SynFlex Elektro GmbH
Auf den Kreuzen 24
32825 Blomberg
Telefon +49 / 5235 / 968-0
E-Mail info@synflex.de

Processing instructions

WEVOPUR 7210 FL PU-encapsulating system

Preparation of moulds

- Moisture will adhere to any metal or synthetic surface. Since moisture may lead to the formation of bubbles in curing, it is a good idea to dry moulds before casting. It is sufficient to dry them for 1–2 hours in an oven at 60–80 °C. It is important to pre-dry coil components and polyamide (PA) casings.
- The sensitivity of casting compounds and hardeners to moisture and to the moisture content of different synthetic surfaces varies greatly. For assistance with individual cases, please contact Wevo-Chemie.
- Pre-heating the moulds improves the flow charac- teristics of the casting compound which in turn enhances the wetting of the substrate surface.
- A heated mould will warm up the casting compound. This reduces viscosity:
  - The casting compound flows into the mould faster.
  - Entrapped air can rise more quickly.
- The higher the temperature of the mould, the better the casting compound will flow. Mould temperatures of up to 80 °C will not damage uncured casting compounds.
- A pre-heated mould will also make the casting compound cure faster.

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SYNFLEX
Insulation Systems

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Preparation of material

- When taking goods out of storage, please follow the rule of FIRST IN – FIRST OUT.
- Goods should be brought from storage into the pro- duction area in good time to allow the temperature of the product to adjust – cold materials are more viscous and do not flow as well. Pressure changes in the device arising from this may lead to problems when mixing.
- Goods should also be stored correctly in the production area (not on a cold floor or in draughty areas but rather on secondary containers / pallets)
- Lids should be cleaned before opening original containers (impurities such as wood splinters may otherwise get into the A component and lead to blockages in the device)!
- Filler material in the A component may settle. For this reason the A component should be homogenised (stirred) before use. Stirring can be done with a special mixing unit (e. g. bucket mixer or helix mixing paddle), a drill with mixing paddle attachment or by hand using a rod or spatula (no untreated wood, as splinters could get into the casting compound).
  Avoid stirring in too much air and its attendant mois- ture. Any filler material that has settled must be evenly dispersed (particularly the sediment at the bottom). When not homogeneously dispersed then the top half of the container will have too much resin (reactive component) and the bottom half too much filler. This can lead to under or overcuring in processing and the resulting cured material will have other mechanical, thermal and electrical properties than those stated in the technical data sheet.
- Even filler-free casting compounds contain small amounts of solids (drying agents, pigments) that may settle. This is why all casting compounds should be stirred before use.
- Stirring for 10–30 minutes is usually sufficient. We recommend also carrying out a density measure- ment to check how thoroughly the compound has been stirred (please refer to “Quality control”).
- Homogenisation should always be carried out before removing a casting compound when the last time it was removed was not that day. Goods in vats should be stirred regularly in a special vat stirring and pump- ing station.
- Both the resin and hardener components should always be protected against moisture. Frequent opening of containers and repeated homogenisation will lead to moisture being absorbed by the resin. This gradually saturates and deactivates the drying agent contained in the casting compound. Moisture damage to the casting compound is not immediately identifiable but instead shows up after curing (large bubbles).
- Following homogenisation, any air that has been mixed in can be removed in a vacuum where neces- sary. This is done by putting the A component into the feed tank and vacuum degassing it for approx. 10–20 minutes (50–100 mbar is usually sufficient for most casting resins).

When processing by hand, the following also applies:

- If the material is processed in batches, we recom- mend dividing out the casting compound into several small, dry containers after one homogenisation.
- After homogenisation, air that has been mixed in should be removed for 3–5 minutes in a vacuum (50–100 mbar). This is recommended particularly when using casting compounds with a viscosity over 3000 mPa·s.

