

▶▶ Rhepanol® O.R.G. and  
Rhepanol® O.R.F.

Acid protection  
Edition 2013



**Installation instructions**

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### Preparation of the substrate

Steel constructions must be blasted with silicate-free grit, e.g. Asilikos, with a percentage purity of SA 2.5. The temperature of the substrate must not be lower than 5 °C (41 °F), the dew point difference has to be at least 5 °C (9 °F), and the relative humidity must be  $\leq 60\%$ .

### Application of Rhepanol O.R.G. and Rhepanol O.R.F.

In compliance with the standardised preparation methods for the substrate, with steel substrates apply approx. 150–200 g/m<sup>2</sup> Rhepanol primer 1 S immediately after blast cleaning. With non-ferrous metal substrates, first Rhepanol primer 2 S is applied to the grease-free and, if necessary, roughened substrate. After the Rhepanol primer 2 S has completely dried out, another layer of Rhepanol primer 1 S is applied. This coating has to

be also completely dried out before Rhepanol contact adhesive 5 is applied.

Acid-proof membranes with a thickness of 2 mm and 3 mm have to be chamfered at the edges using a knife or chamfer plane. The Rhepanol contact adhesive 5 should be applied in a thin and even layer onto both the primed substrate and the cut-to-size Rhepanol acid-proof membrane simultaneously. The total adhesive needed for both bonding surfaces is approx. 400 g/m<sup>2</sup>, while the drying time is approx. 60–120 min., depending on the ambient temperature.

After the adhesive has dried (finger test), place the acid-proof membrane in the correct position, press it onto the substrate, fix it firmly and remove any blisters with a pressure block or a metal roller with a width of 40 mm.

On cement-bonded substrates the acid-proof membrane is applied either by using Rhepanol contact adhesive 5 or Rhepanol melting adhesive 7 or by loosely laying.

### **Preparation of the substrate**

If using Rhepanol contact adhesive 5 or loosely laying the membranes, the substrate must be plain, dry, solid, free from fins, blisters, laitance, brittle or chalking layers, as well as free from oil and grease. Therefore, in most cases mechanical treatment of the substrate will be necessary.

For the levelling out of the substrate or the concrete surface which has become rough after the mechanical treatment, use cement-bonded foundation materials that are modified with a polymer dispersion or solvent-free reaction resin foundation materials.

If using Rhepanol melting adhesive 7, such levelling out and the substrate conditions

required for Rhepanol contact adhesive 5 are not necessary, except for very polluted, oily or wet substrates.

### **Application with Rhepanol contact adhesive 5**

Apply the Rhepanol primer 1 S onto the substrate with a brush or a spreader. Depending on the absorbency of the cement-bonded substrate, the amount of adhesive needed is approx. 200–300 g/m<sup>2</sup>. Rhepanol primer 1 S has to be completely dried out before Rhepanol contact adhesive 5 is applied. Acid-proof membranes with a thickness of 2 mm and 3 mm have to be chamfered at the edges using a knife or chamfer plane. The Rhepanol contact adhesive 5 should be applied in a thin and even layer onto both the primed substrate and the cut-to-size Rhepanol acid-proof membrane simultaneously. The total adhesive needed for both bonding surfaces is approx. 500–600 g/m<sup>2</sup>.

Depending on the ambient temperature the drying time is approx. 60–120 min.

After the adhesive film has dried (finger test), place the acid-proof membrane in the correct position, press it onto the substrate, fix it firmly and remove any blisters with the wide pressure roller or a pressure block.

### **Application with Rhepanol melting adhesive 7**

Apply a standard cold bituminous pre-coating, e.g. Prodorit, onto the substrate using a broom or a spreader with a consumption of approx. 200 g/m<sup>2</sup>. After the solvent containing pre-coat has completely dried, apply the Rhepanol melting adhesive 7. It is melted in a thermostatic control melting pot with an integrated stirrer at 180–190 °C resp. 356–374 °F under constant stirring, poured out at this temperature and levelled out onto the substrate. The amount of Rhepanol melting

adhesive 7 needed is approx. 1.5–2.0 kg/m<sup>2</sup> with a layer thickness of 1.5–2.0 mm.

Regarding the application of Rhepanol acid-proof membranes with Rhepanol melting adhesive 7, there are two equal alternatives a) and b), depending on the given installation conditions.

**a)** Thoroughly re-melt the levelled out and cooled down melting adhesive layer using a gas torch. It is not sufficient to simply warm the surface. Press on the Rhepanol acid-proof membrane onto the substrate without any blisters.

