Proell GmbH – Press Release – K 2025 – Hall 5-C01

Proell's core business is the development of custom-made chemical products for coating/decorating plastics, metals, glass and other materials, as well as innovative ink systems and protective lacquers for the IMD/FIM technology, and screen and pad printing inks.

Product News:

1. NORIPHAN® HTR N 990/011 NC - non-conductive black for IMD/FIM technology

NORIPHAN HTR N is a formable, backmoldable and solvent-based one-component screen printing ink for film insert molding technology.

Due to the development of the deep black opaque shade NORIPHAN® HTR N 990/011 NC, a carbon black-free, non-conductive black is available for printed electronics.

The color shade has a high optical density, an electrical resistance in the giga ohm range and is radar transmissible.

The black can be used for decorative prints but is mainly used for plane multi-layer pre-printing for conductive pastes.

Carbon-based pigments, so called carbon blacks, normally used for black colors, are electrically conductive and can interfere with the functional structures. NORIPHAN HTR N 990/011 NC meets the increased requirements regarding thermal resistance and the demanding hydrolysis test in the automotive industry.

The color shade has been formulated and optimized regarding the interlayer adhesion and shows good adhesion in compound values in the final film/ink/injection material composition.

Picture 1: Non-conductive black color shades for IMD/FIM

Picture 2: Picture collage - functional IMD/FIM demo part from TactoTek. Non-conductive IMD/FIM ink systems can be used for back printing of the printed conductive pastes.

2. NORIPHAN® HTR N 959 IR transparent black screen printing ink for IMD/FIM technology

With the development of the IR transparent NORIPHAN® HTR N 959, a carbon black free, non-conductive black color shade is available for functional touch panel applications. The color shade has a black appearance in incident light. Under transmitted light the color shades appear transparent and is ideally suited for radar, IR & lidar transmitting areas in display and touch panel applications.

Picture 3: Functional climate control panel, PC hard coat film is partly second surface printed with NORIPHAN® HTR N 959

3. NORIPHAN® N2K non-conductive screen printing ink for IMD/FIM technology

NORIPHAN® N2K is a well-established solvent-based two-component screen printing ink for IMD/FIM technology.

The glossy ink system is optimized for processing thin PC films (< 175 µm). Films decorated with NORIPHAN® N2K show no curling effect.

Nowadays this IMD/FIM ink system is used especially for printed electronics applications.

The deep black and opaquely formulated color shade **NORIPHAN® N2K 953** is suitable for the decoration of touch panels and shows high electrical resistance in capacitive applications.

The **NORIPHAN® N2K 953** color shade meets the increased requirements regarding thermal resistance and the demanding hydrolysis test in the automotive industry.

NORIPHAN® N2K ink system is also used for overprinting, embedding and protecting of the sensitive conductive pastes. The ink layers prevent from wash-out effects during the injection molding process.

Films printed with NORIPHAN® N2K are perfectly suitable for the IMD/FIM process (In-Mold-Decoration/Film Insert Molding):

- Good formability e.g. high pressure forming or thermoforming
- Excellent temperature and washout resistance during injection molding
- Good and durable bonding with injection molding resins, preferably PC, PC/ABS and silicon rubber resin

4. Norilux® FastCure 1 highly resistant Dual Cure screen printing lacquer

Norilux® FastCure 1 is a formable, abrasion and chemical resistant dual cure protective lacquer. **Norilux® FastCure 1 is a newly formulated lacquer belonging to the Norilux® DC family. To broaden its range of applications and processors, Norilux® FastCure 1 has a more reactive formulation and can be cured with a significantly reduced UV dose.**

Norilux® FastCure 1 can be used as a protective lacquer or hard coat for first surface protection of products manufactured in IMD/FIM technology using PC and PMMA films and for many other applications where resistant surfaces are required.

Applications

In automotive interior, center stacks, touch panels and decorative trims can be first surface protected with Norilux® FastCure 1. Even mobile phone covers, sanitary panels and displays for household appliances can be overprinted with the highly resistant lacquer.

Versions

The glossy version of the dual-cure lacquer Norilux® FastCure 1/001 can be printed on textured film surfaces to produce abrasion resistant and transparent display windows.

The matt version Norilux® FastCure 1/002 can be printed on uncured transparent hard coat PC films to create matt and gloss effects on one printed film.

Besides the high gloss version, various satin gloss, textured and matt grades versions are available. Even rough haptic surface structures can be achieved with single pass screen printing.

The dual-cure screen printing lacquer can be used as well for overprinting UV curing and solvent-based screen printing inks (pretests are necessary) to protect the decoration.

Norilux® FastCure 1 dries by evaporation of the solvents in jet dryers. Films decorated with Norilux® FastCure 1 can be 3D formed after box oven drying e.g. by high pressure forming or thermo forming. Afterwards, the formed films must be UV cured. The cured lacquer layer shows excellent resistances to abrasion, chemicals and cleaning agents and passes various creme tests of the automobile industry.

