NoriPUR®

One or Two-Component Screen and Pad Printing Ink

Area of Application and General Characteristics

NoriPUR® is a fast drying universal printing ink. It is suitable for printing on PVC, pre-treated polyester and pre-treated polyolefins (PE and PP), acrylics, polycarbonate, wooden materials, metal, paper, cardboard, leather. Pre-tests are necessary for polystyrene, ABS and SAN.

Metals must be absolutely grease-free in order to achieve good adhesion of the ink.

Depending on the intended use, NoriPUR® can be processed as a one-component or two-component ink. When printed as a one-component ink on thermoplastic substrates, the prints can be thermoformed.

When used as a two-component ink, NoriPUR® shows good resistance to chemicals, cleaning agents and fuels.

Weather Resistance

When printed on suitable substrates, NoriPUR® shows excellent weather resistance (with the exception of Opaque White 944). For long-term outdoor durability, a mesh not finer than 77 threads/cm (195 threads/inch) should be used.

Finish

Satin glossy to glossy

Color Shades

Basic Colors for the Proell Matching System	093 Colorless 102 Citron 104 Yellow*[1] 207 Orange*[1] 312 Red	368 Red Transparent 429 Red Violet 467 Pink Transparent 472 Violet 566 Blue Transparent	669 Green Transparent 941 Blending White 948 Black
Standard Colors	101 Yellow Light 115 Yellow Dark 135 Ochre 209 Orange 314 Red Dark 315 Red Medium	417 Violet 518 Blue Light 520 Ultra Blue 521 Blue Medium 523 Blue Dark 610 Green Medium	627 Green Loud 628 Green Light 944 White Opaque*[2] 945 White
Special Colors	171 Yellow Transparent 770 Silver (abrasion resistant)	861 Rich Gold 862 Rich Pale Gold	
Highly Opaque Formulations for Pad Printing	132 Yellow Highly Opaque 232 Orange Highly Opaque	332 Red Highly Opaque 532 Blue Highly Opaque	632 Green Highly Opaque

For pad printing highly opaque formulations are available (see leaflet "NoriPUR® Highly Opaque Color Shades for Pad Printing").

Process Inks for pad printing on request.

*[1] = Not to be used for printing on soft PVC or plastics containing high amounts of plasticizers. Not suitable for vacuum forming.

*[2] = Not to be used for outdoor applications.

The NoriPUR® basic colors as well as special color 770 and the highly opaque formulations for pad printing have been tested according to the toy standard (DIN EN 71, part 3:2013). The results measured (TÜV Rheinland LGA Products GmbH) were significantly lower than the given limits (migration of certain elements, category 3).

USP Class VI standard (United States Pharmacopeia Testing - Biological Reactivity Testing in vivo Plastic Class VI) defines the test procedure regarding acute systemic toxicity and skin irritation as well as histocompatibility. One batch each of NoriPUR® 945 and NoriPUR® 948 (printed as mixture in a ratio of 1 : 1 with 10 % Hardener 002) have been tested by Toxikon, Inc. according to this standard and met all requirements.

Mixing Ratio and Pot Life

Hardener 001

Hardener 002

Hardener 047 (K-NIR drying)

The pot life is 6 - 8 hours. This refers to an ambient temperature of approx. 20 °C (68 °F), higher temperatures accelerate curing.

Hardener 047 is especially suitable for K-NIR drying applications and is characterized by very fast and complete drying and curing times, whereby the required resistances are achieved immediately.

Prior to thinning the two components, ink and hardener, have to be mixed in the following ratio (cf. label):

NoriPUR® Colorless 093	7	parts by weight lacquer
	1	part by weight hardener
NoriPUR® Silver, Gold and Copper Colors	8	parts by weight ink
	1	part by weight hardener
NoriPUR® Colors (Basic/Standard/ Highly Opaque Colors)	9	parts by weight ink
	1	part by weight hardener
NoriPUR® White 941, 945	10	parts by weight ink
	1	part by weight hardener
NoriPUR® White Opaque 944	12,5	parts by weight ink
	1	part by weight hardener

In any case, the compounds should be stirred thoroughly in order to achieve a homogeneous mixture.