**b)** Roll out the Rhepanol acid-proof membrane immediately after pouring out the Rhepanol melting adhesive 7. The pouring, the levelling out of the adhesive and the rolling out of the membrane have to be done consecutively and without interruption.

Alternative b) has to be used if the use of open flames is not permitted at the building site.

### Loosely laid

After the substrate is carefully prepared, line it with a non-woven, approx. 400 g/m<sup>2</sup> fleece prior to the application of the acid-proof membrane O.R.G. or O.R.F. On top of the installed acid-proof membrane O.R.G or O.R.F., another nonwoven fleece of approx. 400 g/m<sup>2</sup> has to be applied, before the final covering out of e.g. concrete or flooring plaster follows.

There are two seam welding methods:

- hot air welding  
or
- solvent welding using  
solvent welding paste.

The seam welding area must be dry and clean, if necessary clean it with solvent welding agent.

### Hot air welding

With hot air welding the seams are sealed through a 40 mm wide overlap. For this purpose use a hot air welder with a flat, 20–40 mm wide nozzle, producing an outlet air temperature of 300–350 °C resp. 572–662 °F (it is recommended to use a Leister Triac welder with a 40 mm wide nozzle, welder position 5–6). The upper overlap is pressed onto the edge of the lower membrane using a narrow metal pressure roller while the hot air welder is moved in the lap, simultaneously heating up the membranes. The pressure roller is placed diagonally (approx. 45°) to the welding seam, producing a herringbone pattern until the overlap edge is no longer visible.

**Solvent welding with solvent welding paste**

With solvent welding the seams are sealed through a 40 mm wide overlap. For this purpose apply a full but not too thick layer of Rhepanol solvent welding paste O.R.G. or Rhepanol solvent welding paste O.R.F. onto the complete lap width of the lower membrane edge. Immediately roll on the overlapping edge of the upper membrane by repeatedly applying moderate pressure with a 40 mm wide pressure roller. The solvent welding paste needed amounts to approx. 50 g per metre of seam.

If membranes are being seam solvent welded that are bonded with Rhepanol melting adhesive 7, make sure that the upper membrane is tightly rolled onto the lower membrane edge, avoiding any trapped air and possible squeezing out of Rhepanol melting

adhesive 7. The Rhepanol solvent welding paste O.R.G. or Rhepanol solvent welding paste O.R.F., which is subsequently applied to the complete 40 mm overlap, must not come into contact with the Rhepanol melting adhesive 7.

**Integrity test of applied membranes and seams**

Due to the conductivity of Rhepanol O.R.G., it is not possible to carry out an integrity test with an electric pore test instrument. With Rhepanol O.R.G. only visual checks for optimal seam welding and possible mechanical damage are possible. Rhepanol O.R.F. is not electrically conductive and can thus be tested for defective spots on metal and cement-bonded substrates in conjunction with Rhepanol primer 1e and Rhepanol contact adhesive 5, by using an appropriate pore test instrument, e.g. Elmed Isotest II RT.

Testing voltage for membrane thicknesses:

1.5 mm = 10 kV

2.0 mm = 15 kV

3.0 mm = 25 kV

For a functionally safe covering of internal corners, first the membrane seams at the floor-wall-corner area are sealed.

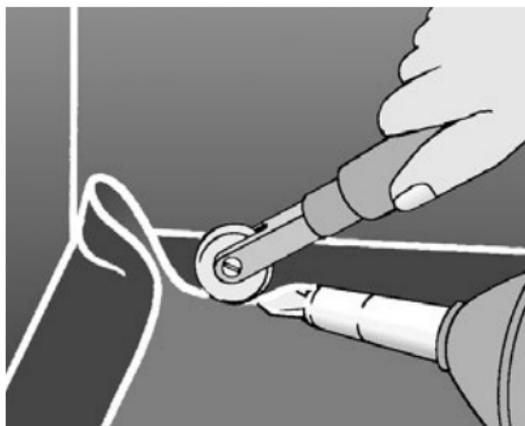
Two methods are available:

- formation of corners by hot air welding
- formation of corners using solvent welding paste

#### **Formation of corners by hot air welding**

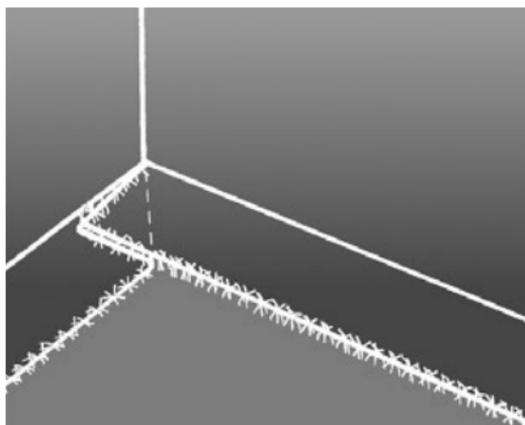
Fold back the approx. 50 mm wide seam and then weld it with hot air.

