

### Waterbased Coating – Sofffeel Coating Guidelines/Considerations

<p><b>Scope</b></p>	<ul style="list-style-type: none"> <li>- As a specialty product, Waterbased Sofffeel coatings are subject to considerations/limitations which should be carefully followed to determine if they fit the intended application and that the desired results are achievable – it is advised to read the following guidelines/considerations for successful sofffeel use and results.</li> <li>- Testing in advance to determine the correct combination of consumables/materials along with the intended print/application process is recommended when using a specialty coating product such as sofffeel to determine compatibility and verify the results.</li> <li>- If the conditions for use fall outside of the following guidelines, please contact your INXCAC Technical Sales Representative to confirm that waterbased sofffeel coating is a suitable product for use in the desired application.</li> </ul>
<p><b>Applications/Uses</b></p>	<ul style="list-style-type: none"> <li>- Due to the widespread appeal for the ‘soft’, velvety and smooth tactile aesthetic, the application of sofffeel coating has expanded to include printed pieces where special care may be required during printing, finishing, storage and end-use:             <ul style="list-style-type: none"> <li>• Folding-cartons</li> <li>• Pocket-folders</li> <li>• Book Covers</li> <li>• Labels</li> <li>• General commercial work including brochures, flyers, inserts, postcards that are processed through mail service</li> <li>• POP Displays</li> <li>• Printed pieces requiring long-term storage</li> </ul> </li> <li>- Sofffeel coating is suitable for use in most applications, however, a thorough understanding of the durability requirements of the printed piece through production, storage and end-use should always be taken into consideration.</li> <li>- While sofffeel coating can exhibit the same positive benefits of typical waterbased coating products in terms of creating a protective and non-yellowing coating-film, it remains a specialty coating product with documented limitations that should always be accounted for in job planning/preparation and execution.</li> </ul>
<p><b>Coat-Weight</b></p>	<ul style="list-style-type: none"> <li>- A coat-weight of <b>1.0-1.5 dry lb/3000 ft<sup>2</sup></b> is recommended to achieve the desired ‘soft’ tactile feel and uniform film coverage/appearance.</li> <li>- Depending on the substrate, ink type/ink coverage, application method and expectations, multiple passes (‘hits’) of sofffeel coating may be required to achieve the desired results for appearance and tactile feel.</li> </ul>
<p><b>Anilox</b></p>	<ul style="list-style-type: none"> <li>- While there are several anilox engraving patterns/types available in the printing industry for use with waterbased coatings, hexagonal engraving has proven to provide suitable results for sofffeel coating application.</li> <li>- The below engraving specification range is recommended for use with sofffeel coating:             <ul style="list-style-type: none"> <li>• 10-13 bcm, 150-180 lpi, 60°, hexagonal engraving</li> </ul> </li> </ul>
<p><b>Blanket Material</b></p>	<ul style="list-style-type: none"> <li>- Rubber blanket surface has proven better for sofffeel coating applications compared to smooth polymer materials.</li> <li>- Use of a polyester-based/rubber-surfaced coating-plate has experienced better results compared to a fabric-based coating-blanket for providing a uniform/defect-free appearance of the sofffeel coating-film – irregularities of the woven fabric pattern can be transmitted into the sofffeel coating-film appearance creating visible defects.</li> </ul>
<p><b>Substrates</b></p>	<ul style="list-style-type: none"> <li>- While sofffeel coating has compatibility across a broad range of substrate types, experience has proven that dull/matte coated papers provide the best surface to optimize the lay/appearance and ‘soft’ tactile feel.</li> <li>- Sofffeel coating has proven compatible with synthetic substrates such as Yupo, however, preliminary testing is recommended to verify compatibility with the specific stock – use of special inks and proper drying techniques are necessary when using non-porous substrates.</li> </ul>

