Instructions for packaging a gable roof house in HEAT³ EasyPack™ bags

Materials/equipment needed for packaging

1) HEAT³ EasyPack™ packaging is made of high-quality (raw material used for the first time) UV-resistant heat-shrink film with a minimum thickness of 178 mic (7 Mil).

Film parameters:

* Tensile strength (PSI) in both directions (MD and TD) 2500PSI as minimum
* Elongation at break (%) in both directions (MD and TD) 600% as minimum
* Yield stress (PSI) in both directions (MD and TD) 1300PSI as minimum
* Dart Drop (g) 600g as minimum
* Puncture resistance (N) 150N as minimum

2) Strips - the recommended strips to be used for fastening should be at least 1" x 2" (approx. 2.5 cm x 5 cm) and not expand when exposed to humidity (to avoid self-damage and damage to fastening screws).
3) Corrosion-resistant screws/nails used to fasten the strip: Strip thickness x > 2.5
4) Power drill or nail gun
5) Hot air tool (recommended minimum power 60 kW) + hot air tool extension (> 180 cm)
6) Tape - for hole patching/stopper-taping weld joints.
   PS! It is recommended that UV-resistant tape be used if the recommended protective period of the packaging is over 3 months.
7) Ladder, working platform or platform truck
8) Waterproof permanent marker — for marking on the packaging risk areas that are under the packaging
9) Knife for cutting film – we recommend the DS-007 cutting knife with interchangeable blades
10) Safety equipment (harnesses, ropes etc)

Before packaging:

1) Large side openings (at least 50% of the module side) must be supported (so that the module will not bend during transport).
2) All internal doors must be closed and any loose (moving) parts in the module must be secured.
3) All pipes, extremities or sharp edges (roofing sheet edges, gable ends, eave corners, etc.) which are in contact with the packaging or extend almost to the packaging (< 10 cm) must be padded by means of taping/clamping down extra film or by adding other padding material so that the cover will not rub against the sharp edges during transport. The same should be done with the cable ends extending out of the module.
4) If extremities extend beyond the external boundary of the module by more than 20 cm, consideration must be given to whether to poke the extremity through the packaging or to leave it padded under the same packaging. If it is poked through the packaging, this extremity must be covered individually.
   If the cover must be pierced from places such as extremities/chimneys/ventilation devices, these elements must be covered individually with a piece of film, an X should be cut at the point of insertion, and the extremity/chimney/ventilation device must be led through this opening (the cover of the extremity and the module packaging should be welded together and the joints taped).
5) In order to protect the film against the sharp points and edges described in sections 3 and 4, to exclude potential penetration risk, we recommend putting into place an additional one-piece film panel extending over the roof edges of the module and other sharp areas.
6) If the roof of the module is open to a certain extent, it must be covered with beams and plywood in such a way that during packaging nobody will step through the hidden/covered opening. Any openings in the roof that remain uncovered under the packaging (ventilation shafts, chimney bushings, etc.) must be immediately marked upon unrolling the packaging by means of a waterproof permanent marker.
7) If any parts of the construction materials that are sensitive to short-term heat (for several seconds the temperature of the heat-shrink film is up to 150 degrees C) are in contact with the packaging and there is a risk that they may be melted with the heat-shrink film during heating, they should be covered with extra film

or with construction paper, or a packaging operator must be informed about this risk so that this area is not heated (however, heating 100% of the packaging is recommended).

8) Clean the area around the modules to be packed from construction debris to avoid the risk of fire.

HEAT³ EasyPack™Packaging:

(as a reference, see video with instructions on YouTube – link {https://youtu.be/bC6y3ILBa4I})

The packaging must be sufficiently high (+/- 20 cm higher than the module) to allow the lower edge of the side of the packaging to be wrapped around the perimeter strip attaching it to the module.

