



THE FORMWORK

NOE[®]plast

Dated: 08.2017

Technical instructions for
NOEplast textured formliners



NOEplast textured formliners for concrete that deserves to be seen



NOEplast for textured concrete finishes: the right way to create aesthetically pleasing concrete surfaces. NOEplast textured fair-faced concrete surfaces bring buildings to life with an ever-changing interplay of light and shadow. The visual effect varies as the lighting conditions change with the time of day. Light and shadow play games with one another, depending on the position of the sun.

When used in the right way, NOEplast can create a visually consistent textured finish over large areas of fair-faced concrete. The NOEplast range can cater for the customer's individual wishes in every case. The large selection of designs offers the perfect choice for every project: From delicately proportioned, life-like wood grain to natural or abstract motifs, from eye-catching bush-hammered concrete to artistically designed reliefs.

Using NOEplast:

NOEplast can be used on site for in-situ concrete as well as in the factory for precast concrete units (balustrades, beams, columns, pillars, parapet elements, walls, troughs and other shapes). The formliner material is flexible, which makes casting curved concrete components a relatively easy task. Given careful handling and the use of one of NOEplast special release agents and adhesives supplied by us, NOEplast textured formliners can be reused for 80 to 100 concrete pours without problem.

Important:

Release agents ease the task of stripping formwork, protect the NOEplast formliners and extend their useful life. Release agents may evaporate. If the site programme calls for NOEplast formwork to be exposed to wind, weather, sand or sun for long periods (several days), then NOE special release agent with paraffin, Part No. 569800 must be used. In strong sunlight, we recommend providing shade for the spray-coated formliners if they are to stand for a long time before concreting. If weather conditions have caused the NOEplast release agent to evaporate, it must be reapplied.

Untreated surfaces can result in discolouration of the concrete.

Release agent must be reapplied before every pour. A product warranty for NOEplast textured formliners can be given only if one of the NOEplast release agents supplied by NOE is used.

NOE special release agent with paraffin should be used in countries where high temperatures and humidities can be expected.

If you intend to use NOEplast in these countries, please contact the NOEplast advice service beforehand, otherwise we cannot accept any liability for loss or damage.

NOEplast textured formliners are manufactured from polyurethane.

NOEplast formliners are manufactured from a plastic material and, like all plastics, will shrink and expand in response to temperature variations. For this reason, it is better in practice for NOEplast formliners to be slightly too large than too small. Therefore they are generally supplied in widths and lengths a few centimetres larger than the ordered dimensions. If necessary, you may have to cut the formliners to the final dimensions on site.

NOE does not assume financial responsibility for the cost of this work.

NOEplast technical data

Shore A hardness in accordance with DIN 53 505	65–70
Tear propagation resistance	Up to 10 N/mm
Temperature resistance	+ 80° C
Dimensional tolerance (length, width, pattern dimensions)	± 1 %
Dimensional tolerance formliner thickness	± 2 mm

Comment on dimensional tolerances:

Smaller tolerances are possible for specially manufactured articles. Any adverse tolerance effects can largely be compensated for by stretching and/or compressing the formliners.

Formliners placed loosely in forms may expand during long-term use. Formliners can be cut to the correct shape using a trimming knife or handheld circular saw.

We would expressly point out that NOEplast formliners are used in already constructed formwork. For this reason, the following tolerances are quite normal and therefore cannot be the grounds for complaint (referred to the table NOEplast technical data): The tolerance on length, width and pattern dimensions is ±1 % of the overall dimensions in each case; Dimensional tolerance formliner thickness: ±2 mm.

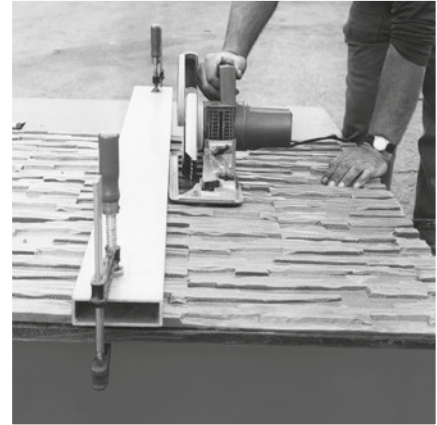
All NOEplast textures are casts from existing shapes that have been used as templates. So, for example, NOEplast wood textures are cast from timber boards, which may have knots, notches and variations in texture arising from how they have been sawn. The same applies for other NOEplast surfaces. We cannot provide any warranty with respect to the tolerances and reproductions in the concrete resulting from them.

