Canson Infinity Canvases Handling Guide

Inkjet Receptive Canvas – An overview

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A. The language of inkjet receptive canvas

Canvas — A woven fabric often used for painting, printing and other applications requiring a tightly woven material which is flexible, strong and long lasting.

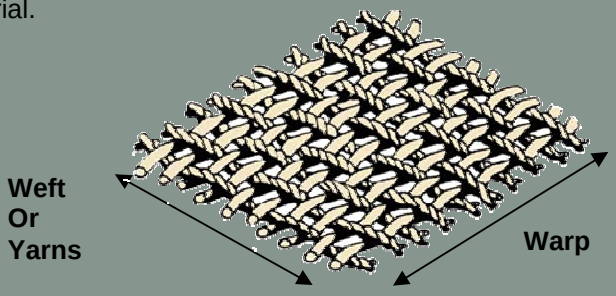
Acrylic Gesso — The white surface found on inkjet receptive canvas which is generally composed of titanium dioxide and calcium carbonate mixed in an acrylic polymer emulsion.

Canvas Weight — The weight of a square yard of canvas or square meter of canvas usually stated in ounces or grams per square meter prior to applying a coating.

Warp — Yarns which run along the length or north - south axis of canvas.

Weft — Yarns which run along the width or east - west axis of the canvas. Also referred to as “fill yarns”.

Thread Count — The number of yarns in the warp and weft in one square inch of canvas or woven material.



Texture — The pattern of the canvas which is influenced by the coarseness and uniformity of the yarns found in the warp and weft.

Tooth — The abrasiveness of the surface.

Interstice — The lowest point between the warp and weft yarns, creating an indentation.

Kitty — Particulate matter left behind on the canvas by the looming process at a canvas mill. Kitty is most often found on the reverse or non-gesso coated side of inkjet canvas.

Pepper — A black or dark brown particulate from cotton seeds which remain in canvas after canvas has been woven and remain in the gesso coating. Typically, all cotton canvases tend to have a higher pepper content than polyblend canvases.

All Cotton Canvas — Canvas constructed of all cotton yarns. All cotton canvas can sag or droop when mounted on stretcher bars and exposed to high humidity.

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Polyblend Canvas

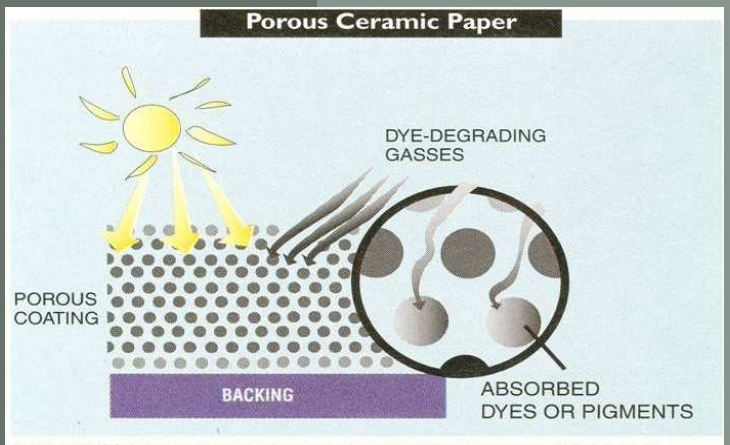
Canvas constructed of synthetic polyester and cotton yarns. A polyblend canvas is technically superior to an all cotton canvas and typically has a more uniform texture, directly influenced by how tightly woven the canvas is (measured by thread count). Also known as “polycotton” canvas.

Dimensional Stability

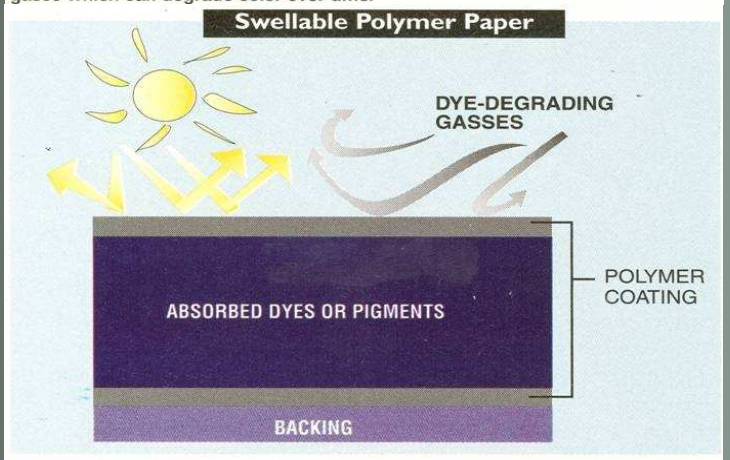
Canvas is, as are all woven fabrics, dimensionally unstable. It can be overstretched, lose its shape, be influenced by humidity and its gesso may crack when stretched while cold.