1) Place the rolled HEAT³ EasyPack™ packaging on one of the narrower edges of the module (short end) and open the straps/tape that hold the roll together.
2) Unroll the packaging along the module to the opposite edge so that it reaches both short ends.
3) Now, unfold the packaging so that the corners of the packaging match the corners of the module. We recommend that you leave the sides of the packaging unfolded until all corners and sides of the packaging match the corners and edges of the roof of the module. Then, push the sides of the packaging down over the edges of the module.
   NB! In order not to break the packaging when fixing the corners, we recommend that you place your hand under the side film of the packaging without pushing it down from the roof and grasp the corner of the packaging and the corner of the module at the same time, and then push the side wall along the back of your hand over the edge of the module.
4) Straighten the roof pane more or less, and then pull the sides of the packaging all the way down from the ground (it is usually possible to move the packaging to a better position on the module from the ground as the packaging slides over the module).
5) If the module has eaves that extend more than 30 cm over the edges of the module, we recommend that you first attach the strips on the packaging against the side of the module under the eaves.
   a. Push the strips under the eaves together with the film up to the corner between the eaves and module as far as possible (so that the film under the eaves also remains away from the inclined module after heating).
   b. The strips under the eaves must be approximately 3 to 5 cm longer from both sides in order to allow the edge of the packaging to be folded onto the strip (this way there will be no “bags” in the corners of the eaves which would otherwise lead to possible condensation on the open side of the water module)
   c. fasten the strip with tightly fixing screws or nails every < 50 cm
6) After installation of the eave strips, fasten the strips of the lower perimeter. The strips should be installed at the lowest height of the module, which should be protected against road dirt and precipitation, without gaps around the perimeter of the entire module. Gaps can be left in places where the lifting straps run through.
   PS! If possible, the perimeter strip should be turned together with the edge of the film packaging a couple of times and then the perimeter strip should be secured with screws or nails every < 50 cm (the interval depends on the strength of the strip and screw and on the substrate holding the screw). If the film cannot be wrapped around the perimeter strip, the strip must at least cover it within the entire height of the strip and the pitch of the screws must be smaller in this area (< 30 cm). It is important to be sure that the strip presses the film against the module with sufficient strength and that the packaging does not slide out from under the strip during transport.
7) Heat the film 100%.
   If there are strong folds in the film before heating (for example, a fold under the gable), we recommend that you start heating these folds from a slight distance from the smoother surface (1-2 m from either side of the fold) so that folds are removed when the film shrinks. The fold under the gable should remain minimal (maximum 0.5-1.5 m high depending on the roof slope). A tape covering the edge of the fold and the smooth surface of the packaging must be placed on the folds that were not removed during heating.
   After this, heat the other side of the packaging by moving along the entire side from bottom to top. Do all sides in this way and last heat the roof of the packaging.

8) When heating is complete, any holes and folds detected on the packaging must be taped[1] and stopper-tapes must be placed on the weld joints (e.g. 50 cm sections). Taping is enough to patch smaller holes, but to repair bigger holes we recommend placing a piece of heat-shrink film on the hole, covering the hole at least 20 cm from all edges, taping the corners of this piece of film, and welding it to the film of the packaging by applying heat between the film. Then tape all the edges of the attached film onto the film of the packaging.
9) If necessary, tape doors with a zipper on already shrunk film in order to get under the packaging to complete internal work, perform inspections or other reasons. Tape the doors on the film with double tape (narrower tape first and double wider tape on top of it) covering the entire outer edge of the door with the zipper. Wait at least 1 hour after fastening the door to open the zipper and cut an opening in the heat-shrink film covered with a door.
   If transport is started or the product is stored for a longer period of time, we recommend that you tape the zippers so that rain does not pass through the zippers or that wind or branches and the like do not break the door next to the zipper during transport.
   After the door with the zipper has been installed, do not re-heat the film, as otherwise the zippers may tighten and it will not be possible to open/close the zippers.
   PS! Follow the instructions for installing the doors as described in the separate instructions for installing doors with a zipper and refer to the video on YouTube for reference - link {https://youtu.be/Bp39jYce430}
10) During prolonged storage, **the tape used to cover the holes must be checked at least every 3 months** to ensure that the sun has not reduced the properties of the tape adhesive and the tape has not been removed leaving an open opening on the packaging. For longer-term packaging, we also recommend that you consider adding ventilation valves to the packaging or adding moisture-collecting means to the module under the packaging.

