out to ensure the quality of the product is as intended (free of damages). Proceed to secure load to guarantee a safe transport.

If there is any risk of direct exposure to natural or artificial heat sources during transport, it is recommended not to wrap the panels completely with stretch film -or similar- as it could affect the product by accumulation of internal heat

7. HANDLING, STORAGE AND CARE

• For the correct storage and care of Klar multilayer thermoacoustic panels, the following should be considered:

• Must be stored in a cool, enclosed environment avoiding wet or humid areas and direct sunlight (do not exceed 60°C / 140°F)

• Panels must rest on a level, even surface, never on sloped, uneven, or irregular ones.

• For proper protection and care, panels should not be placed directly on the floor. It is recommended to use wooden pallets or similar, ensuring even weight distribution, and separated from floor. Never store panels sideways or diagonally.

• The maximum height of the panel stack shall not exceed 5 feet.

• Panels shall not be handled diagonally or from opposite corner ends (i.e. do not lay opposite ends on the ground) since it may cause ruptures, deformation or damage.

• It is recommended to store panels in areas that allow clear maneuvering of the load and not close to objects that may cause damage during handling.

• Cover the panels with dark tarps or opaque plastic films but allowing flow of air.

• The above-mentioned area must have the corresponding signals.

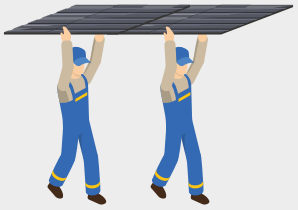


• Although panels do not have sharp or living edges that may cause cuts or hurt to personnel during transportation or handling, the use of EPP and gloves are always recommended, and following all safety procedures from your local county or State is encouraged.

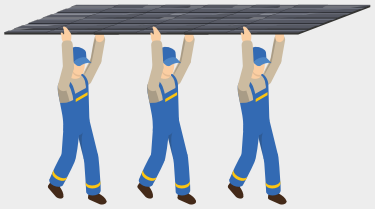
• Considerations for manual handling:



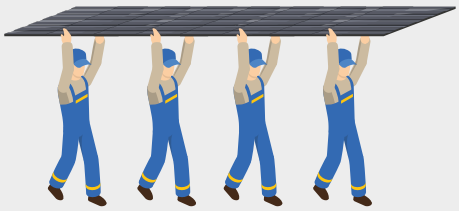
Up to 10 ft long



Up to 20 Ft long

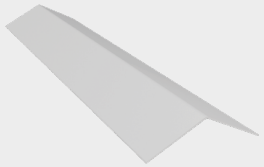
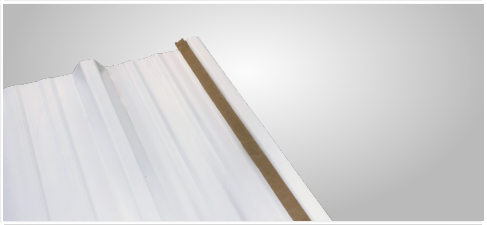
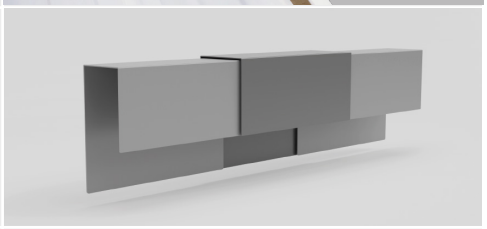
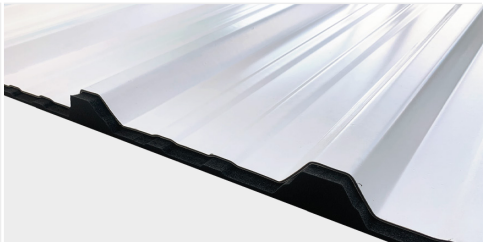


Up to 26 Ft long



Up to 40 Ft long

8. ACCESSORIES

Accesories	Description	
Klar Screw	3" Self Drilling Screw Available in: Stainless Steel, Coated & Mini Drill Point	
Ridges: Klar TK9 Ag Klar TK6S Ag Plus	Klar's PVC ridge cappings are manufactured with the most advanced co-extrusion, multilayer technology.	
Double-sided mastic tape for overlaps.	Recommended for low slope roofs.	
Klar PVC Trims	Rake Trim Ridge Cap Starter Jtrim Eve Trim Corner Trim	
Closure Strips	Used to seal gaps.	

