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SOLVENT BASED SCREEN PRINTING INKS – A NECESSITY

Reading our Screen News attentively you have surely often come across information about UV-curing screen printing inks. For ecological and productivity reasons this type of ink is increasingly used. In other words, they have become a necessity for printers. Naturally this is correct. Above all for label printers using multi-colour equipment or for large format screen printing.

The reasons are clear. UV-curing inks are free of solvents and cure very fast, almost in a flash. The ink film of UV-curing inks cures within fractions of a second under the influence of UV-light. This extremely quick drying combined with the fact that the ink film does not contain any volatile components is the reason why inks containing metal or effect pigments do not result in an optimal surface. The necessity to cure the ink films using UV-radiation is another reason, that the use of UV-inks is sometimes difficult. The main problem is the limited opacity of highly pigmented ink layers. Especially highly opaque whites and blacks can often only be cured with a lot of energy. On the other hand, this is no problem when using solvent based ink systems.

Some of the solvent based ink systems showing properties not yet achievable with UV curing products are:

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HIGHLY OPAQUE WHITE PK-JET 60/129-HD

An extremely opaque white, suitable for almost all thermoplastics. The advantage of PK-Jet 60/129-HD is the high opacity you can achieve, even when using fine fabrics. This is due to the extremely high pigmentation. This high opacity is a requirement for screen prints applied to completely cover high-contrast substrates with an opaque white. Another application is the production of double-sided labels with opaque white and barrier coats.

For double-sided labels or printing of the barrier coat we recommend:

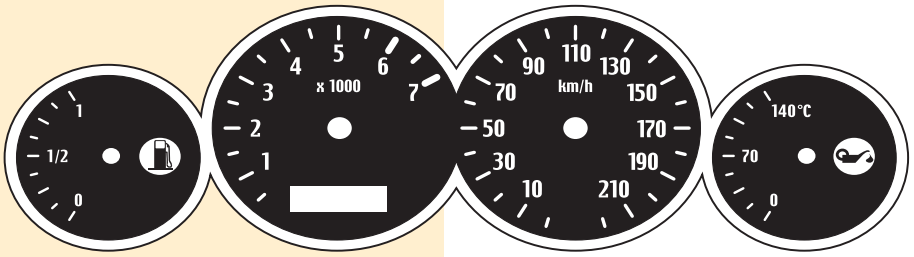
1. Print coloured image
2. First barrier coat > PK-JET 60/129-HD, fabric 77-55
3. Barrier coat > PK-JET 60/129-HD (2 parts) + J 74 (1 part), fabric 77-55
4. Second barrier coat > PK-JET 60/129-HD, fabric 77-55
5. Print coloured image

These three prints will result in a pure white, completely light blocking ink layer. For common barrier coat layers often up to 5 prints are required. Shrinkage of plasticized transparent PVC foils will be very low when using PK-Jet 60/129-HD.

PK-Jet 60/129-HD can be processed in automatic equipment. Other high printing speeds and stacking are possible in combination with suitable driers.

OPAQUE BLACK CX 65/45-AM

Originally developed for screen printing scales and panels in the automotive sector, this product is also suitable for many other applications. CX 65/45-AM will achieve prints completely blocking the light. This product is suitable for thermoplastics and shows excellent printing and drying properties.

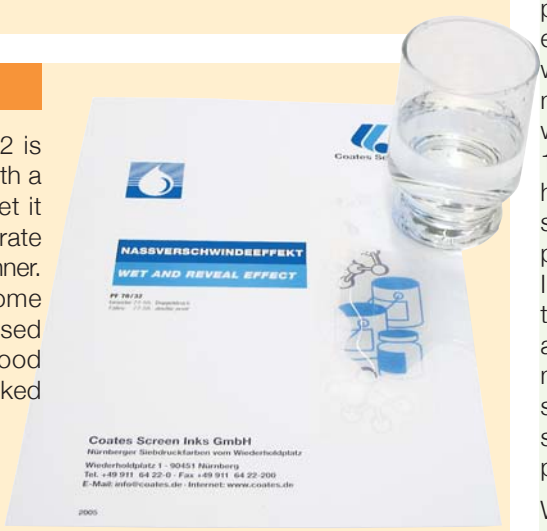


MIRROR INK MI 79/10

On suitable substrates such as polycarbonate, acryl and polystyrene foils Mirror Ink MI 79/10 is suitable for the production of screen printed mirrors. MI 79/10 is printed on the reverse side of the substrate. This fantastic effect can only be achieved by evaporation of solvents and orientation/positioning of the aluminium particles during the process. If necessary MI 79/10 is covered with XL 65 or other colour shades of the XL range. Only mild thinners such as XVS or XVH should be used.

WET AND REVEAL EFFECT

Wet and reveal effect ink PF 70/32 is used to cover substrates partially with a white overprint. If this ink film is wet it becomes transparent and the substrate will show again in a high-contrast manner. When the ink film dries it will become opaque again. PF 70/32 is processed with a 77-55 fabric. Due to the good drying properties prints can be stacked after jet drying.



PEARLESCENT AND METALLIC EFFECTS

UV-curing screen printing inks – especially those containing UV-curing bronze binders – can be used to produce metallic or pearlescent-like effects to a limited extent. Some printers use such UV inks. However, you can achieve much more brilliant effects on surfaces using solvent-based bronze binders. Reduction of the binder by evaporation of solvents will result in an optimal orientation of these effect particles.

RISKS ASSOCIATED WITH THE PROCESSING OF SOLVENT-BASED SCREEN PRINTING INKS.

There are basically three types of these risks:

a) risks for the printer (health risks)
b) risks for the environment
c) risks in reference to explosion limits, flammability

Even though there was little publicity about this subject, ink manufacturers have done everything to formulate solvent-based screen printing inks, which meet all legal requirements of health protection as well as protection of the end user of printed articles. Solvents were substituted according to the requirements of the regulation on dangerous working materials. In addition, more than 10 years ago, there was an exchange of heavy metal containing pigments in screen inks. Generally all screen and pad printing inks produced at Coates Screen Inks GmbH, Nuremberg correspond to the requirements of EN 71, part 3 and are suitable for printing of toys. Furthermore phthalate plasticizers were also substituted – all measures taken to make screen printing inks and printed end products as safe as possible.

When properly processing solvent-based screen inks the only problem is emission of solvents into the atmosphere. To exclude a potential risk of explosion, only screen inks with a flashpoint exceeding 40°C may be used in screen printing equipment and driers. If for technical reasons, this is not possible, printers have to take the necessary actions to ensure explosion protection. Relevant legislation is the European Standard EN 1010.

Use of solvent-based screen printing inks is a necessity for screen printers. Nevertheless UV-technology is the future. Due to constant development work and research UV-curing screen inks have advanced considerably and are suitable for a broad field of applications.