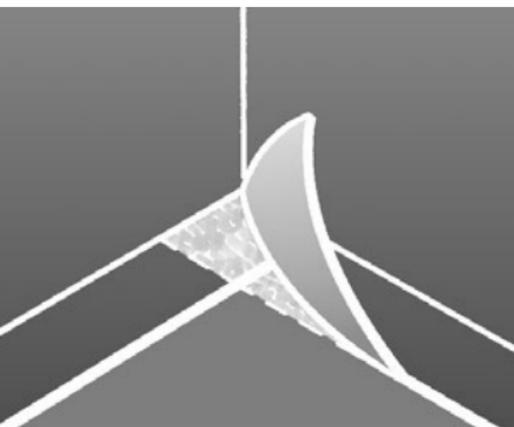
Fold back the gusset, press on flatly and weld it with hot air.



Weld the gusset with hot air until it is completely incorporated in the membrane.

To fix the corner formation, a special corner patch is applied.





### **Formation of corners using solvent welding paste**

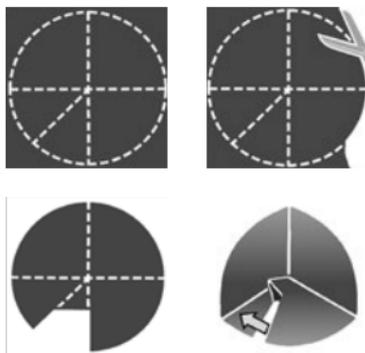
First line the floor; make sure the Rhepanol acid-proof membrane adjoins the valley between the floor and the wall. Then, line the walls so that a seam overlap of at least 4 mm width lies on the floor. Keep this stripe free from adhesive!

Cut the gusset which has been formed in the corner. Then solvent weld the seam overlap to the membrane which is bonded to the floor, also close the cut ends of the gusset by solvent welding during this operation.

To fix the corner formation, a special corner patch is applied.

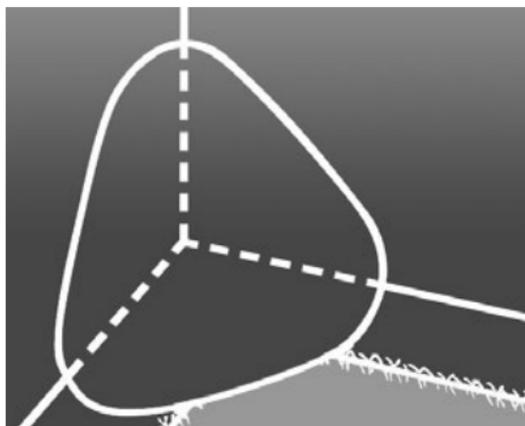
### Preforming the special corner patch

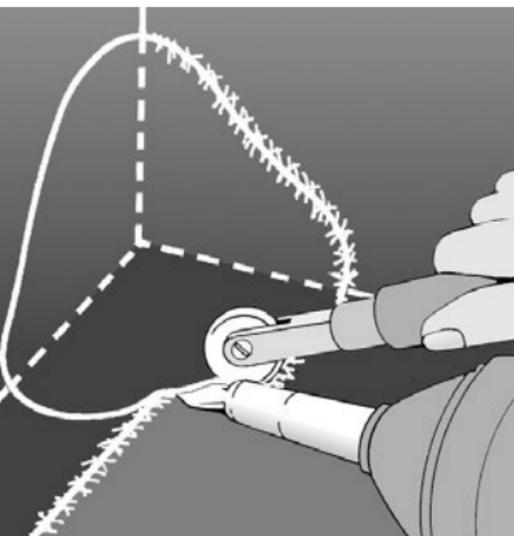
The special corner patch is based on a square of at least 120 x 120 mm. Mark, cut out and weld with hot air according to figures 1 to 4.



### Placing the special corner patch

Place the special corner patch in the correct position and apply Rhepanol contact adhesive 5 to both the internal corner and the special corner patch. After drying press it into the internal corner.