Important:

When applying the release agent, please ensure that no excess remains on the formliners and that no small puddles of release agent form. Otherwise this can lead to discolouration of the concrete surface.

If the concrete mix contains chemical additives, dyes or pigments, then they may, under certain circumstances, react chemically with the NOEplast formliners or release agent. This can also lead to discolouration of the concrete surface.

NOE always recommends that a trial pour be carried out before first use.



Transport

We select the transport packaging to suit the requirements of the NOEplast formliners. NOEplast formliners are delivered in rolls, on pallets or in special boxes, depending on the design. The transport packaging is there to protect the NOEplast formliners. It is always charged for in accordance with our quotations.

Special packaging materials (rolls, pallets and boxes) are **not** taken back nor are credit notes issued for them. Should you decide to dispense with the use of the special packaging materials selected by us, we shall not be liable for any transport damage.

We can indicate the transport costs in your quotation only if you provide us with accurate information about the amount of goods to be transported and the delivery location.

Preparation

NOEplast formliners are delivered in rolls or flat depending on the design and depth of the texture. Rolled up mats must be unrolled and laid flat immediately after delivery.

If the unrolled NOEplast formliners are stored in the open or exposed to the weather, they must be protected by covering them with a weather and light-proof tarpaulin to prevent weathering effects.

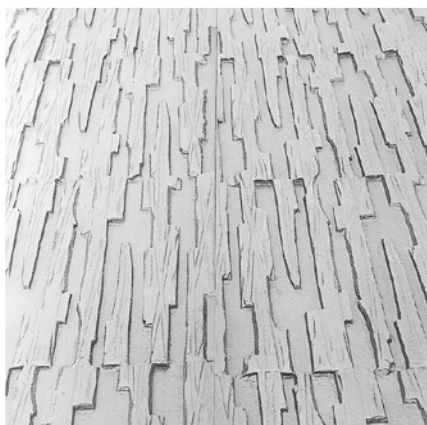
Protect from:

- **Mechanical damage**
- **Dirt**
- **Large temperature fluctuations**
- **Direct sunlight**
- **Wet and frost (snow, ice)**
- **Aggressive chemicals (solid, liquid, gaseous)**
- **There is a risk of the release agent evaporating at temperatures > 50 °C**

Cutting to size

NOEplast can be cut to the required size using a trimming knife or a circular saw with a hard-metal blade.

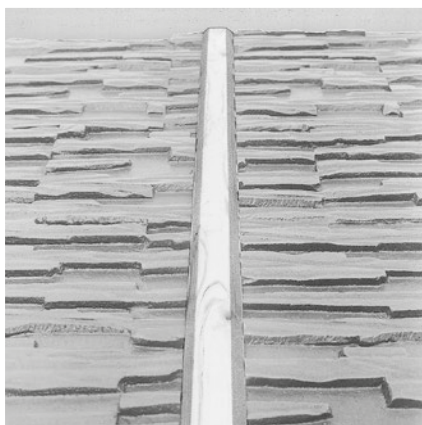
Note: Formliners that have been subject to frequent use may have to be cut to size again in certain circumstances.



Vertical butt joints

In the case of wide concrete surfaces, it may be necessary to place NOEplast formliners alongside one another. The resulting texture will always look symmetrical if two NOEplast formliners are butted together at each end of the surface. With some NOEplast designs, we recommend using a dummy joint to form the butt.

There are some NOEplast formliners that cannot be butted together without a visible joint appearing in the concrete. Please ask your NOEplast advisor, who will be pleased to advise you on your butt jointing options for specific NOEplast formliners.



Horizontal butt joints

As a rule, the dimensions of NOEplast formliners are generally adequate for normal construction heights.

If horizontal butt joints are necessary, we recommend the use of dummy joints to make them into an aesthetic feature. Dummy joints are easily created using profiled mouldings.



Securing formliners in place

NOEplast formliners should be glued over their full surface area to a secondary facing material or liner that is completely independent of the main formwork (frame or beam formwork).

