

Waterbased Coating – Ink-Train Coating

Benefits

- INXCAC waterbased ink-train coating products provide significant benefits to printed sheets and have clear advantages compared to using conventional/oil-based lithographic over-print varnishes:
 - Improved quality and visual appearance
 - Improved protection, rub/mar resistance
 - Dries quickly and requires minimal spray powder application
 - Fast turn-around through press and finishing processes
 - Non-yellowing
 - Available in different visual finishes – gloss, semi-gloss, satin, matte
 - Environmentally friendly
 - Easy clean-up

Waterbased Coating – Ink-Train Coating Use

Printing Unit

Application Method

- Waterbased ink-train coating products are designed to be applied dry-offset, without the use of fountain solution or the use of the press dampening system – disengage/de-select the dampening system prior to use.

Ink Fountain

- Do not add ink-train coating to the ink fountain until immediately prior to coating application/printing – waterbased coatings dry by evaporation and can ‘skin’ in the ink fountain when not in use.
- It is recommended to make-ready the job prior to using the ink-train coating to avoid drying in the ink fountain and on ink-rollers/plate/blanket surfaces.
- Close ink fountain zones prior to adding any ink-train coating to the ink fountain – the ink-train coating can leak from the ink fountain if the zones are open.
- Only open ink fountain zones immediately prior to coating application and close the ink zones when production will be interrupted for an extended period.
- When setting the ink fountain zones, it is better to use minimum ink zone opening and increased ink fountain roller speed/sweep to control the coating application to prevent ink fountain leakage.

Inking Rollers

- Make certain that the inking rollers and plate/blanket cylinder surfaces are clean prior to use.
- If necessary, color-rinse the inking rollers to avoid contamination by residual ink color – this is a good general practice to avoid color contamination.
- Thoroughly flush the rollers with water to remove residual solvent prior to using ink-train coating.
- Minimal rollers are required to transfer the ink-train coating from the ink-fountain to the printing plate – ink-train coating does not require being split into a thin film like ink but does require even application/coverage.
- Using more rollers will split the coating film into a much thinner film thickness increasing the tack and likelihood of drying on the rollers.
- Remove all unnecessary rollers, leaving only the rollers required to transfer and apply the coating to the plate using the first/number-one ink form roller – if the coating film does not appear smooth on the sheet, the second/number-two ink form roller can also be installed/used for smoothing the film.
- It may be necessary to replace ink rollers to clean the printing unit using the press roller wash-up device.

Printing Plate

- Mount a printing plate that has been processed to remove all the emulsion – do not leave the emulsion on the plate as this is a hydrophobic surface.
- It is not recommended to use an ‘old’ printing plate that has an image.
- Use reduced roller contact settings to promote coating transfer – it is recommended to reduce all roller stripes from the manufacturer recommendations by half; example, 4mm to 2mm.

	<p>Impression Cylinder</p> <ul style="list-style-type: none"> - Use minimum impression/blanket-paper pressure. - Use 'break-away' method to set impression pressure by reducing until coating area on paper is incomplete and incrementally increasing until the coating area on the paper is complete. - Excessive printing pressure can result in beading along the perimeter edges of the coating area and cause sheet sticking in the press-load/stack.
<p>Blanket</p>	<ul style="list-style-type: none"> - Since the ink-train coating will be generally applied in an over-all/flood application from the printing plate to the blanket, it is necessary to size the coating area of the blanket to the paper size to avoid build-up outside of the paper margin – this can be achieved in two ways: <ol style="list-style-type: none"> 1) Cut the blanket under-lay packing to be inside the paper margin by approximately 1/4" along the three, non-gripper edges. 2) Use a full under-lay and cut/strip the blanket in the coating non-image areas to create a non-contact relief that is approximately 1/4" inside of the paper margin – make sure there is enough relief depth to avoid coating transfer onto the non-image areas of the blanket. - If the coating coverage area requires knockouts to provide coating-free areas, it will be necessary to cut/strip the blanket in these areas.
<p>Drying Retarder</p>	<ul style="list-style-type: none"> - Prior to use, make certain that INXCAC Drying Retarder has been provided – if INXCAC Drying Retarder is not available, it is advised to acquire this prior to use. - INXCAC Drying Retarder is a spray-on solution that has been formulated specifically for use with waterbased ink-train coatings. - Drying Retarder is best applied to the ink fountain and ink rollers using a spray bottle and can be used on a rag to wipe roller/plate/blanket surfaces clean. - Drying Retarder is used to prevent the ink-train coating from drying in the ink fountain and on roller, plate and blanket surfaces during production and non-production periods. - Please reference the INXCAC Drying Retarder Technical Data Sheet (TDS) for additional information.
<p>Start-Up/Use</p>	<ul style="list-style-type: none"> - Mix the waterbased ink-train coating product thoroughly prior to use and measure viscosity – reference the INXCAC Waterbased Coating Viscosity Measurement document for detailed viscosity measurement instructions. - After the job has been made ready, pour waterbased ink-train coating into the ink fountain, making certain that the ink fountain zones are closed. - Set the ink fountain zones and ink fountain speed/sweep to apply coating relative to the area of coverage of the coating blanket – as a reference, start by setting the fountain zones and speed/sweep to apply a film equal to a lithographic over-print varnish. - Favor increasing the ink fountain roller speed/sweep rather than opening ink zones to prevent leaking of the ink fountain. - Pre-ink the printing unit by ducting coating via the ink fountain or use an ink knife to apply a bead of coating onto the inking rollers and inch/crawl the press to begin transfer and avoid slinging – once the coating begins to transfer over all the rollers, the press can be idled to completely cover all inking rollers. - It is recommended to slightly over-ink the inking unit with coating to prevent tack, drying and back-trap of first printed/coated sheets. - Using a rag, wet with Drying Retarder and wipe over the blanket surface leaving very slightly damp to prevent tack during initial coating application – this can prevent sheet sticking and tear-off by first sheets. - Begin by applying coating only/no ink to the sheets, and evaluate the sheets for coating coverage, coating film thickness and drying – this is done by a visual evaluation of coating coverage: <ul style="list-style-type: none"> • Excessive coating application can result in slinging, misting, slow/poor drying, set-off/blocking and sheet distortion/curl. • Insufficient coating application can result in coating starvation on the sheet, drying on rollers/plate/blanket surfaces, ink back-trapping onto the blanket, ink fountain and ink roller contamination of printing inks, picking and sheet tear-off onto blanket, hickies and potential roller damage. - Keep the press idling or crawling, do not let the press sit static with coating on the inking rollers. - Make necessary adjustments to coating film thickness via ink fountain zone and/or speed/sweep adjustments. - Prior to making any subsequent 'pulls', stop the press and examine the condition of the coating film on the rollers – if the coating film seems very tacky or dry, mist the rollers with Drying Retarder and crawl the press to run in.