[1] For the best taping results, the temperature of the materials (tape, film door and film packaging) must be over 18 °C (65 °F). If taping is done in cold/dusty/wet conditions, be sure to clean/dry the film surface carefully and warm tape after each strip of tape is placed to ensure that the tape adhesive is activated.

Removing HEAT³ EasyPack™ packaging from the module after use

1) Do not remove the packaging before it is absolutely necessary to ensure maximum protection.
2) Before removing the packaging, consider whether you want to remove the entire packaging at once or only partially (for example, a couple of sides).
   NB! If you partially remove the packaging, note that the cut edges may cause the wind to tear away the rest of the packaging, so it may be necessary to fix the packaging to the module in advance.
3) Remove the strips from the packaging or, if no strips were used, cut open the lower perimeter of the packaging.
4) Cut open the side edges of the packaging.
5) In order to facilitate the handling of the packaging to be removed, it is recommended that it be removed in film strips of up to a few metres (the film quantity to be removed should not be too big nor too heavy and it should be easy to roll together).
6) Remove from the film panels all materials that are not plastic (e.g. packing tape, wooden strips, ventilation valves, loading belts, etc.).
7) Unfold the cut off/removed film panels and store these on top of each other.
8) The packaging must be rolled as tightly as possible to minimise the amount of waste produced. In order to avoid problems with handing over film to waste recycling companies, we recommend that the film be kept clean and not rolled together in the mud. For a larger number of packaging pieces, the packaging is sent to you in big-bags, which you can use to make it easier to collect and hand over removed thermal shrink film.
9) Collected used packaging must be delivered to the waste management companies together with the remaining film waste collected. Used thermal shrink packaging (material — LDPE, Plastic #4) can be recycled into other products. Please use this option!
10) BE RESPONSIBLE AND SEND ALL PACKAGING MATERIALS TO A WASTE RECYCLING COMPANY THAT WILL DELIVER THE MATERIAL TO MANUFACTURING COMPANIES THAT CAN USE IT.

Advantages of HEAT³ EasyPack™ packaging

1) All film welding is done in a clean factory environment – welding the film in the presence of sawdust will result in poor-quality weld joints, which may burst during transportation or when stored in windy conditions.
2) Less damage to the packaging and the module under it – the packaging does not wobble in the wind and during transport and does not become damaged or damage the module.
3) Easy and quick to install – by following the procedures described above, modules are usually packed in minutes. Example: packing a 15.4 x 4.0 x 4.0 module takes a total of 30 minutes (10 min. for rolling the packaging open and providing with strips + 20 min. for heating and taping the packaging) with 2 people.
4) There is no need to store different film rolls in the warehouse for different packaging needs - each package is custom made for a specific module!
5) Does not produce waste – provided the measurements have been accurately communicated, the packaging is prepared so that in the future no waste (film residue) is generated during packing.
6) Quick removal (< 5 min.) – there are only a few strips and the film is cut open. The film can also be cut apart in sections by removing only the side that goes against the other module or by removing all sides, leaving only the film on the roof, which holds at the edges until the last minute. In this way modules can be temporarily protected from precipitation during construction work.
   NB! After removal of the film, the packaging should be cut into panes and rolled together (in order to reduce waste) and sent to the recycling facility for recycling.
7) Continuation of the construction work in a module pre-packaged at the factory thanks to the film doors which can be added to the packaging, if necessary.
8) Less strip installation = faster work at the plant and construction assembly, less damage to the facade, fewer possibilities for water damage.
9) Standardisation of work – all packaging is performed using the same method and work procedures.
10) Aesthetic packaging/look – the marketing side faces the customer.
11) Packaging with UV protection.
12) Safer work – less work at heights and standardisation of the process.