NOE offers customers NOEplast adhesive, which has been specially designed for use with NOEplast formliners. Like all adhesives, this should be applied to a dry, dust-free and non-greasy substrate.

When gluing onto formwork panels, the formwork surface must first be roughened.

The underside of the NOEplast form-liner must also be dry and free of dust and grease before gluing. Any excess release agent on the NOEplast formliners must be completely removed with an absorbent cloth before gluing, otherwise bonding could be adversely affected.

We would like to point out that NOEplast formliners that have been glued into place can only be removed mechanically. The formwork and the NOEplast

formliners may be damaged during this operation.

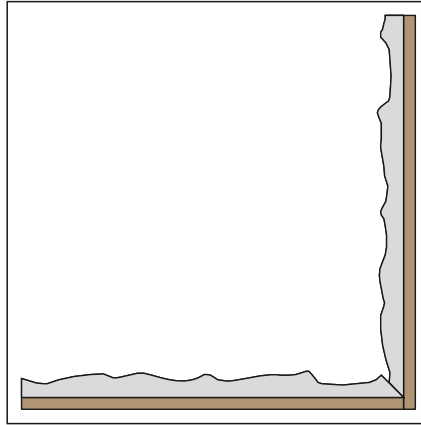
Further important information is given on page 6 in the section on "Gluing NOEplast textured formliners".

NOE offers a special service: on request, NOE can deliver your NOEplast formliners already glued onto a secondary facing material (3-layer solid wood panels) and ready for use. In this way, you can avoid adverse site conditions such as dirt, wet and extreme temperatures, while relieving the demand on site crane capacity and not having to set aside space for gluing on site.

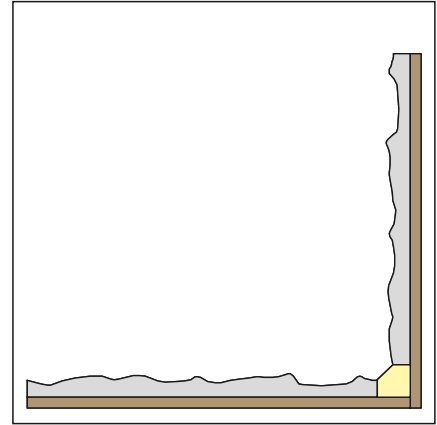
Formliner butt joints

It is difficult to obtain a visually elegant solution when butting together formliners with large-scale, irregular textures if the joint between the formliners has to be properly sealed. These corners appear untidy. It looks the same if the formliners are not tightly butted together but are mitred. The mitre cuts in the back of the formliners achieve a good seal, but the front edge can look untidy, depending on the texture. Therefore a smooth surface (moulding) or chamfers should be introduced (see Figures 1 to 4).

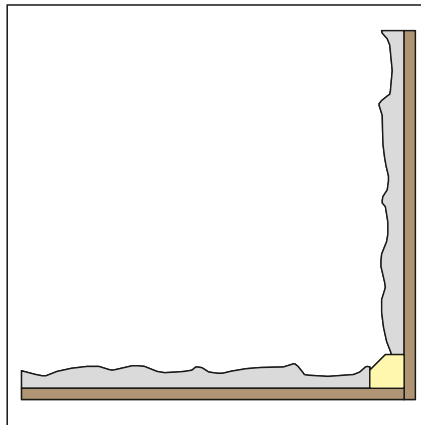
In the case of textures with straight line features, we recommend using mitres.



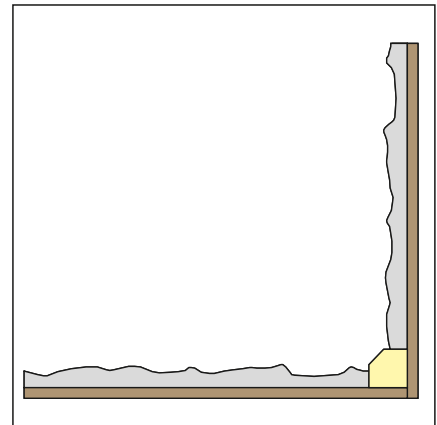
1 Forming a corner with mitre-cut formliners



2 Corner profile with chamfer at the highest part of the texture in the concrete



3 Corner profile with chamfer at the mid-height of the texture in the concrete



4 Corner moulding with chamfer at the deepest part of the texture in the concrete

Note: We would like to expressly point out that joining two formliners can never be a perfect replacement for an undamaged formliner. There is always the risk that, no matter how much care goes into the cosmetic reworking of the gap between the formliners, the joint will still be visible.