Picture 4-5: Decorative tactile effect, printed with Norilux® FastCure 1 on a PC film. Second surface decoration including secret-til-lit effect was printed with the IMD/FIM ink system NORIPHAN® HTR N.

5. NoriCure® ORL-1

The weather resistant UV curing lacquer can be used for overprinting of solvent-based ink systems (for example, Thermo-Jet®, NoriPUR®) as well as for printing on PVC self-adhesive films, Polycarbonate, rigid PVC and PMMA.

NoriCure® ORL-1 protects the overprinted ink layer from UV-radiation and is outdoor resistant.

The protective lacquer is available as high gloss version NoriCure® ORL-1/001 and as matt version NoriCure® ORL-1/002. The screen printing lacquer shows excellent printing properties, good scratch and abrasion resistance as well as high chemical resistance.

Picture 6: Outdoor-resistant PVC sticker printed with NoriScreen® ALU screen printing inks and protected with NoriCure® ORL-1/001.

6. NoriCure® HC-1 – Hard-Coat Lacquer

NoriCure® HC-1 is an UV-curing screen printing lacquer showing excellent scratch and abrasion resistance. The cured surface of the lacquer resists even strong wipes with steel wool.

The high gloss UV-lacquer is designed for printing on PC films, coated PET films (e.g. Autotype Autoflex EPG 180, Autotex V200), and various rigid PVC films and for overprinting of printed products.

The lacquer is used to overprint and protect displays, lenses and panels. The cured lacquer shows excellent resistances to chemicals and cleaning agents. Besides the high gloss NoriCure HC-1, matt (NoriCure® HC-1-001) and textured (NoriCure® HC-1-002) as well as UV-stabilized (NoriCure® HC-1-003) versions are available.

Picture 7: NoriCure® HC-1: Color Information

7. NoriPUR® for NIR applications with ultra-short drying times

The versatile ink system can be used as one or two component ink for printing onto PVC, pre-treated polyester and polyolefins, acrylics, polycarbonate, wood, metals and more.

Processed as two-component ink, NoriPUR® shows excellent resistance to chemical and mechanical influences.

A wide range of color shades, including metallics and highly opaque formulations, is available from stock.

In general, two-component screen printing inks dry relatively slowly.

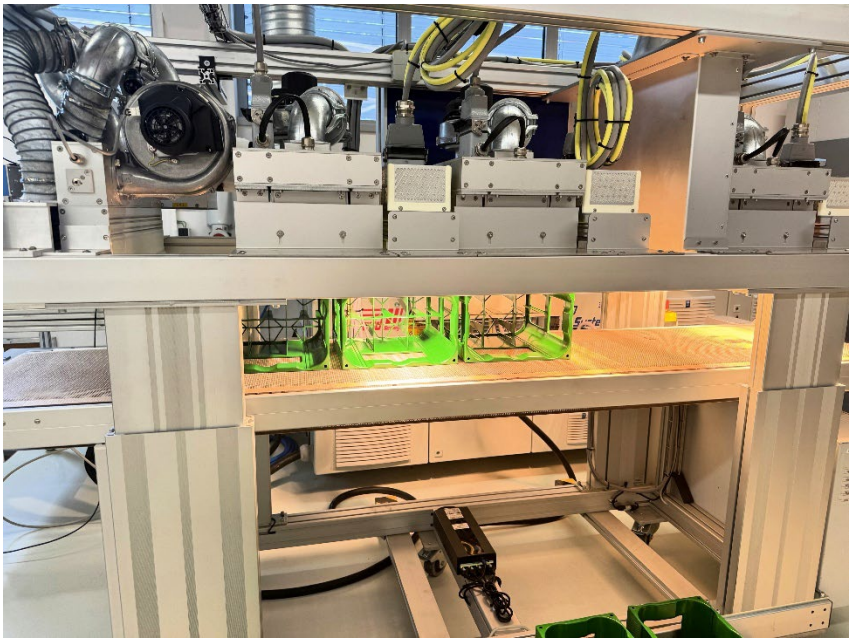
Instead of a conventional hardener, NoriPUR® inks can be processed with a NIR-activatable hardener that is optimally adapted to the NIR drying process.

By using this NIR-activatable hardener, the drying of the two-component ink layers is significantly accelerated.

The accelerated drying can be advantageous for decorating front panels (control panels for white goods), beverage crates, as well as metals and many other substrates.

Specially developed highly opaque white color shades were developed for printing on beverage crates. Even these screen printing inks, applied in thick layers, can be fully cured within a few minutes through the intense NIR drying process.

Picture 8: Printing of NoriPUR® highly opaque white screen printing ink on beverage crates



Picture 9: NIR curing of NoriPUR® inks printed on PE beverage crates

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