Mounting Canvas

Canvas is often mounted onto a stretcher frame, also known as stretcher bars, to create added depth to a print. Gallery wrapping, the process of wrapping an image around the edges and slightly onto the reverse side of the stretcher bars is quite popular. Care must be taken when mounting the canvas to avoid damage to the image and the sharp edge of stretcher bars should be lightly sanded so as to round them, reducing the possibility of cracking the gesso by forcing the canvas over a knife-like edge.



CERAMIC COATED: Porous papers are coated with a ceramic material that absorbs inkjet dyes and pigments like sand on the beach absorbs water. Inks are drawn into the pores on contact, where they’re instantly dry to the touch. Unlike polymer-based coatings, ceramic coatings leave dyes exposed to the light and gases which can degrade color over time.



PLASTIC COATED: Swellable papers absorb and encapsulate liquid dyes and pigments within their top polymer coating. After contact with the ink, it can take up to 24 hours for the polymer to dry completely, but when dry, it protects the inks from light (UV) and air (gas) fading.

B. Technology, Handling, Printing and Finishing Inkjet Canvas

1. Inkjet Receptive Coating Technologies

Canson currently offers three specific aqueous based inkjet receptive canvases. Each canvas has a swellable polymer based inkjet receptive emulsion designed to be compatible with many popular OEM inks.

All Canson canvases are completely OBA free, designed for maximum archival life, colour stable and manufactured with proprietary inkjet technology that renders them unlike other inkjet receptive canvases.

Swellable polymer inkjet receptive emulsions are thought by many to be the optimal technology for maximum print archivability. Further, a number of reports indicate microporous coating adhesion may be weakened significantly by OZONE exposure resulting in flaking and cracking of the print.

The illustration besides, taken from the March 2003 edition of Popular Photography and Imaging *(“The Truth About Inkjet Prints”*), depicts the nature of the principal inkjet receptive technologies available today (swellable Vs ceramic coating).

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2. Functional Temperature and Humidity Ranges

It is very important to ensure the temperature and humidity found within the printing environment conform to Canson's specifications to avoid problems such as : excessively slow drying (see Pigment Ink Outgassing, Drying and Humidity below), print banding, gesso cracking (due to cold temperatures) and, with some third party inks, ink flashing in high temperatures.

The functional temperature range for Canson Artist Canvas Professional Gloss, Artist Canvas Water Resistant Matte and Museum Canvas Water Resistant Matte is **10°C to 29°C** (50°to 85°Fahrenheit).

The functional humidity range for these canvases is **30% to 65%.**

Many printer manuals speak directly to ink smearing problems when inkjet media is printed outside of its functional humidity range. Additionally, post print varnish drying is significantly affected by temperature and humidity.

3. Storing Unused Inkjet Canvas

Partially used rolls of canvas should be placed immediately back into their plastic shipping sleeves, have the end caps reinserted and stored in a vertical position. Never leave a roll of canvas on a printer overnight in an unprotected state – it is highly susceptible to migrant gas intrusion, moisture absorption and may become dirty through airborne dust accumulation. Unused canvas must be stored within its functional temperature and humidity ranges.

4. Unwrapping and handling rolled inkjet canvas

When removing a roll of inkjet receptive canvas from the box, ensure care is taken to grasp it by the paper sleeve wrapped around the center of the canvas. It is wise to avoid getting fingerprints on the unprinted media as the natural oil in the fingers and any unseen dirt on one's hands can affect print performance. A number of fine art print shops require their employees to wear clean gloves or grasp the media with clean towels or rags when loading and unloading media into wide format printers.

5. Pigment Ink Outgassing, Drying and Humidity

Pigmented inks used in wide format inkjet printers have various glycols and glycerines used to suspend pigment particulate and render them capable of being emitted as a mixed ink through an inkjet print head. Unfortunately, these substances evaporate rather slowly, often feeling dry to the touch yet having substantial amounts of the compounds remaining in a less than fully dry state within the inkjet receptive layer. The evaporation of these compounds is known as "outgassing".