Levelling the formliner backs

For technical reasons to do with the method of production, it can never be guaranteed that formliners are all of equal thickness. It may therefore be necessary to compensate for the different thicknesses by sanding off excess or applying extra material. This is done by laying the formliners down on the textured side and butting them together. The thicker formliner of a butted pair is then sanded down until it is the same thickness as the thinner formliner. The best way to do this is using a drum or belt sander.

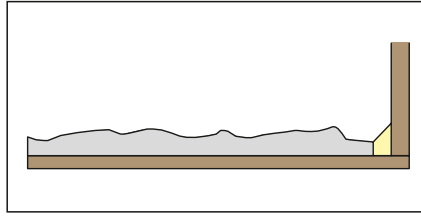
If the difference in thickness is too great, it is often less work to apply NOEplast filler to thicken the edge of the thinner formliner, rather than to sand down the thicker formliner. First the area that is to be increased in thickness is roughened using sandpaper. Then NOEplast filler is applied, levelled and smoothed. A piece of squared timber of the required thickness is placed along the edge of the formliner to act as a guide. The squared timber is coated with wax beforehand to prevent the filler from sticking to it. After the filler has hardened, the two formliner edges are the same thickness and the pair are ready for use.

Working with NOEplast textured formliners

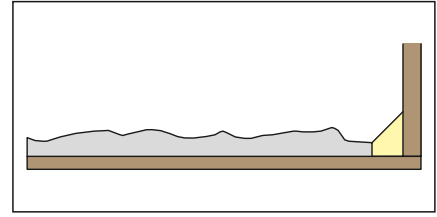


Use of profiled mouldings

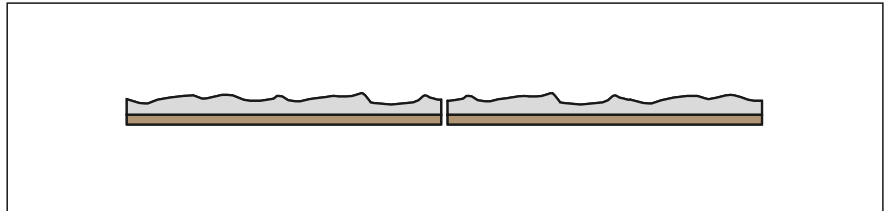
As is done with smooth-finished, fair-faced concrete, suitable profiled mouldings are used to form joints, corners and edges. All that needs to be determined is whether the dimensions of the moulding should relate to the highest, middle or lowest point of the texture. The actual thicknesses of the formliners must be taken into account in determining the dimensions of the moulding (see Figures 1–5).



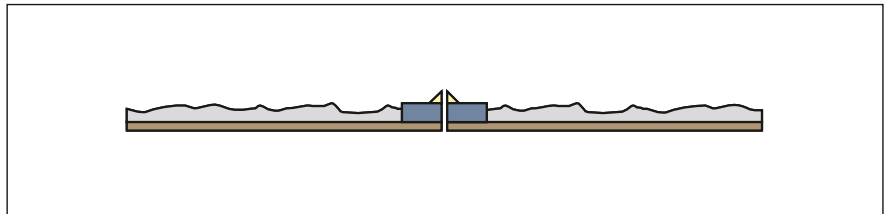
1 Corner chamfer matching the highest point of the texture in the concrete



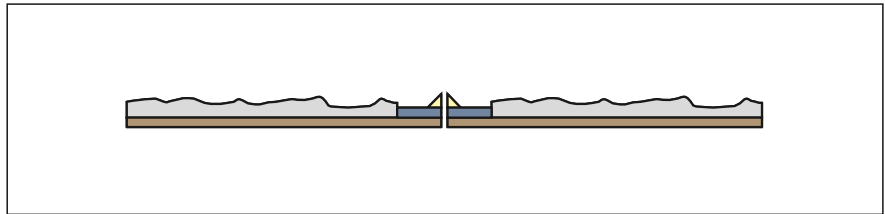
2 Corner chamfer matching the lowest point of the texture in the concrete



3 Butt joint



4 Smooth moulding with chamfer matching the lowest point of the texture in the concrete



5 Smooth moulding with chamfer matching the highest point of the texture in the concrete

Gluing NOEplast textured formliners



NOEplast adhesive is used for attaching NOEplast formliners to wooden formwork, synthetic resin-coated formwork liners and steel formwork.