Thinning

Screen printing:

Thinner M 202
Thinner S 402, Thinner S 404 or a corresponding mixture
Addition: approx. 10 – 20 %

Pad printing:

Thinner F 001 (very fast)
Thinner F 002 (fast)
Thinner M 202 (medium)
Thinner M 203 (slow)
Thinner S 402 (very slow)
Addition: approx. 30 %

Fabric

All usual screen printing fabrics and mesh counts are suitable.

Stencil

Solvent resistant emulsions must be used. Excellent results during long production runs are achieved by using Pröll Diazo-UV-Polymer Emulsion Norikop 10 HQ.

Drying and Curing

NoriPUR® dries fast on racks or in tunnel dryers. Crosslinking also occurs when the prints are stacked.

Higher drying temperatures increase adhesion in many cases (e.g. when printing on metal). The following temperatures and drying times are recommended:

120 °C (approx. 250 °F) for 10 minutes
150 °C (approx. 300 °F) for 5 minutes

When using hardener 047, drying is carried out by irradiation with K-NIR rays. The irradiation time depends on the technical specification of the radiation source, the drying process and the wavelength spectrum used. Preliminary tests are strongly recommended.

With ideally set parameters, an irradiation time of a few seconds is sufficient for complete curing. All required resistances and test criteria are achieved immediately. Post-treatment is not necessary. The substrates can be further processed after a very short time.

Exceptions:

- All white color shades as well as 093 Colorless:
  Discoloration/Yellowing may occur even at temperatures in the range of 100 °C (210 °F). For this reason, drying pre-tests are a must!
- 104 Yellow and 207 Orange:
  Pigments used in the Basic Colors 104 and 207 are not stable under certain conditions. When printing on materials with a high content of plasticizers, these color shades should not be used. The same pertains to applications with temperatures exceeding 60 °C (140 °F). Especially when used in mixtures in only low concentrations, these colors will cause color shifts when exposed to such temperatures.

When printed as a two-component ink on metal and dried at the above mentioned higher temperature, NoriPUR® provides good resistance against bending and shows high impact strength.

Other Directions for Processing

On polyolefins (PE, PP), addition of hardener can improve adhesion and scratch resistance. Polyolefins must be pre-treated for printing.

As two-component system NoriPUR® inks have good resistance to chemicals such as fuels, alcohol, inorganic acids etc. (according to DIN ISO 2836) provided that the printing substrate is resistant to the testing medium (see Technical Information "Resistance Test Results").

Resistance tests should be carried out after the prints have been stored for at least 7 days at ambient temperature or for 2 days at 50 – 60 °C (120 – 140 °F).

Overprinting

For overprinting NoriPUR®, Overprint Varnish NoriPUR® 093 Colorless is recommended. For overprinting NoriPUR® one-component systems, NoriPUR® 093 with or without hardener can be used. For overprinting NoriPUR® two-component systems, only using NoriPUR® 093 plus hardener make sense. In the latter case, overprinting has to be carried out without delay to achieve sufficient interlayer adhesion.

K-NIR drying must be carried out after overprinting.

Mixing ratio:	7	parts by weight Lacquer NoriPUR® 093
	1	part by weight Hardener 001 or 002

Cleaning Screens and Utensils

Screens and utensils which came into contact with two-component inks must be cleaned immediately because cured two-component inks become solvent resistant.

Screens and utensils can be cleaned with UNI-CLEANER FP61 or UNI-REIN A III.

Shelf Life

The shelf life stated on the label assures the ink's 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 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 ambient 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 prior to any production runs. Materials that are supposed to be identical may vary from manufacturer to manufacturer and even from batch to batch. Some substrates may have been treated with or can contain sliding agents, antistatics or other additives which will impair the adhesion of the inks.

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

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.

This information supersedes all previous technical information.