



SOLVAY CHEMICAL SECTOR – SBU FLUOR

SOLVAY FLUOR GmbH

Technical Services – NOCOLOK® Product Range (SFLU-AN)

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NOCOLOK® Znflux – TECHNICAL INFORMATION

NOCOLOK® Precoating

General Information

This text provides information about the application of binder systems for NOCOLOK® Znflux.

Solvay offers a concept for Znflux binder application:

NOCOLOK® Precoating (water-soluble)

This product can be used in water-based NOCOLOK® Znflux slurries to improve flux particle adhesion. This is of particular interest for fluxing of pre-formed components prior to assembly in order to reduce flux fall-off and dust formation. The binder is also helpful to pre-coat certain areas with specific flux loads. The binder mixture can be applied on external and internal surfaces.

During the brazing cycle, the binder will completely evaporate (mostly between 350 and 400°C).

The NOCOLOK® Precoating binder however is not completely inert to Znflux. As tested in laboratory it is good for application for at least 72 hours. After that time the mixture gradually deteriorate slowly changing into jelly like substance. For this reason one can foresee using Znflux water slurry as a mixture prepared in house directly before application. Trials have shown that for recommended flux loads with a NOCOLOK® Precoating mixture there was no surface discoloration after brazing.

Recommended flux loads:

When considering flux load as applied in a form of flux, binder and water mixture we always consider the load of dried deposit. Since the weight fraction of the binder in dried coating is very small for the sake of simplicity it has been ignored in the following reasoning.

The Znflux is a substance which generates during the brazing cycle Zn and Nocolok® flux. Thus the load of flux is always in constant ratio (3 : 2) to the load of Zn. Since the Zn flux is used as a method for creating Zn enriched corrosion sacrificial layer, one should choose Zn load as a primary/input parameter.

Typical Zn load would be 4 g/m². Thus in order to obtain a load of 4g/m² of Zn the load of Znflux coating should be 10g/m² and the brazing will be done with a flux load of 6g/m². For calculation of required Znflux loads for different Zn loads use the included excel table. Use the green field for input data.

Required Zn load [g/²]	Flux content resulting from the required Zn load [g/m²]	Overall Znflux load resulting from required Zn load [g/m²]
4	6	10

Note:

An optimal Zn load value will depend on the product and brazing condition and should always be checked individually.

General Comments:

The surface areas to be coated with binder mixtures must be free of lubricants, oils, dirt, and dust. Means of application include spraying, roller coating and dipping.

NOCOLOK® Precoating mixture can be applied by spraying with a suitable spray gun (1.4mm – 1.6mm) at approximately 3 – 5 bar pressure.

The surface temperature should be at least 10°C.

The thickness of the binder coating is usually between 10 and 30µm.

Oven and forced convection for drying is recommended (hot air in the temperature range 100°C to 200°C), however drying can be also done in ambient environment.

Please refer to the MSDS for detailed information regarding the safe handling of the product.

Preparation of Binder Mixture:

The mixture should be prepared directly before consumption.

To prepare a mixture free of agglomerates and to achieve best coating results, the following procedures must be observed:

NOCOLOK® Precoating

- **50 parts (wt%) de-ionized water** (as used for preparing standard flux slurries) is mixed thoroughly with
 - **15 parts (wt%) NOCOLOK® Precoating** (water-soluble)
- Once the first two components are completely homogenized,
- **35 parts (wt%) NOCOLOK® Znflux** powder are added successively under continuous agitation.

If necessary, the mixtures can be passed through a sieve prior to use. This will remove any potential agglomerates.

Prior to use, the flux powder in the mixture must be suspended. When the mixture is stored for some time or diluted, the mixture must be well shaken before application.

The binder component is activated by oxygen from air. Once used and dried, the product cannot be recycled or reused.

Any remaining flux / binder mixture should be stored in an airtight and sealed container. The mixtures must be consumed within three days after mixing.

Additional Information:

- The formulations (mixing ratios) provided in Solvay's technical information sheets and brochures are intended as general recommendations – They provide the best basis for automated spray application and have been tested with good brazing results.
- The recipes can be adjusted to specific application needs by changing the mixing ratios within certain ranges.
- A well balanced ratio of binder and thickener to flux in the mixtures is important for good brazing performance:
- Higher binder ratios result in a harder coating layer and stronger flux adhesion. But they require more care for the binder removal step.
- Very high binder ratio increases the organic content in the mixture – which may result in carbon residues (discoloration) after brazing.
- It is possible to reduce and/ or to increase the water content of the mixtures – resulting in higher respectively lower viscosity.
- Water dilution will cause less wetting action and reduced adhesion.
- A surfactant (wetting agent) is part of the binder formulation – providing uniform coating, and – compensating (to some extent) for surfaces not cleaned prior to application.
- Cleaning before binder-based flux application is recommended.

Nocolok[®] Precoating Warehousing Considerations and Shelf Life:

- Under standard storage conditions, the shelf life of Nocolok[®] Precoating (before mixing) is up to 12 months. Standard storage conditions means that the product was stored at less than 30°C, as suggested in the MSDS.
- The binder product can be stored at a temperature higher than 30°C, but the shelf life will shorten due to premature aging. Therefore, we recommend that the binder products be consumed within six (6) months, if the storage temperature is a constant 40°C. This is not based on experimental data, but on general knowledge of water based polymer systems and adhesives. Any product stored at a temperature higher than 40°C should be consumed more quickly.
- Under no circumstances should the binder products, in their original packaging, be exposed to a temperature of 60°C or above. We suspect that polymerization will occur, agglomerates will form and the performance will drop.

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