### **Hot air welding the special corner patch**

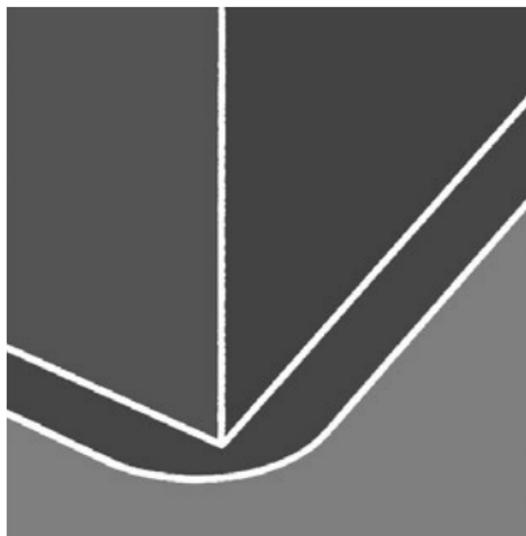
The special corner patch is welded to the underlying membrane by use of a hot air welder and a narrow metal pressure roller.

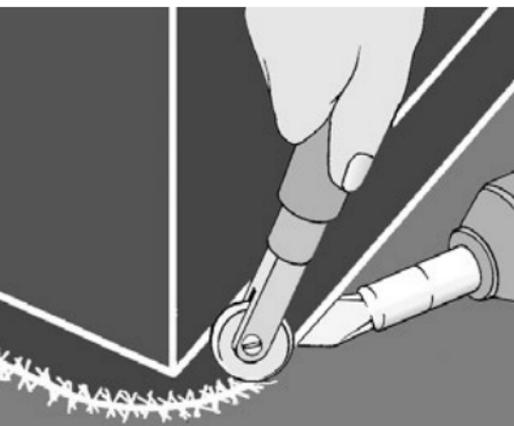
### **Solvent welding the special corner patch (no illustration)**

Special corner patches can also be fastened with Rhepanol solvent welding paste O.R.G. or with Rhepanol solvent welding paste O.R.F., depending on the membrane type.

**Formation of external corners**

In the corner area the seam overlap is reduced from 40 mm to 20 mm by manually forming the cold material so that it can be applied in the seam area without causing stresses in the seam.



**Hot air welding**

The seam overlap is welded to the underlying membrane by use of a hot air welder and a narrow metal pressure roller.

**Solvent welding  
(no illustration)**

The seam overlap can also be sealed with Rhepanol solvent welding paste O.R.G. or with Rhepanol solvent welding paste O.R.F., depending on the membrane type.

In principle: Pipe and flange connections should be carried out with Rhepanol O.R.G. only.

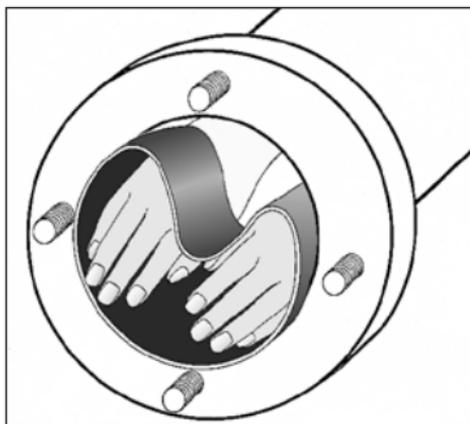
Pipes and flanges require the same careful preparations as metal vessels, e.g. cleaning, blasting and priming prior to lining.

In order to line pipes with a small diameter, cut out a strip of acid-proof membrane Rhepanol O.R.G. (circumference plus seam allowance). Hot air weld the overlap at the inner and outer seam so as to form a sleeve. Place the preformed sleeve in the pipe with the seam up. For pipes with a flanged connection the lining must be approx. 10 mm longer. Pipes with a larger diameter which have easily accessible interior surfaces are lined in the same way as metal vessels.

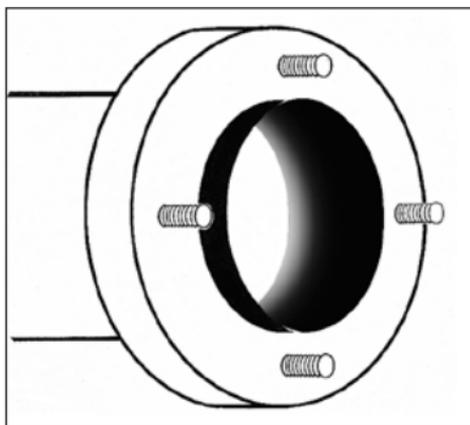
Since Rhepanol O.R.G. deforms under pressure, the flange must be carried out as shown on the illustration (see next page).

On the following pages the illustrations show the steps for carrying out a flange connection. The same procedure is to be used for the mating flange.

In order to be able to easily disconnect the two flanges for maintenance, the contact surfaces should be graphitised prior to being screwed together.