9. INSTALLATION OF PANELS | ROOF INSTALL

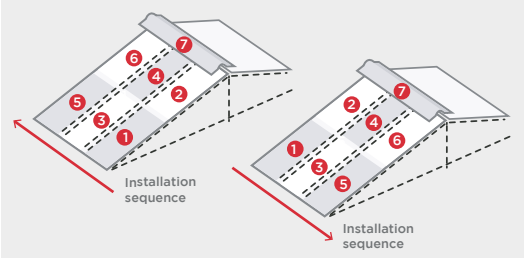
To achieve a correct installation, the following steps must be followed:

STEP 1

Make sure to have all materials and tools shown in section 10 as well as all necessary EPP. It is recommended to follow all safety procedures from your local county or State.

STEP 2

Inspect and validate the structure. Make sure the distance between supports (purlins) are in accordance with the design of the project.



STEP 3

Make sure panel dimensions are the correct ones for the space to cover. Otherwise, measurements and drafts shall be taken, and panels be cut as needed. A saw with an abrasive cutting blade is recommended for cutting panels.

STEP 4

In all cases, installation of panels must be done in the prevailing wind's opposite direction and following the sequence shown on picture below.

STEP 5

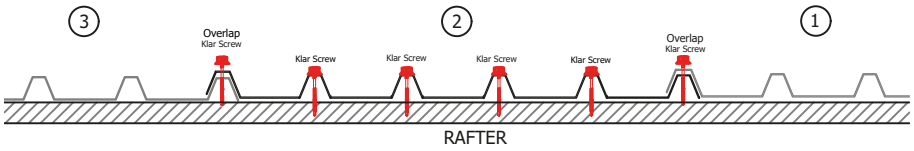
During installation and maintenance, do not put any kind of weight on top of the panels until they are properly fastened or secured to the structure. It is recommended to distribute the load or your own weight using boards with protection.

STEP 6

It is strongly recommended not to use any flat cardboard, drywall, plywood, underlayment, insulation membranes, films, or any similar product under panels because this normally creates a 'heat chamber' effect that may alter or deform the product.

STEP 7

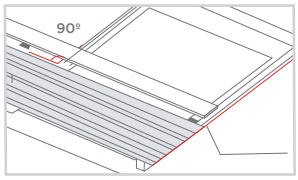
When installing the first panel, fasten at every ridge. Keep in mind that ridges 1 and 6 are also used for overlapping. It is recommended to fasten over the ridges rather than on the lower areas of the panel to avoid potential deformations.



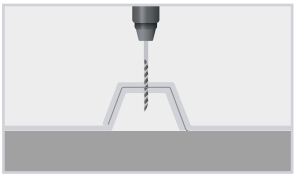
STEP 8

Lay down the first panel on the support structure, checking its alignment and making sure it is squared. When drilling, make sure to do it over the ridges and in a 90-degree angle against the panel. Use the recommended self-drilling screws keeping in mind the hole diameter in the panel must be 3-4mm oversized compared to the screw diameter to allow for panel expansion and contraction.
It is important that this first panel is well squared as it will serve as a guide for the next panels. Fasten panel at every ridge using the recommended Klar fasteners.