# TECHNICAL RESOURCE INFORMATION

<b>Inks</b>	<ul style="list-style-type: none"><li>- The below considerations for ink selection/use should be accounted for when using waterbased softfeel coating:<ul style="list-style-type: none"><li>• Avoid using softfeel coating in-line/'wet-trap' over printed areas of heavy/saturated ink films such as metallic inks, low-pigment/'weak' special colors, 'rich' black process builds, or process inks/builds run at abnormally high densities. Inks that require large amounts of fountain solution can create an unstable ink/dampening film emulsion which can contribute to uneven transfer/coverage of softfeel coating. In these cases, a 'primer' coating should be applied in-line/'wet-trap' over inks and the softfeel coating should be applied in a secondary/'dry-trap' application to achieve the best results.</li><li>• When running two-sided work, making certain the ink/coating films from the first-side printing are completely dry/cured before turning the sheets and proceeding with printing/coating the second side.</li><li>• When using softfeel coating over cured Hybrid-UV/UV inks, test and qualify that the inks do not contain silicone or non-imprintable waxes that can contribute to adhesion failure of the softfeel coating-film – inks that contain silicone or high-levels of micronized, low molecular weight waxes will not gain or improve adhesion of softfeel coating if the sheets are run under the UV lamps on a second-pass.</li><li>• When softfeel coating will be applied over Hybrid-UV or UV inks, it is important that the softfeel coating-film adhesion is tested and qualified prior to producing live-jobs. As individual ink colors can have varying degrees of adhesion capabilities when softfeel coating is applied, each individual ink color should be tested for softfeel adhesion – this includes process ink colors as process image ink coverage/separations and ink sequence/rotation can vary.</li><li>• Adhesion can be an issue when using softfeel coating over digital ink/toner systems or dry-trapping over dry/cured offset inks – testing adhesion in each application is recommended to verify results.</li><li>• The use of wax/silicone-free coatable inks is recommended when dry-trapping softfeel coating.</li></ul></li></ul>
<b>Primer Coatings</b>	<ul style="list-style-type: none"><li>- In instances when heavy/saturated ink films are unavoidable, gas/chemical ghosting is a strong possibility, or adhesion is a concern, it is recommended to apply a primer coating prior to softfeel coating application.</li><li>- INXCAC satin waterbased coating products such as 1428 and 1365 are suitable primer coatings for use with softfeel coating, but this should be tested and qualified through your system prior to full production to account for all other process variables.</li></ul>
<b>Press-Load/Pile Temperature</b>	<ul style="list-style-type: none"><li>- Care should be taken not to create excessive press-load/captive pile-temperatures when using softfeel coating.</li><li>- Excessive temperature, particularly when coating the second side, can result in blocking of printed/coated sheets.</li><li>- Short press-loads or tiering of press-loads is recommended as not to create excessive weight of the pile.</li><li>- Captive pile-temperature measured in the sheet-center of the press-load should not exceed 95F.</li><li>- Use of spray-powder can help effectively ventilate the pile and dissipate heat – use of proper sized powder for the substrate type is necessary.</li></ul>
<b>Captive vs Pull-Sheets</b>	<ul style="list-style-type: none"><li>- Sheets that are left captive in the press-load for several minutes will generally have a better coating-film appearance compared to sheets that are immediately pulled from the press-delivery – the coating-film on captive sheets will continue to flow/level in the pile compared to pull-sheets where the coating-film is prematurely dried due to air exposure.</li><li>- Continued flow/levelling of the softfeel coating-film on captive sheets in the press-load can provide improved visual results and should be used to gauge actual results for the job.</li></ul>
<b>Rub Resistance</b>	<ul style="list-style-type: none"><li>- Rub resistance should be carefully tested and qualified prior to full production, particularly when using softfeel coating on folding-carton applications or applications in which the printed product will encounter significant handling and/or face-face movement and friction.</li><li>- All post-press applications/processes should be taken into consideration as manual and/or mechanical handling, particularly finishing equipment, can create wear and/or polishing/burnishing of the softfeel coating surface.</li><li>- Contact with belts, rollers, suckers and other moving and non-moving mechanical parts can create an undesirable 'mark' on the softfeel coating surface resulting in quality issues/defects.</li><li>- Care should be taken in the mechanical set-up of all equipment surfaces used in processing printed pieces using softfeel coating.</li></ul>
<b>Additional Surface Applications</b>	<ul style="list-style-type: none"><li>- Softfeel coating can accept additional surface applications such as UV coating, foil-stamping and film-lamination if the softfeel coating and any beneath ink/primer coating layers are fully dry/cured – if any ink/coating films are not fully dry/cured, poor adhesion of any additional surface application can be the result.</li></ul>