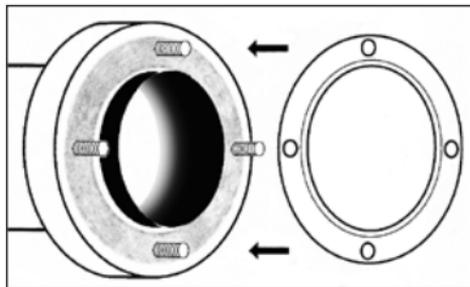


Bond the fit-to-size sleeve made from acid-proof membrane Rhepanol O.R.G. in the pipe using Rhepanol contact adhesive 5.

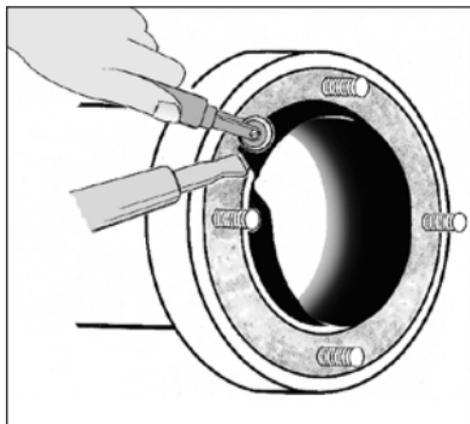


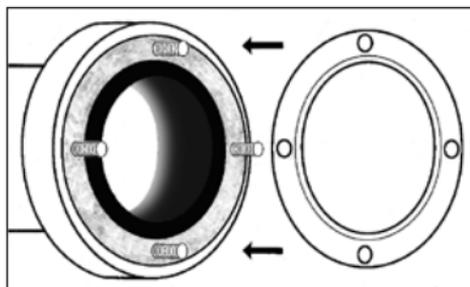
The end of the sleeve must extend the flange by 10 mm.

Cut the first gasket with the inner diameter being 10 mm larger than the pipe diameter and bond the gasket to the flange with Rhepanol contact adhesive 5. Chamfer the inner side. Use a chemical-resistant asbestos-free flat gasket. We recommend type AFM 309 produced by Reinz, 89233 Neu-Ulm, Germany. The thickness of the flat gasket must be the same as the membrane Rhepanol O.R.G. thickness.

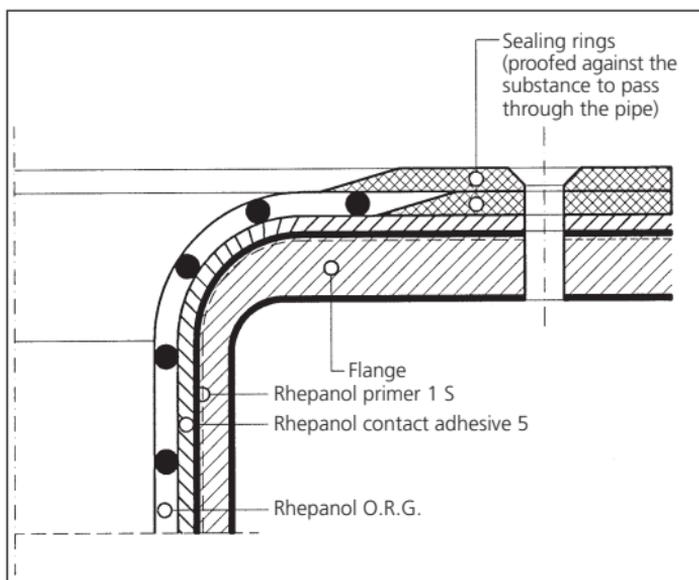


Apply Rhepanol contact adhesive 5 onto the gasket. Manually press the end of the membrane which juts out tightly onto the gasket without causing stresses in the material. Hot air weld the pressed on end of the membrane.





Cut the second gasket to size so that the inner diameter fits exactly the inner diameter of the pipe. Then chamfer the inner side by filing and fix the gasket to the prepared surface by contact bonding.



The drawing "pipe and flange connection" shows the complete construction.

When installing Rhepanol O.R.G and Rhepanol O.R.F., the corresponding national working and safety instructions have to be followed. For work in pits and indoors forced ventilation is obligatory. The vapours released during application of the primers, the contact adhesive and the solvent welding paste should be drawn off at floor level and vented outwards. During all works, whether indoors or in open buildings, sufficient ventilation must be ensured.

Follow the instructions on the containers for the handling of hazardous materials.

For Germany, the Regulations for the Prevention of Accidents of the German Employer's Liability Insurance Association, the local Rules for the Prevention of Accidents and the TRGS 507 "Surface treatment in rooms and vessels" are to be observed.

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