

INOFIN FR / FR-V roofing membranes can be welded homogenously and therefore reliably sealed by hot-air-welding.

Area seams should be welded with either a self-propelled hot air welding machine (for example Leister Varimat) or by using a hand held hot air welder. Structural details must be welded by hand-held welders.

Requirements

The membranes to be welded must be dry, free of dirt, dust and any adhesive.

Please consider the following points for the hot-air welding:

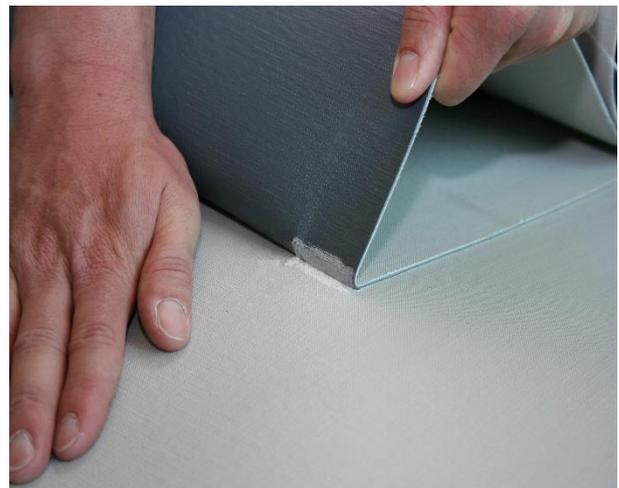
1. The welding temperature depends on the welding equipment, the welding speed, the substrate and the weather conditions.
2. Avoid overheating of the seam because this may cause a weakening of the membrane material and a degradation of the seam strength.
3. The welding must be effected with contact pressure. During the welding process with a hand held hot air welder use a silicone roller to press the surfaces together. When using a welding machine it may be necessary to add additional weights. The pressure resistance of the insulation material must correspond with the necessary compacting pressure during welding as well as the respective manufacturer's instructions.
4. Voltages variations caused by long power supply lines or other electricity consumers lead to different welding seam qualities. Adjust the welding temperature as needed in order to avoid this.
5. The roofer / roofing contractor must have sufficient knowledge and ability for welding and handling synthetic membranes.
6. Different material thicknesses and changing climatic conditions cause different welding temperatures and speeds. Test welds are therefore recommended on the actual substrate prior to work commencing. After the welding test seam has cooled down check the seam quality thoroughly.

Welding practice

Unroll the single ply membranes completely to release any tension and overlap them according to the installation guideline. Consider a minimum welding width of 20 mm. Plasticize the surfaces to be welded (overlap area) by heating them with a hot air welding tool in order to connect the membranes together. After that, press down the seam area immediately with a silicone roller to create a homogenous seam. Avoid wrinkles in the seam area because they can lead to water ingress by capillary action.

Welding test

Before work commences carry out a test weld on the actual substrate as the outside temperature and humidity can affect the quality of the finished weld. Conduct a peel test and adjust the welder accordingly. A good weld will have been achieved if you are unable to peel off the overlapping membrane. The membrane will tear outside the weld along the complete width of the testing strip. In addition to this welding advice please also refer to the INOFIN FR and INOFIN FR-V installation guidelines.

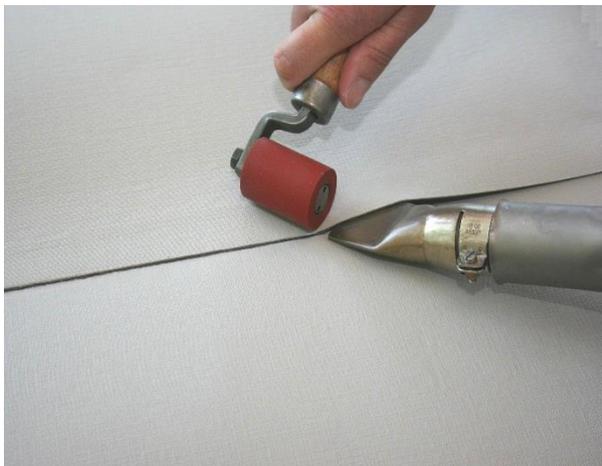


Manual welding

The nozzle width of hand-held heat welders for area joint welding is 40 mm. For detailing we recommend to use a 20mm nozzle. Digital controlled hand-held heat welders should be set to approximately 350°C. (Note: you have to execute welding tests, see point welding test). A pressure roller of silicone or PTFE is necessary to achieve a sufficient compacting pressure in the seam area. Remove combustion residue at the nozzle outlet with a brass wire brush.