	<ul style="list-style-type: none"> <li>- When using UV inks, verify that the softfeel coating-film has positive adhesion to the beneath cured ink-layers if the additional surface application will be applied over areas of both ink/coating – lack of adhesion between the softfeel coating-film and beneath cured UV ink-layers can result in poor adhesion after the additional surface application is applied.</li> <li>- Due to the material and process variables of additional surface applications, testing is recommended to verify compatibility/performance with softfeel coating prior to production.</li> </ul>
<p><b>Ghosting</b></p>	<ul style="list-style-type: none"> <li>- As a dull coating, softfeel is susceptible to gas/chemical ghosting – precautions similar to running OPV/litho varnishes should be followed to prevent a ghosting occurrence.</li> <li>- Below are some recommendations to follow in instances where ghosting is believed to have potential:             <ul style="list-style-type: none"> <li>• When using softfeel coating on two-sided jobs, make certain the ink/coating films are dry/cured completely on the first side before printing the ink/coating on the second side – on two-sided jobs, if both-sides of the sheet are drying simultaneously in a stack/pile, ghosting can occur in the softfeel coating-film areas.</li> <li>• Produce the first side completely prior to producing the second side.</li> <li>• Avoid running spot-UV coating over softfeel on two-sided jobs, particularly when dark solid ink areas are involved – the result can be ghosting if the softfeel coating-film and ink films are not completely dry/cured prior to spot-UV coating application.</li> <li>• Avoid using highly absorbent papers that can retain moisture/solvents that can continue to ‘gas’ over-time – high hold-out stocks would be recommended as a preventative measure when ghosting potential is a concern.</li> <li>• Avoid using inks containing high concentrations of drying oils.</li> <li>• Run small press-loads/lifts and monitor pile-temperature so as not to over-heat.</li> <li>• Do not allow sheets to sit captive for an extended period – handle/wind sheets to ventilate immediately after second-side printing/coating if ghosting potential is suspected. Sheets may need to be winded several times following second-side printing for continued ventilation.</li> </ul> </li> </ul>
<p><b>Printed Materials – Handling &amp; Storage</b></p>	<ul style="list-style-type: none"> <li>- Softfeel coating is a specialty product with the final dried film being less durable and exhibiting a higher COF compared to general use waterbased coating products.</li> <li>- Printed-pieces using softfeel coating should be handled more cautiously than those produced using general-use coatings, with consideration that they are formulated for a specific tactile ‘feel’ that is achieved by creating a soft, low-slip dried film.</li> <li>- After printing, despite the softfeel coating film being dry, consideration should always be given to the condition of under-lying ink films that may remain ‘set’ but not fully dry/cured – these ink-layers may require days or weeks to fully oxidize depending on variables in the consumables/materials and printing process.</li> <li>- Jobs which require heavy ink-coverage, high/saturated ink-density, slow drying ink or ink/fountain solution combinations, poor drying system condition or operation, substrates which contribute to slow ink drying or ambient conditions that are not favorable for ink drying can impact the oxidative drying process of lithographic inks.</li> <li>- In cases where the beneath ink films are not fully dry/cured prior to additional printing, finishing, packaging, transportation or storage processes, quality-issues/defects related to ink-condition can occur.</li> <li>- To ensure the most positive results, softfeel printed/coated sheets should be completely dry prior to finishing, packaging, transportation and/or long-term storage.</li> <li>- When using softfeel coating, care should be used during finishing processes to avoid creating quality-issues/defects such as wear, scratching, scuffing, marring or ink/coating removal/transfer.</li> <li>- Care should always be taken in ensuring that softfeel coated-pieces are completely dry for ink/coating films prior to packaging for transportation – packaging softfeel coated-pieces prior to the ink/coating films being fully dry/cured can result in blocking, sticking, clinging, picking, ink-transfer/set-off, wear or scratching/burnishing.</li> <li>- Packaging methods should be determined for shipping and storage keeping in mind that the ambient conditions for temperature/humidity can have a negative consequence to the softfeel coated-pieces – packaging considerations that can directly impact the results during transit/storage:             <ul style="list-style-type: none"> <li>• Shrink-wrap selection which can trap moisture/humidity – perforated vs non-perforated</li> <li>• Packaging too loosely which can result in in-transit movement/friction</li> <li>• Packaging too tightly to not accommodate for material expansion due to changes in ambient conditions</li> <li>• Packaging too tightly creating uneven pressure-distribution/pressure-points on printed-pieces</li> <li>• Not ‘nesting’ pieces to most effectively and evenly distribute weight/pressure</li> </ul> </li> </ul>

