

THINNERS AND RETARDERS FOR PAD PRINTING

Ink manufacturers are often asked the question, why pad printing inks are not supplied in ready-to-print adjustments. The answer to this question is, that pad printers world-wide are applying these inks under various printing conditions. And modern pad printing inks have to meet all these different requirements.

Climate

Pad printing inks are processed under many very different climate conditions. Printers in the subtropical regions as well as their colleagues in a temperate region such as Scandinavia should be able to use the same ink type. Often they also print the same part with the same logo.

Speed

Printing speed depends on the basic conditions of pad printing. In automatic lines production speeds can be very quick. Manual printing of big parts on the other hand can be quite slow.

Motive, Plate

It will make a great difference if an ink is printed with a flat etched steel plate or with a plastic grid plate. The ink will dry a lot faster with process dots with a diameter of less than 100 µm than it does with parts of cm². Printing of fine details requires a different ink adjustment than printing of areas. Every printer who tried to print fine writing together with areas knows, how difficult that is. Naturally the depth of the plate also has an influence on the printability of the ink. In addition to the printing conditions there are also different machine types (open or closed systems), which also require different adjustments.

Various thinners and retarders with different evaporation rates and dissolving properties are offered to adjust pad printing inks. They are used to allow transfer of ink from the plate via the pad to the substrate. The ink becomes that sticky in the plate that it can be taken

on by the pad without drying in. The ink, however, must not dry on the pad and also must not be too wet, so that a complete transfer is possible. Thinners (retarders) with a slow evaporation rate are retained in the ink film longer than quickly evaporating thinners. Drying properties of the inks have a direct influence on their printability. Generally the following rules apply when using thinners:

quick thinner

*low temperatures
quick cycles
area prints
slow drying inks
deep etched plates
non screened plates*

slow thinner/retarder

*high temperatures
slow cycles
fine details
quick drying inks
flat etched plates
screened plates*

Coates Screen offers the following thinners and retarders:

● ADDITIVE A

Universal thinner for "regular" printing jobs. Additive A can be used in all pad printing inks of Coates Screen.

● ADDITIVE B

Quick adjustment of additive A. Additive B is often used on quick running machines.

● ADDITIVE C

Extremely quick thinner for very quick printing speeds and quick drying. Additive C is frequently used with UV-curing pad printing inks.

● CAN

Has an especially high solving power. Thus CAN can improve adhesion of pad printing inks on various plastic materials. Processing of CAN corresponds to Additive A.

● TP 262

An especially mild thinner, which will not affect sensitive plastic materials. In combination with TP 249 it is especially suitable for printing of polystyrene sensitive to tension cracks. TP 262 is often used as cleaner for misprints.

● BGA

Slow thinner or quick retarder. Used for slow printing processes or for printing quick drying inks such as TP 313.

● TPD

Universal retarder, often used in combination with Additive A.

● TPV

Mild retarder. Slow adjustment of TP 262.

● JD

This retarder with very high dissolving power is especially suitable for four colour process printing. Addition should only be 5% approx. so that drying is not affected.

● LAB-N 111420/VP

Retarder in paste form. With LAB-N 111420/VP inks can be retarded without reducing viscosity.



| THINNER | EVAPORATION RATE | SOLVING POWER | APPLICATION |
|--------------------------|------------------|-----------------------|---|
| ● ADDITIVE A | 1 | good | universal, standard printing jobs |
| ● ADDITIVE B | 0,5 | good | universal, quick printing speeds |
| ● ADDITIVE C | 0,25 | good | quick cycles, TP/UV inks |
| ● CAN | 1 | very good, aggressive | to increase adhesion |
| ● TP 262 | 0,6 | mild | sensitive plastics, plastic cleaner do not use with TP 219 |
| ● BGA | 5 | good | slow cycles, quick inks, e.g. TP 313 |
| ● TPD | 25 | good | universal retarder in combination with Additive A or B |
| ● TPV | 25 | good | retarder for printing sensitive plastics |
| ● JD | 25 | very good | process printing in combination with Additive A or B |
| ● LAB-N 111420/VP | NA | n.a. | retardation of inks without viscosity reduction |

This table is a summary of the most important properties. Numbers for evaporation rate are related to Additive A (=1).

The variety of thinners and retarders offered seems to be confusing at first sight. In practical use about 80% of the printers use Additive A, which is the best choice for regular printing jobs. However, if you want to achieve highest quality prints, e.g. process printing or if you need to adjust the pad process to other manufacturing processes, we can offer solutions to achieve optimal printing results.

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