

Proell's core business lies in the development of custom-made chemical products for coating/decorating plastics and other materials, as well as innovative ink systems for 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: Functionalized IMD/FIM car front module – Covestro demo part

IMD/FIM color shades in combination with conductive pastes, heating areas and LED lighting.



Picture 2: Functional IMD/FIM demo part from KH-Helmbrechts. Non-conductive IMD/FIM ink systems are used for pre and back printing of the printed conductive silver 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 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® HTR N 093/444 – mild formulated one-component lacquer

The transparent and with mild solvents formulated screen printing lacquer is part of the one-component NORIPHAN® HTR N IMD/FIM ink range.

The lacquer is used to print on solvent-sensitive inks (e.g. Mirror Ink M3 N) and sensitive PC substrates, as well as to overprint and protect conductive silver pastes.



4. 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

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