TECHNICAL RESOURCE INFORMATION

	<ul style="list-style-type: none"> - If there is a lack of coating film thickness on the rollers contributing to the tack/drying, duct or knife more coating onto the inking rollers before re-starting. - Prior to making any subsequent 'pulls', wipe the blanket clean with a rag wet with Drying Retarder and leave very slightly wet. - If the coating has dried on the ink rollers, sudden movement of the press can damage the rollers – if the coating is suspected of being dry on the ink rollers, the rollers should be sprayed with Drying Retarder and the press should be cautiously inched to break the rollers apart and spread the Drying Retarder over the entire surface area of all rollers before idling the press – if dried coating remains on the rollers, the entire roller system should be cleaned.
<p>Drying</p>	<ul style="list-style-type: none"> - Waterbased coatings dry by the evaporation/absorption of water from the wet coating film. - The use of a press drying system equipped with hot-air knives (HAK), infrared lamps (IR) and air-extraction (EXT) can be used in combination with a small amount of anti-offset powder to promote the drying of the waterbased coating and underlying ink films. - If the press is equipped with IR, HAK and EXT, the use of all three drying system components can be used to achieve a measured delivery-pile temperature of ~95F using a probe/stem thermometer or handheld pyrometer. - With an adequate drying system, the results of a printed/coated sheet pulled from the press delivery should be dry to the touch and exhibit good immediate/short-term rub protection – keep in mind that if applied in-line over wet inks, the underlying ink films remain wet/soft and will require time to fully dry/harden. - In saturated ink film areas, the coating film may be broken through with heavy rubbing immediately off-press causing the beneath ink films to become smeared – in this case, the coating film should provide sufficient short-term protection of the beneath inks in a stack/pile until they fully dry. - With an adequate press drying system, production speeds can be increased, and minimum spray powder application can be used without causing issues of sticking, blocking or set-off in the delivery-pile. - If the press is not equipped with a drying system, or is equipped with IR only, special care should be taken in making certain that adequate drying is achieved – in this case, atmospheric conditions for ambient temperature and relative-humidity can positively or negatively impact the rate of drying result. - Too much coating application, insufficient spray powder application or press speeds that are too fast can all contribute to the issues of sticking, blocking or set-off in the delivery-pile. - Without a suitable drying system, drying of the waterbased coating may take longer, however, sheets should be dry enough to be handled 10-20 minutes after printing/coating – the beneath printing inks may remain wet/soft and will require additional time to fully dry/harden. - An increased spray powder application may be required to ventilate the delivery pile for drying purposes. - Ambient pressroom conditions for temperature and relative-humidity will impact the rate of the waterbased coating film to dry by evaporation – if the air conditions are high for temperature and relative-humidity, the ability of the water contained in the coating film to evaporate will be impaired and contribute to slow drying of the applied coating film, particularly if the press is not equipped with a suitable drying system containing IR/HAK/EXT.
<p>Production Stops/ Interruptions</p>	<ul style="list-style-type: none"> - Avoid using waterbased ink-train coating during make-ready to prevent problems during frequent press stops/starts. - Avoid stopping the press completely when in non-production – keep the press idle or on crawl whenever possible. - Make certain that there is enough coating on the ink rollers to prevent premature drying during brief stops – duct fresh coating onto the ink rollers prior to start-up from a production stop as a general practice. - IF stopping the press for >2 minutes, mist the rollers and wipe the plate/blanket cylinders with Drying Retarder. - If the press will be stopped for an extended period, completely clean the ink rollers, plate and blanket surfaces – if necessary, remove coating from the ink fountain and clean. - If the press will be stopped for an extended period, close the ink fountain zones to prevent leakage. - Stir the coating in the ink fountain frequently to prevent skinning.
<p>Ink Considerations</p>	<ul style="list-style-type: none"> - Avoid using inks containing alkali-sensitive pigments that may react negatively with waterbased coating resulting in a color-shift or 'burn-out' – when using special mix colors, inquire to your ink supplier that the inks are 'coatable' and compatible with waterbased coating.
<p>Cleaning</p>	<ul style="list-style-type: none"> - Rollers/surfaces should be thoroughly cleaned after use – hot water, water/ammonia (1:1) mixtures or INXCAC 501 Cleaner can be used to remove coating from the rollers/surfaces after use.