Outgassing rates are directly affected by humidity and temperature. High humidity significantly retards the evaporation rate of glycols as do low temperatures. Additionally, if a print – be it on paper or canvas, is framed under glass prior to full ink outgassing, fogging and even condensation can occur, ruining an exhibition print. The evaporative state of glycol outgassing directly affects the relative drying time of a product.

HP Vivera Pigmented Inks, Canon Lucia Pigmented Inks and Epson K3 Ultrachrome Pigmented Inks have highly proprietary ink formulations, all of which require outgassing but may outgass at differing rates. In an effort to speed outgassing, some printmakers use

temperature controlled drying rooms, drying boxes or high volume airflow rooms with highly dehumidified air circulating.

Epson officially comments on outgassing state : "*The new Epson UltraChrome K3 inks have about the same outgassing as the previous ink set. So, depending upon the environmental conditions, Epson recommends that you let your prints "outgass" into interleaving papers (Epson Singleweight Matte, Doubleweight Matte, and Presentation Matte all make great interleaving papers) for at least 48 hours before framing.*
Please note: You must replace the interleaving paper at the 24 hour mark with a fresh sheet. Proper framing procedures must be used, including no contact between the print and the inside of the glass or UV acrylic." [1]

6. Setting Printer Platen Gap or Headspace

Ensure the platen gap in a printer is adjusted to facilitate the thickness of canvas when printing. If the platen gap is too narrow, print head strikes may occur which can damage the media, printer or both. Additionally, horizontal banding may present itself when the platen gap is too narrow. All printers come with a printer guide which fully discusses requirements for both thick and thin media. The caliper of all three Canson canvases are noted in their respective product specification sheets (see Appendix 1). The caliper of inkjet media corresponds to the relative thickness of the product.

7. Setting Vacuum or Paper Suction Levels (Vertical Banding)

Vacuum, or paper suction, may be adjusted on many wide format printers. In a wide format printer, the media is held in place by a vacuum as the print heads pass over it and the media advances in the printer. Canson Museum Canvas is a very heavy gauge product whereas the Artist Canvases, both Matte and Glossy, are very finely woven and require less suction to be held in place. If the paper suction is too heavy, vertical banding can occur owing to the canvas being sucked in to the vacuum ridges. For instance, on an Epson 9800, the paper suction may be reduced from standard to - 2, producing excellent results. All problems involving vertical banding could be linked to vacuum settings.

8. Color management settings (ICC Profiles & RIPs)

Generic ICC profiles are available for free on www.cansoninfinity.com. These profiles have been made for each canvas product and for a number of popular wide format inkjet printers.
Also, a number of printmakers prefer third party RIPs as they believe they offer greater color management control. Many RIP users profile their own media or in some instances, the RIP manufacturer profiles commercially available media and makes it available to their customers. A number of third party RIPs (Raster Image Processors) are commercially available: Ergosoft, EFI/Best, CGS, GMG, ColorBurst, ColorByte, Onyx, KPG/Creo, Wasatch etc.

9. Using Take-Up Reels

Many high volume printmakers use take reels. Take up reels are attached to the bottom of the front of the printer stand and allow a multiple print run to be wound onto itself, obviating the need to single cut prints as they exit the printer. Once the roll of prints is wound up, they can be removed from the take up reel. To properly dry and outgas, take up reels MUST BE UNWOUND with the prints exposed to circulating air which is within the functional

[1] Extract from the *Epson Stylus® Pro Frequently Asked Questions (page 3)* found at http://www.epson.com/pdf/SProProduct_FAQ_7205.pdf

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temperature and humidity tolerances for the canvas. If prints are left wound up, proper drying and outgassing will not occur. The same holds true for stacking paper or canvas prints prior to outgassing. Do not stack them until properly dry and acid free interleaving should be always be placed between stacked prints to avoid image damage.

10. Water Resistance

Canson Museum canvas WR Matte and *Canson Artist Canvas WR Matte* are both highly water resistant canvases. *Canson Artist Canvas Professional Gloss* is not/not a water resistant canvas.

Water resistant canvas eases print handling once an inkjet print is fully outgassed but should not be confused with rubbing wet fingers, dry fingers or foreign objects over a printed image (see Handling Inkjet Prints below).