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Feed Tanks

- When filling the feed tanks, ensure the correct reser- voir is used for each component. If components are mixed up then the reservoirs must be cleaned out thoroughly and the hose lines changed.
- A single-use hose should be used when applying a vacuum to take up the B component, to avoid urea forming in the feed lines through residual hardener reacting to moisture.
- If a funnel is used for filling, this then also needs to be cleaned using a suitable cleaning agent.
- The filled component should be stirred at regular intervals to prevent the filler from settling. Ideally it should be stirred at atmospheric pressure or in a vacuum.
- When using unpressurised feed tanks or vacuum chambers, both components should be protected against moisture and the air inlet valves should be fitted with silica gel filters. The silica gel can be regenerated following a colour change, e. g. at 120 °C overnight.
- When vacuum casting moulds, the resin and hardener components must always be evacuated before starting production. This process may take several hours. The vacuum (negative pressure) in the feed tank must always be less than the vacuum in the casting chamber (as a rough guide, pressure in feed tank should be 50 % of pressure in casting chamber).
- When filling a vacuum feed tank without subsequently carrying out vacuum casting, then an abso- lute pressure of 200–800 mbar is usually enough.
- From experience, we recommend using up the contents of a feed tank within 7 days at most.
- With atmospheric casting, the feed tank for an unfilled B component does not need a mixing device. For vacuum dispensing systems, a mixing device is usually combined with thin-layer degassing.
- If a casting compound is pre-heated, the material must be recirculated in order to prevent filler material from settling in the hoses. We recommend only heat- ing up to max. 40–50 °C; higher temperatures will not notably decrease the viscosity of the casting compound any further. The pot life will however be reduced even further and the filler will be more likely to settle.
- Isocyanates should not be heated if at all possible.
- If a device’s resin feed tank is supplied from vats or containers, the filled component in the vats / containers should also be stirred regularly. Gate mixing paddles or cup stirrers are preferable for this. Care should also be taken to ensure the vats or tanks of resin and hardener are made airtight at the device. When balancing the pressure it is important to ensure that the air being introduced is dried through silica gel filters with a colour indicator.
- The homogenity of the filled component must be ensured at all times and should be checked by measuring the density.

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- The mixing ratio should be checked and documented daily before starting production. After short breaks in production, it can also be potentially useful to check the mixing ratio. In addition, the density (dosage of A component via the mixing head) should also be checked.
- The ratio of components as set out in the data sheet should be strictly observed. Deviation from this should not constitute more than ±3 % in terms of the hardener. (For example, for a mixing ratio of 100:20, a “tolerable” deviation would be from 100:19.4 to 100:20.6.) Excess hardener may react to humidity which can lead to the formation of bubbles. After an initial softening effect, a subsequent reaction of excess isocyanate hardener to moisture can also, over time, lead to overly hard, brittle moulding materials. In contrast, excess A component acts as a plasticiser. Deviating from the ideal mixing ratio in order to alter the properties of the moulding material is not permissible.
- In order to prevent a reaction between the two components in the mixing chamber / mixing tube, blank shots (dosing out the mixture into a waste receptacle) are carried out when there is a break in dosing. When processing at room temperature (RT approx. 22 °C), the device pot life (downtime after which at the latest a blank shot should be undertaken) should be half the material pot life. The device pot life should be halved with every additional 10 °C increase in material temperature. The blank shot should amount to at least 1.5 times the volume of the mixing chamber / mixing tube.
- Even with continuous dispensing, dynamic mixing heads should be cleaned regularly and static mixing tubes should be regularly replaced.
- Insufficient rinsing / replacing can lead to the components gelling in the mixing head / mixing tube. This is particularly true when using casting compounds with a short pot life (please refer also to “Errors in processing the casting compound”).
- Cleaning agents should have a low water content and not react with the B component. Special solvents composed of high-boiling esters (flashpoint >100 °C) are suited to this purpose.
- A blank shot should be carried out before starting production in order to remove final residues of the cleaning agent from the mixing chamber.

When processing by hand, the following also applies:

- We recommend manually processing no more than 200 g resin / hardener mixture at a time, in exceptional cases 500 g. Processing times get shorter with the batch size. This should however not be less than 100 g, otherwise weighing errors may become too large.
- Once weighed out, both components are stirred thoroughly for 2–3 minutes to make a homogeneous mixture. It’s important to skim the sides and base of the container many times over and to ensure the components are thoroughly mixed.
- After stirring together, we recommend transferring the casting resin mixture from the mixing container to a second receptacle. This avoids the risk of any unmixed parts of the resin and hardener remaining on the sides or the base of the mixing container which could then lead to hardening defects later on.
- Since air has again been introduced by mixing the resin and hardener, the mixture should be vacuum degassed for 2– 3 minutes at approx. 50–100 mbar. A small lab pump and a small vacuum chamber, for example a desiccator, should be sufficient for this purpose.
- For mixtures with a mixed viscosity below 600–800 mPa.s, it is usually enough to leave the mixture to stand for approx. 5 minutes to allow most of the air that has been mixed in to escape.
- Once the mixture has been prepared in this way, it is poured into the mould, which is ideally warm.