Three steps of welding process:

1. Tacking: apply tack welds (points) at the rear of the seam to be welded.
2. Pre-weld: apply a continuous intermediate weld directly in front of the tack welds. Please consider a sufficient wide unwelded area (minimum 2 cm) for the seam welding.
3. Final-weld: use the pressure roller parallel to the nozzle (see image below) and roll it with light pressure beyond the seam. A small continuous welding bead should leak from the edge of the seam.



Automatic welding

It is recommend to use automatic welders with temperature measure in the nozzle and automatic temperature control.

Welding tests have to be done before you start welding (see point welding test).

As a guide a temperature of 400°C at a speed of 2 m/min. should be set with the Leister Varimat and 3 m/min. with the Leister Varimat V2.

With the automatic welder you will not achieve a clear welding bead. A shiny area of membrane adjacent to the welded seam which is between 0.5 cm and 1.0 cm in width will demonstrate a good weld.

If the temperature is too high you will notice brown discolouration of the membrane, the reinforcement will push through and a clear welding bead will be present.

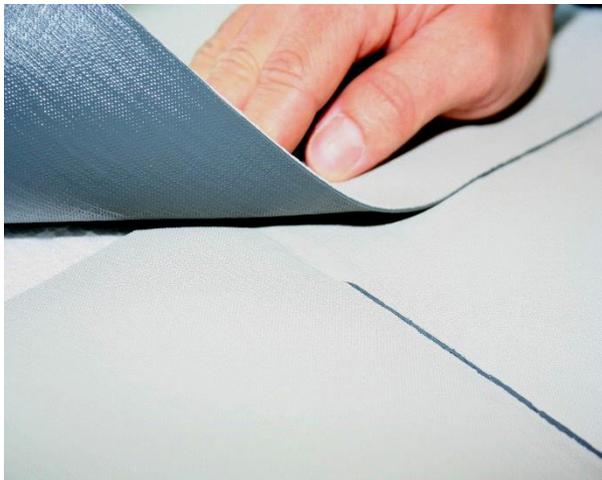


Welding of T-joints

Multiple overlapping membrane layers for example at head butt joints (T-joints) require special attention during the hot air welding process.

The INOFIN membrane layer needs to be chamfered at the location of the weld. This can be done by:

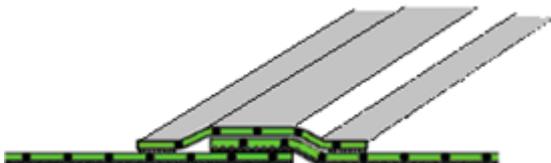
- Using a hand-held welder to heat the membrane edge and scrape off the material with the nozzle of the welder.
- Heat the membrane edge with the hot air welder and then roll over the edge with the pressure roller.
- Use a chamfer plane.



Welding of butt joints with INOFIN FR-V membranes

Multiple overlaps of four membranes at one point should be avoided. The membranes have to be arranged with a corresponding offset.

Use separate INOFIN FR strips for forming the head butt joints of INOFIN FR-V membranes. The area membrane of INOFIN FR-V should overlap about 2 cm at the butt joint. Place centrally the INOFIN FR membrane strips with an overlap of at least 4 cm on both sides and weld tight.



Weld carefully the resulting T-joints as previously described.

Welding seam checking

After having finished welding check all seams with a test needle or screwdriver with rounded top and re-weld if necessary. The test needle is to lead with slight pressure along the seam edge.



Polystyrene-insulation:

In case of polystyrene insulation material apply appropriate measures for example a sufficient overlap in order to avoid a damage by heat .

System accessories

The following accessories are available for an efficient and safe application of INOFIN FR / FR-V membranes:

- INOFIN F homogeneous membrane for detailing like vent pipe inserts
- INOFIN F Coated Metal Sheets
- INOFIN F Internal and external corners
- INOFIN Lightning Rod Protection Tube
- INOFIN Pipe insert DN 50
- INOFIN Drainage element DN 100
- INOFIN Stainless steel ventilation element DN 100
- WITEC Walkway FPO
- INOFIN Contact adhesive and TEROTECH Spray Adhesive for connection bonding
- Terokal TK 400 and Terokal 3958 for surface bonding with INOFIN FR-V

INOFIN FR / FR-V welding advice



Information mentioned above corresponds to the state of the art, documented in the professional guidelines and the DIN 18338. Furthermore the information corresponds to our current state of knowledge of developing and production of INOFIN FR / FR-V as well as reliability of the product in practice.

This welding instruction supersedes all previous welding instructions.

Please contact the technical support if you have any questions.

Technical support WOLFIN Bautechnik GmbH

Telefon: +49 6053 / 708-141

Fax: +49 6053 / 708-113