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Alignment & Square



Drill 90°



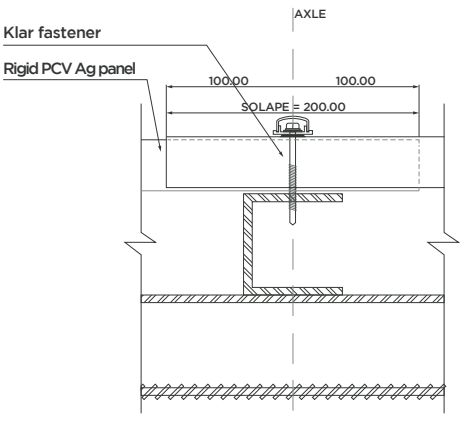
Klar Screw

STEP 9

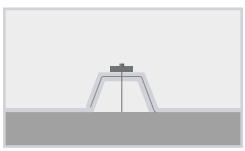
Continue with the next panel overlapping the panel one ridge. In areas of considerable winds overlap panels by one ridge and fasten panel in every ridge with a 3" screw and every eave with 1.5" screw.

STEP 10

When securing ridge overlaps with self-drilling screws, make sure they are properly fixed and tightened with adequate (tight but gentle) torque. Too tight may cause panel deformation -and even cracking the panel surface- but too loose may result in a potential filtration spot. Always secure ridges over the center of the ridge and in line with the supporting purling underneath.



Correctly Fastened



Incorrectly Fastened

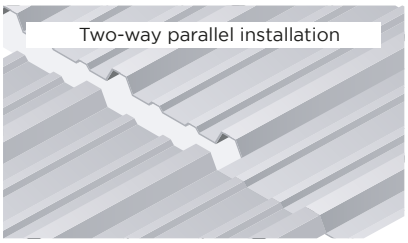


STEP 11

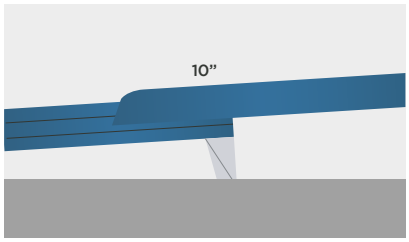
Avoid using rigid or cemented sealants at drilling points. Instead, is recommended the use of flexible sealants that may allow yield for panel expansion and contraction.

STEP 12
After finishing the sequence of panel installation, you must double check alignment of the panels prior to starting the process of placing the finishing accessories.

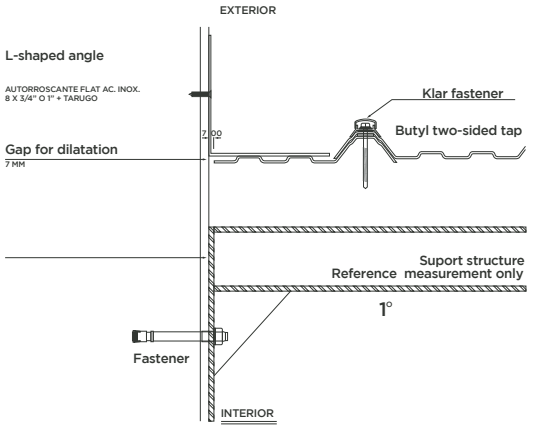
STEP 13
For double slope or double pitch roofs, install panels in a mirrored, parallel pattern on both sides to ensure proper alignment and create a uniform ridge line, allowing for correct ridge cap installation.



STEP 14
For ridge cap accessory installation, make sure to secure the ridge cap using the recommended Klar fastener and the installation sequence as specified in the previous steps. The screws must go where a support or lower support is available