The formwork surface and the back of the formliner must be dry and free of grease.

Do not apply when humidity is high. The adhesive is delivered in a drum with two components (base and hardener).

Minimum working temperature +10 °C, maximum working temperature +30 °C. NOEplast adhesive should be processed in accordance with the instructions for handling and use. Hazard information can be found in the safety data sheets.

Formliners that have been glued in place can only be removed mechanically from the substrate. Formwork linings can be irreparably damaged during this process. For this reason, we recommend that wooden panels or formwork linings for which you have no further use be used as the substrate.



Here's how it's done:

Substrate: dry, clean, free of oil and grease. Steel formwork should first be grit blasted. Wooden formwork should have sufficient loadbearing capacity. Synthetic resin-coated formwork and multi-layer boards must be sanded down to the wooden substrate. Avoid any contact with moisture. Stir component A thoroughly. Add component B and mix until homogeneous. Pour the mixture into a second container and stir again thoroughly.



Allow at least 24 hours after the formliners have been glued in place before they are subjected to load. Clean tools with thinners.

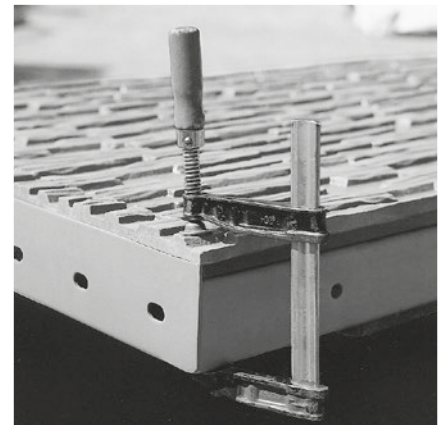
We recommend that formliners are glued over the entire surface in the case of in-situ concrete formwork. Gluing the formliners onto a secondary formwork liner dispenses with the need to clean the loadbearing formwork.



After applying the adhesive to the whole of the back of the NOEplast textured formliner, place the formliner down on its long edge and roll it onto the formwork substrate. Press the formliner into place without trapping any air. If necessary, weigh down the corners and edges.



Lightly nail down the formliner at the corners. Screw clamps can be used to hold down the formliner in the case of steel formwork (see photos). Ensure that the whole area has been pressed down. This can be done by walking over the formliners several times.



If the formliners are later removed from formwork or tilting tables and adhesive residue remains on the substrate, this can only be removed mechanically.

NOEplast adhesive technical data

	NOEplast adhesive Part-No. 569513
Mixing ratio A : B (by weight)	5 : 1
Pot life (processing time) Adhesive application time	+ 10 °C bis + 30 °C approx. 30 to 40 minutes at an ambient temperature of +18 °C
Coverage per m² On a smooth surface, when used properly	approx. 500–600 g/m ²
Curing time	24 hours
Humidity	Sensitive to humidity during processing Not sensitive to humidity in the cured state
Bond strength (depending on surface roughness) On steel On wood	Approx. 0.044 kN/cm ² Approx. 0.054–0.087 kN/cm ²
Sensitivity to frost	Do not store below 0 °C Process only above +10 °C
Shelf life (for unopened drum, stored in dry rooms)	9 months (at + 18 °C)
Temperature resistance	+ 100 °C
Contents per drum (two components)	4.80 kg (component A 4.00 kg, component B 0.80 kg)



NOEplast release agent must be applied again immediately before each pour.

Preparation

Select a release agent suitable for the local conditions before offering the formwork and the NOEplast formliners up to the reinforcement.

- NOE special release agent is suitable for "normal" conditions
- NOE release agent with paraffin is suitable for "unfavourable" conditions or weather (e.g. extreme heat, long standing time, rain, wind, dust, sand)

The textured formliners must be **dry and dust free** before the release agent is applied. Only in this way can it be ensured that the release agent coats the surface of the formliner properly. Apply evenly from all directions, especially with deep textures.

