



# NoriGlass TPI 960

## Deep Black

3-Component Glass Decorating Ink – silicone free

### Area of Application and General Characteristics

#### TPI – Touch Panel Ink

- **Very high Optical Density:** **OD ~ 5 @ 7  $\mu\text{m}$  Layer Thickness (x-rite 361T Densitometer)**
- **Very high Electrical Resistance:** **> 500 G $\Omega$  @ 5000 V Measuring Voltage (FLUKE 1555; distance of electrodes = 1 cm)**
- **Very high Surface Free Energy:**  **$\sigma_{\text{total}}$  ~ 50 mN/m**  
( $\rightarrow$  Very good bondability.)  **$\sigma_{\text{disperse}}$  ~ 45 mN/m**  
 **$\sigma_{\text{polar}}$  ~ 5 mN/m**  
**(Krüss MSA; H<sub>2</sub>O/Diiodomethane)**

**NoriGlass TPI 960's properties allow the best possible realization of touch panels (black frame) or capacitive touch switches.**

**The cured ink layer is opaque and has, due to its high electrical resistance, no negative influence on touch sensors behind.**

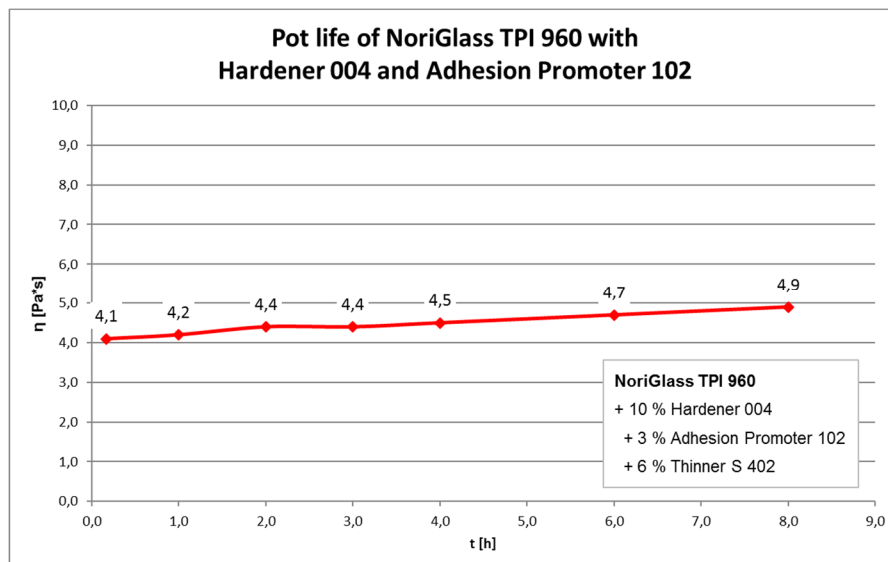
### Mixing Ratio

Prior to printing, NoriGlass TPI 960 has to be mixed homogeneously step by step with **10 % Hardener 004** (mix thoroughly with stirrer, at least 2 min) and then

**3 % Adhesion Promoter 102** and the intended percentage of Thinner S 402 (10 % at most, for viscosity adjustment).

Optimal processing with stirrer (blade agitator or dissolver), with a subsequent ink rest time of 10 minutes.

### Pot Life



## NoriGlass TPI 960

The mixture of ink, hardener, and adhesion promoter must be processed within 8 hours.

Even if the ink still seems to be processable, an exceeding of the pot life will impair the adhesion and chemical resistance of the printed ink film.

Consequently, the quantity of the mixture should be limited in accordance with the amount required for the printing job.

This time span refers to a closed container and an ambient temperature of approx. 20 °C (68 °F). Higher temperatures accelerate the curing process.

### Thinning

Thinner S 402

Addition: 0 – 10 %; combined addition with Adhesion Promoter 102 is possible.

### Mesh

All usual screen printing fabrics and mesh counts are suitable.

Mesh counts from 120-34 Y threads/cm (305-34 threads/inch) to 165-31 Y threads/cm (420-31 threads/inch) are recommended, coarsest mesh without additional defoamer: 61-64 Y threads/cm (156-64 threads/inch).

Recommended defoamer: Defoamer 9415 (0.5 – 1 %)

### Drying

Each ink layer must be dried separately, the final curing will be done after the last drying step.

Minimal drying: 3 min / 80 °C (175 °F)

Maximal drying: at most 100 °C (210 °F), time has no influence.

Higher drying temperatures may cause entrapment of solvents (plastified ink layer), poor leveling or loss of interlayer adhesion.

### Curing

Prior to curing, the drying step must be done!

Depending on your requirements and specifications and your processing capabilities, we recommend following three curing scenarios:

High temperature curing: 3 min / 80 °C (175 °F) → drying  
30 min / 180 °C (355 °F) → highest resistances

Low temperature curing: 3 min / 80 °C (175 °F) → drying  
20 min / 140 °C (285 °F) → high resistances

IR supported jet drying: 1<sup>st</sup> section: 100 s / 80 °C (175 °F)  
2<sup>nd</sup> section: 100 s / 130 °C (265 °F) + 100 % IR → high resistances

The curing can also be done at a later date. It is of importance that prints are stored dry and room temperature (no water or humidity).

### Remark

A cleaned and degreased surface of the substrate is of decisive importance regarding adhesion and resistance of the baked ink layer. When cleaning, please consider that standard (glass) cleaners often leave residues of wetting agents on the surface which may impair the adhesion of the ink specially when exposed to mechanical stress or to steam (e.g. dew).

### Outdoor Resistance

NoriGlass TPI 960 is not recommended for long-term outdoor use.

### Cleaning of Screens and Utensils

UNI-CLEANER FP61 and UNI-REIN A III

### Shelf Life

The shelf life stated on the label assures the ink's and auxiliaries' (as hardener, adhesion promoter, thinner etc.) quality and refers to unopened original cans stored in a dry place at temperatures between 5 °C (40 °F) and 25 °C (75 °F).

Opened containers of Hardener 004 and Adhesion Promoter 102 must be tightly closed immediately after use as the hardener reacts with moisture in the air.

### Important

Allow the ink as well as all the auxiliaries to be added to adjust to room temperature in the closed container before use.

Printing results, to a large extent, depend on the substrate as well as the printing and application conditions. We recommend checking your printing materials under your conditions of use before performing any production runs. Materials that are supposed to be identical may vary from manufacturer to manufacturer and even from batch to batch.

In general please refer to our technical leaflet "General Information on Screen Printing Inks" which may be downloaded from our website [www.proell.de](http://www.proell.de), click Downloads ⇒ Solvent-Based Screen Printing Inks.

Before starting a production run, it is necessary to test samples of each newly designed part systematically with regard to the specifications for the intended use (e. g. climatic chamber, resistance, etc.).

The information contained in the technical information/instruction sheets or other product information sheets is based on product testing conducted by Pröll. Because printing and environmental factors critically affect each individual ink application, the above mentioned information and instructions represent only general recommendations concerning product characteristics and directions for use and should not be construed as representing express warranties regarding the product. The information and instructions in no way release the purchaser from his obligation to verify and test the inks and their application for the specific request, regarding: product characteristics, weather resistance, mixing proportions, gloss, thinning, special mixtures, printability, drying speed, cleaning, effects on or of other materials to be contacted and safety precautions. All details contained in the instruction sheet "General Information on Screen Printing Inks" are to be considered. The further manufacture and use of products containing our inks by the purchaser takes place beyond our control, and the responsibility for further application and use of our product resides solely with the purchaser. Pröll disclaims any warranties, express or implied.

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