Additionally, water resistant canvas allows the use of a waterborne varnish (see Post Print Lamination and Varnishing below).

Accordingly, photos are attached below which demonstrate the waterfast nature of these two products. A common test of this feature involves simply pouring a glass of cool water (do not use hot water) over a fully dry, outgassed print. When performed after the products are fully dry and outgassed, this test notes an absence of ink runoff or bleeding.

Water Resistance Testing

PHOTO 1

PHOTO 2

Photo 1 is print rendered on Canson Artist Canvas Water Resistant Matte. It was printed on an Epson 9800 at 1440 DPI using the Matte Black (MK) Inkset. After outgassing for 48 hours, cool tap was run over it for 30 seconds as depicted.

Photo 2 illustrates the appearance of the canvas just as the water was turned off. Note the lack of ink runoff or bleed.

Photo 3 illustrates the water wicking off of the canvas at 1 minute. Again, note the absence of ink runoff or bleed.

Photo 4 illustrates the relatively dry state of the canvas 5 minutes after water had been run on it.

PHOTO3

PHOTO 4

11. Handling Inkjet Prints

Inkjet prints should be handled with care:

1) **Cotton or disposable paper gloves** are advisable when handling imaged media to prevent fingerprints, body oils and foreign matter from being deposited on the image.

2) The **surface of inkjet prints are also very susceptible to abrasion prior to being varnished**. Under no circumstances should an inkjet print be rubbed with a wet or dry finger or foreign object.
Many pigmented ink sets, especially Matte Black (MK) inks have an extraordinarily high amount of ground pigment micro-particulate. It is these pigments that create the longevity (thus archivability) required for long term fade resistance.
The challenge is pigment encapsulation in swellable polymer deep absorption in ceramic coatings on canvas. This gesso layer just under the inkjet receptive layer on canvas is relatively non-absorbent, requiring the entire inkset to be absorbed into a thin receptive layer. The lighter colors penetrate more deeply and the MK ink lies just below the inkjet receptive layer, often at the very surface itself.
When dry, and outgassed, the ink is fully encapsulated and suspended, ready to be sealed. A fully dry, fully outgassed, unvarnished print on Canson Artist Matte or Museum Matte Canvas will handle very well and you will not see surface ink loss relative to normal handling.
When you begin to rub, scrub, or scour an unsealed print, you strip off the micro layer encapsulating the inks. It is this layer that remains water resistant while at the same time being abrasion susceptible, especially to wet abrasion. If handled correctly under normal conditions, this is a non-issue. If you start wet rubbing or dry rubbing an unsealed print, you

have a self induced problem. As noted earlier, Canson canvases are manufactured with a swellable polymer emulsion. When printed, dried and sealed there is no canvas that is more archival than Canson Inkjet Canvas. However, as described earlier, Swellable Polymer coatings have their own unique challenges as do ceramic coatings – not the least of which is acidity, premature image desiccation and surface adhesion.

12. Print Varnishing

All inkjet prints rendered on canvas should be sealed with a high quality varnish to both protect it from external damage and prevent fugitive ingassing. Varnishing an inkjet print is also known as "lamination" or "top coating". There are two types of liquid varnishes commonly used on inkjet prints: Solvent based and water based.

Solvent based varnishes are nearly universally compatible with all inkjet media but some find the odor and the ventilation requirements objectionable. Low odor solvent or mineral spirit acrylic varnishes are available, which do not produce the pungent fumes created by some solvent based varnishes but still require ventilation as do waterborne laminates (note: waterborne varnishes have low levels of solvents within them and nearly all warn the user to apply in a well ventilated area). Solvent based laminates have excellent leveling properties and are not as prone to bubbling as waterborne varnishes when hand applied. Solvent based varnishes may be applied on both water resistant and non-water resistant inkjet media. As with all varnishes, compatibility testing should be done with solvent based varnishes to ensure combined media – varnish performance is acceptable.

