



## NewV<sup>®</sup> products MGA<sup>®</sup>

### UV inks and varnishes for food packaging

Consumer protection demands that packed foodstuffs not be contaminated by packaging components. European Framework Regulation (EC) No. 1935/2004 on materials and articles intended to come into contact with food requires that food packaging must not transfer any constituents to the packaged foodstuffs in quantities that could

- endanger human health,
- bring about an unacceptable change in the composition of the food, or
- bring about a deterioration in the organoleptic characteristics thereof.

This means that the packaging design has to prevent the migration of substances from the substrate, ink or varnish layer into the packaged food in quantities that exceed the legally defined limits.

Undesirable interactions between foodstuffs and their packaging can occur by

- invisible set-off in the stack or in the reel: the transfer of invisible substances from the printed side to the unprinted reverse side (the food contact side) and from there to the packaged foodstuff
- migration: the transfer of substances from the printed image through the substrate to the unprinted reverse side and from there to the foodstuff
- transfer of volatile substances within the enclosed air space of the packaging

The curing of UV inks is based on a chemical reaction that starts when the ink is exposed to the UV light. During this reaction, the UV-reactive photoinitiators and the vehicle molecules create cross-links and form a polymerized solid film. In case of conventional UV inks and varnishes there is a certain amount of residues that have the potential for migration even after the curing process. The reason can be:

- decomposition products of photoinitiators and non-reacted photoinitiators
- residual monomers that remain in the ink film or that are absorbed into the substrate
- incomplete reaction of the ink components due to inadequate curing.

According to the Swiss Ordinance on Articles and Materials (SR 817.023.21) migration of substances for which only inadequate toxicological data is available must not exceed 10 ppb or 10 µg/kg foodstuff. For most substances this limit is close to the analytical detection limit.

Apart from foodstuffs, there are further product groups which also require packaging that prevents migration of substances from the substrate, ink and varnish layer. Examples are tobacco, cosmetics and pharmaceutical products. In case the packaging design does not prevent migration of substances the same rules need to be applied as in case of food packaging.

By the reason of the special requirements of the tobacco brand owners, please contact our Product Management Tobacco for recommendations ([www.hubergroup.de](http://www.hubergroup.de)).

### Switching from standard (UV or conventional) inks to low-migration UV inks

Residues of inks and varnishes that are not low-migration must be removed from the ink rollers. When switching to low migration inks, the inking and varnishing units (including the piping) must be cleaned thoroughly. After washing the rollers, leave them to dry well.

- Inking rollers, dampening rollers and rubber blankets must be clean and absolutely dry. To complete washing of the rollers and blankets, we recommend you give them a final washdown with water in order to remove all residues of the washup solution.
- Use washup solution that is recommended for food packaging printing.
- The fountain solution system must be clean and the fountain additive used must be suitable for food packaging printing.
- It may be necessary to change the dampening solution before starting the low migration print job.

## Information on Good Manufacturing Practice (GMP)

- **NewV MGA** products are formulated and manufactured in compliance with the "EuPIA Guideline on Printing Inks applied to the Non-Food Contact Surface of Food Packaging Materials and Articles" and "Good Manufacturing Practices for the Production of Packaging Inks formulated for use on the non-food-contact surfaces of food packaging and articles intended to come into contact with food" published by the European Printing Ink Association (EuPIA).
- **NewV pack MGA** printing inks are designed to fulfil the requirements of printing inks for food packaging mentioned before. After proper curing of the ink, any traces of migrants from the cured ink layer will be below applicable migration limits. Possible impurities in raw materials as well as cross contamination ("non-intentionally added substances", NIAS) are also considered. This is a significant difference to standard UV curing printing inks.
- Using a non-approved raw material instead of the approved one is excluded by a special SAP based system.
- **NewV MGA** products are manufactured in special production facilities to prevent contamination with non MGA products/raw materials.
- All inks are checked by a specific analytical quality control system.
- Full traceability in the production is guaranteed back to the raw material batch.
- Information on substances used or known to be present with the potential to migrate, including possible restrictions, is provided in the respective "Statement of Composition", to allow members of the packaging chain to assess compliance of the printed packaging with the Framework Regulation (EC) No 1935/2004 and/or Swiss Ordinance 817.023.21.

## Miscellaneous

- To prevent contamination through standard UV or conventional inks and varnishes, only use absolutely clean equipment and tools.
- Check the radiation output of the UV curing units prior to beginning the print run, e.g. using a measuring instrument or test labels. These measurements must be repeated regularly during the course of a long production run.
- The fount solution system must be clean and the fount additive must be suitable for food packaging printing.
- In case auxiliary materials or additives to the ink or varnish are used, only products that are recommended for food packaging shall be used.
- Never use regenerated isopropanol for printing food packaging.
- The stacks must be stored – before and after printing – in a way that the organoleptic characteristics suffer no negative influences and the climatic conditions are constant (preferably 22°C and 50 – 55% relative humidity).
- The sheets from the start of the print process usually still contain residues of other non-low-migration ink constituents released by the ink rollers. Migration testing shows that proper low migration samples are only obtained after producing a few thousand print sheets.
- Please remember that paper, cardboard, and plastic films like PE or PP are not sufficient barriers to migration of substances from the ink and varnish layer. Only glass, metal, aluminium foil above 8 µm, and specific materials like PET or multi-layer products are absolute barriers that give the required safety. In other cases migration testing is always recommended to make sure that the packaging design protects the packed product or not.
- Please note that recycled substrates are suitable for food packaging or low migration jobs only if they have been specifically developed for and are recommended for this purpose. Otherwise a suitable barrier is needed to prevent migration. For such products please ask your paper supplier.