Wet or moist substrates prevent good contact between the release agent and the formliner. Unfavourable weather conditions (rain, snow) can cause the release agent to wash off and it must then be reapplied.

Concreting

If cement slurry flows onto stripped wall surfaces, rinse off with water immediately. Cement slurry usually causes dark stains on light-coloured, fair-faced concrete.

Heating

If tilting tables or forms are heated, the temperature should not exceed +80 °C.

NOE special release agent* technical data

Container sizes	Part No. 569710 200 l drum Part No. 569720 30 l canister Part No. 569730 5 l canister
Coverage	30–40 g/m ² depending on the texture depth
Density (+15 °C)	0.84 g/cm ³ DIN 51757
Viscosity (+20 °C)	8 mm ² /s DIN 51562
Flashpoint	+130 °C EN ISO 2592
Water solubility	Must not be thinned
Storage	–10 to +30 °C
Shelf life	36 months in a closed container

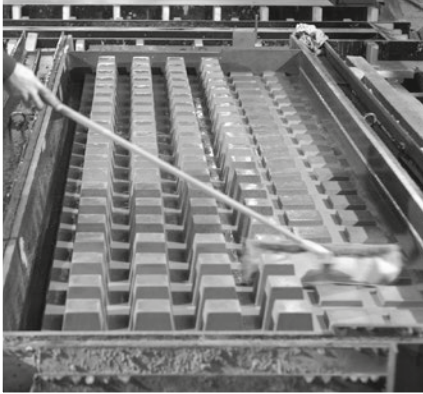
* Easily biodegradable in accordance with CEC-L-33 A 94 (> 80 % after 21 days)

NOE release agent with paraffin technical data

Container sizes	Part No. 569810 30 l canister Part No. 569820 5 l canister
Coverage	40–60 g/m ² depending on the texture depth
Density (+15 °C)	0.81 g/ml
Viscosity (+20 °C)	<2 mm ² /s DIN 51562
Flashpoint	+64 °C EN ISO 2719
Water solubility	Insoluble
Storage	+5 to +30 °C
Shelf life	36 months in a closed container

NOEplast formliners must be protected from the weather if they are stored or not used for long periods. Please refer to the notes on page 3 of the NOEplast technical instructions.

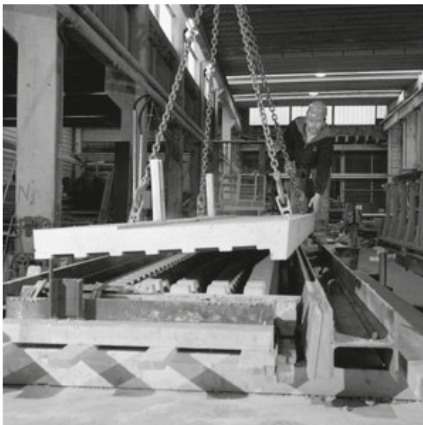
Stripping, storage, cleaning, tools and accessories



Stripping

Stripping formwork presents no problems providing that NOEplast special release agent has been properly used. It is important that the stresses in the formwork are relieved on the day after concreting if possible and the formwork (if it cannot be completely removed on the day) is at least detached from the concreted wall by releasing the spindles. If this is not done, the formliners, or the formliners and the secondary formwork liners, may become so firmly held in place (by suction) that they are destroyed by the amount of force needed to strip them.

With corner panels and curves, you should take note that simple and easy stripping can only be assured if the NOEplast formliner's texture does not create a physical "keying" effect with the concrete, e.g. an undercut.



In the case of glued formliners, the completed component must be lifted off from one edge.

Observe the advice in the safety data sheets.

No warranty of performance can be given if a release agent supplied by a third-party is used.



Storage

NOEplast formliners should be stored flat. Despite their flexibility, NOEplast textured formliners are not insensitive to excessive mechanical loads.

Do not fold or bend NOEplast formliners. NOEplast formliners must be stored flat in a dry environment. UV radiation should be avoided.