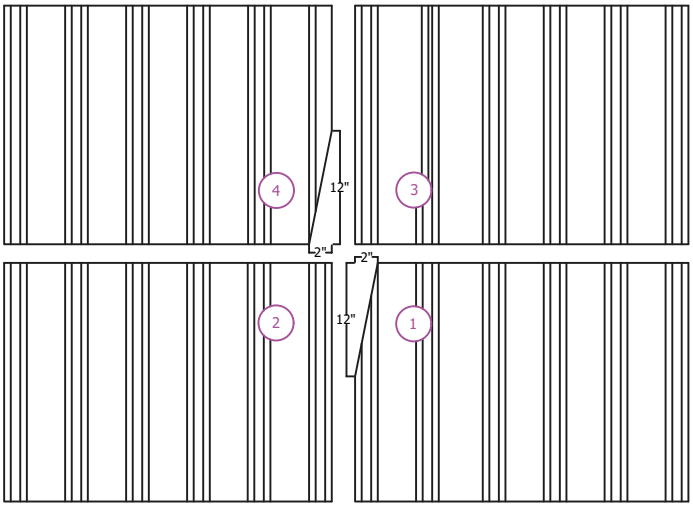
STEP 15
In areas where panels converge with other materials of the structure, always consider a 7mm (0.275”) gap to allow panel expansion and contraction and avoid cracks or deformations. In some cases the use of flexible sealants are acceptable but make sure it is applied only in one of the ends to allow material mobility.



10. RECOMMENDATION

Recommendation for overlaps on roofs of 2.50 mm thickness or more:
For a cleaner finish, it is recommended to make a blade-type cut on the sheets positioned between layers 1 and 4, as shown in the diagram below.

OVERLAP DETAIL



Floor plan view

1. Cut diagonally sheet 2 and 3
2. Apply butyl tape in the overlap area (Sheet 1 and 3)
3. Place Sheet 2
4. Apply butyl tape in the longitudinal overlap
5. Place sheet 4

For vertical installation of Klar AG Panels on walls, the following recommendations must be observed to ensure performance and durability:

A) Span Table:

The same span table recommended for ceilings and roofs applies to vertical wall installations. Always verify the distance between supports (purlins or framing members) as specified for the corresponding panel model and thickness. Refer to table on page 2

B) Fastening Position:

It is strongly recommended to fasten the panels over the ridges, never in the valleys, to avoid potential deformations and to allow for proper structural performance.

C) Installation Direction:

Start the installation from the bottom upwards, beginning at the right or left side of the structure. Overlap panels by one ridge, maintaining proper alignment. In areas exposed to considerable winds, ensure all ridges are properly fastened.

D) Overlapping:

- Side overlap: One ridge.
- End overlap: Minimum of 10 inches.

E) Expansion Considerations:

Where panels meet other materials or structural elements, always leave a 7 mm (0.275”) gap to allow for expansion and contraction, preventing cracks or deformations. In specific cases, flexible sealants may be applied, but only on one side to maintain material mobility.

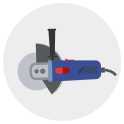
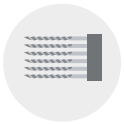
F) Fasteners:

Use Klar’s recommended fasteners:
- Self-drilling screws, stainless steel, with EPDM washer.
- Drill perpendicular to the panel surface, oversized the hole by 3-4 mm relative to the screw diameter to allow expansion.
- Avoid overtightening, as it could cause warping or surface cracks.

G) Acclimatization:

Before installation, panels should be acclimated by storing them within the installation environment to equalize temperatures and minimize thermal expansion/contraction effects.

12. INSTALLATION TOOLS

Description	Material	Description	Material
Circular Saw with an Abrasive Blade		Tape Measure	
Cordless Drill		Measuring Square	
Level		Cleaning Rag	
Drill bits		Bit Extenders	

13. CLEANING AND CARE

After installation and to keep your thermo-acoustic multilayer panels in their best condition Klar recommends performing once a year the following:

Description	Material
Use a soft cloth or cleaning rag to remove any particles left from cutting panels during installation.	
Use neutral soap or detergent at 10% solved into water for no longer than 15 mins prior to rinsing with water	
Tap water	
Squeegees and rag extenders are acceptable but make sure to apply softly on surface.	