- Binding the exterior of packaging tightly creating excessive or un-even pressure on contained printed pieces

- Sofffeel Printed/Coated Materials - Recommended Storage Conditions
  - Temperature not to exceed 100F for fully dried ink/coating films – recommended 65-80F
  - Humidity not to exceed 75%RH; recommended 35-55%
  - Pressure not to exceed 4 PSI

**\*The above values are recommended guidelines after verifying that the ink and sofffeel coating used were properly dried and process controls and shipping conditions have been explored and identified to safeguard the product longevity.**

## ***Aziridine Cross-Linker***

- The addition of INXCAC Catalyst 1740 (Aziridine Cross-linker) to sofffeel coating immediately prior to use can benefit the dried coating-film by imparting additional rub/block resistance.
- INXCAC has several sofffeel coating products available, some products will benefit more from the addition of 1740 than others – contact your INXCAC Technical Sales Representative to discuss further.
- It is recommended to use 1740 with sofffeel coating in the following circumstances:
  - Two-sided printing/coating jobs
  - Heavy/saturated ink-film areas created by process ink builds and/or special ink colors
  - Jobs that require manual and/or mechanical handling/finishing which can result in wear/scratching/burnishing of the sofffeel film
  - Jobs which require additional surface applications involving heat and/or pressure
  - Jobs which require additional surface applications such as UV coating, film/foil application
  - Packaging/folding-carton pieces
  - Products which require heavy end-user handling – example: pocket-folder
  - Products which are prone to in-transit friction/abuse during transportation
  - Jobs which require long-term storage, particularly in non-climatized conditions for temperature/humidity or transportation/storage in/through areas of extreme temperature/humidity
  - Jobs which require short or long-term storage in conditions >100F and up to 120F – printed/coated jobs stored in conditions >100F without the use of Catalyst 1740 will be prone to blocking/sticking/picking.
  - The use of Catalyst 1740 with sofffeel coating can promote block resistance in temperatures up to 120F.
- Sofffeel Printed/Coated Materials **WITH CATALYST 1740** - Recommended Storage Conditions
  - Temperature not to exceed 120F for fully dried ink/coating films; recommended 65-80F
  - Humidity not to exceed 75%RH; recommended 35-55%
  - Pressure not to exceed 4 PSI

**\*The above values are recommended guidelines after verifying that the ink and sofffeel coating used were properly dried and process controls and shipping conditions have been explored and identified to safeguard the product longevity.**

## ***Cross-Linker Use***

- Consult INXCAC '1740 Cross-Linker' technical document for usage instructions/considerations prior to use.