Our advice on use and other recommendations are based on extensive research and many years of experience. However, this information is non-binding and does not release our customers from their duty to test the suitability of our products and processes for the customers' intended purpose. We assume that NOEplast formliners will be used in what are for us normal temperature and weathering conditions, and that they will be used properly and professionally. In all circumstances NOE's general conditions of business will apply. We reserve the right to make technical changes.

Cleaning

We offer a NOEplast formliner cleaner for cleaning NOEplast formliners that have been contaminated with concrete or cement slurry. This cleaner can be used to clean the formliner surfaces and for degreasing the formliner backs. NOEplast cleaning agent Part No. 569512 is available in 10-litre containers.

Use of NOEplast cleaner:

Please pour the NOEplast cleaner into a bucket and dilute with tap water to suit the degree of contamination of the formliners. The cleaner must be mixed with water in a ratio between 2:1 and 20:1. Apply the cleaner using a soft, lint-free cloth evenly over the surface of the dirty NOEplast formliner. At places where the dirt is thick, rub the saturated cloth with a circular motion and allow the cleaner to work for a maximum of two hours. After a maximum of two hours, rinse the NOEplast formliner with copious amounts of water. For even dirtier areas, the formliner surface can be rinsed using a steam lance. So as not to damage the NOEplast formliner, the steam jet must be applied at a distance of at least 60 cm from the formliner surface.

Note: The cleaner removes grease. Before the NOEplast formliner is used again, our NOEplast special release agent must be reapplied. Our NOEplast cleaner is suitable only for NOEplast formliners and not for the removal of adhesive residues.

Tools and accessories

Description	Part No.
Trimming knife	396400
Spare blade	396450
Serrated spreader (spring steel)	396700
Stirring rod	394903
NOEplast filler grey	842310



PU casting compound for manufacturing moulds and textured formliners

You can use NOEplast liquid to make your own textured formliners and moulds in the concreting factory or on site. These are then used to make in-situ concrete components or precast concrete units.

Preparation

The substrate of the negative mould must be free of dirt and **absolutely dry**. Use release wax, Part No. 569400, apply thinly and repeat if necessary.

We accept no liability for any damage caused to the negative mould by NOEplast liquid or NOEplast release wax.

Processing

Ensure that the components are mixed precisely in the ratio 100:5.

The quality of the cast achieved with NOEplast liquid is very dependent on the stirring and mixing of components A and B:

Component A must be stirred thoroughly before use. Component B is poured into the drum with component A and then stirred until component A is completely uniform in colour.

To avoid casting defects in your mould, pour the mixture into a clean container and stir again briefly.

After mixing, the liquid compound is spread evenly over the negative mould. The minimum thickness at the thinnest point must be approximately 5 mm.

The cast formliner can be stripped after a minimum of 12 hours. Store the formliner flat. It can be used after approximately 48 hours.

If necessary, the negative mould can be cleaned with an aqueous surfactant or white spirit (observe the safety instructions).

Glue the cast formliner onto a timber or steel formwork facing using NOEplast adhesive, Part No. 569510. The formwork surface and the back of the formliner must be dry and free of grease.

Storage of components

Components A and B are sensitive to frost and moisture. The containers must be stored in conditions where moisture is excluded.

Observe the hazard information in the safety data sheets.

NOEplast liquid technical data

Mixing ratio A : B by weight	100 : 5
Processing temperature	Not below + 15 °C
Pot life (processing time)	Approx. 1–2 hours
Stripping	After approximately 12–15 hours
Usage time	Approx. 48 hours after stripping
Density	Approx. 1.40 g/cm ³
Shore A hardness in accordance with DIN 53 505	Standard 55 Shore 30 30
Shrinkage after curing time	Approx. 0.5 %
Humidity	In processed state not sensitive
Frost	In processed state not sensitive
Shelf life in an unopened drum	max. 1 year



Negative mould cast in a box form using NOEplast liquid.



Perfect reproductions are achieved using white cement and sand followed by grit blasting.

Drum sizes

Description	Standard Part No.	Shore 30 Part No.
NOEplast liquid 5 kg 20 kg 50 kg	569050 569060 569061	569030 569031 569032
NOEplast primer (1 l)	569070	
Adhesive for NOEplast with hardener (4.8 kg)	569513	
Release wax (0.5 kg)	569400	
Release agent 5 l 30 l 200 l	569730 569720 569710	





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