Waterborne varnishes are preferred by many customers for use with water resistant canvas. The low odor, low fume level and ease of disposal are found attractive by many. Waterborne varnishes can be prone to bubbling and foaming and their leveling properties when hand applied are not generally as good as solvent based varnishes. This can leave blotchy areas on a canvas print. Compatibility testing is very important as it is common to find a third party waterborne varnish which works on one brand of canvas but not another. Some waterborne varnishes have PH levels and additive components which are incompatible with water resistant canvases, which can ruin the inkjet receptive layer and in some cases, the acrylic gesso underneath.
Satin and Matte water based varnishes use matting agents to bring them down from their original state of gloss. Accordingly, some varnishes will require stirring to reconstitute the matting agents after they have settled while stored. If not stirred, the print may have varying gloss levels within the image. Care must be taken to avoid inducing air into the varnish while stirring, causing bubbles which can mar the finished surface of an inkjet print.

Varnish application methods vary widely. Varnishes may be applied by a coating machine, sprayed on with a High Velocity Low Pressure (HVLP) spray gun, applied with aerosol spray cans, brushed on or rolled on.

Appendix A presents a document produced by Booksmart Studio which illustrates a method of applying Clearstar Waterbased Type C Varnish to Canson Artist Water Resistant Matte Canvas.

13. Combining Mediums on Inkjet Canvas Fine Art Prints

Texturing gels (or impasto) are often applied to a varnished inkjet print to give the appearance of an actual painting. Thinned acrylic paints are occasionally used in the same manner. In all cases, compatibility testing must be done to ensure acceptable results can be obtained.

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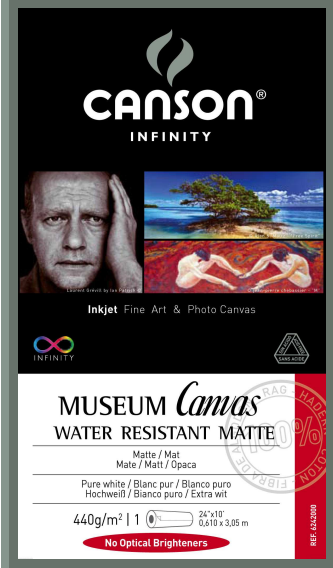


Canson Museum WR Canvas is the perfect instrument to combine mediums and its texture and heavy gauge should facilitate the additional surface weight of reasonably large volumes of combined mediums. Light weight canvas can stretch out of shape when large volumes of texturing gels or acrylic paints are applied.

C. Canson Infinity Inkjet Canvases Specifications

Museum Canvas Water Resistant Matte 440gsm

A very heavy gauge (477 gsm/23.5 mil) all cotton canvas reminiscent of the canvas used by the Old Masters in oil portraiture and depictions of nature.
The occasional imperfections in the gesso and coarse weft and weave create a texture which gives the appearance of a hand rendered canvas, perfectly suited for fine art reproduction, obviating the appearance of a machine made product.
The weight and strength of this canvas are ideal for applying texturing gels and other mediums which, when properly applied, can lend the appearance of an oil or acrylic painting rendered entirely by hand.
This canvas is optimized for pigmented inks but will also work with dye based inks given color adjustment.
It is water resistant and has a natural white appearance.
It may be varnished with water based or solvent based varnishes but must be tested for compatibility first. Ensure full outgassing has occurred prior to varnishing product.
As with all inkjet imagery, handle prints with care and avoid fingerprints and excessive handling – the unvarnished surface is subject to abrasion.
This product must be used and stored within its functional temperature and humidity ranges.

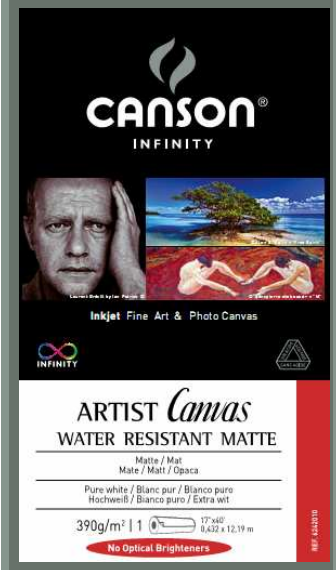
Properties:
Coating: Polymeric Non-toxic
Surface: White – Gloss
Weave: 84 x 27 All Cotton
Caliper: .0235" (23.5 mil)
Weight: 440 g/m^2 (14.5 oz/yd^2)
Gloss (60^o): 2.2

Ratings
Health – 0
Reactivity – 0
Flammability – 1 not spontaneously combustible

Environment
Functional temperature range – 50^o to 85^o Fahrenheit
Functional relative humidity range – 30% to 65%
Ink dry time – varies with type and amount of ink, relative humidity and temperature.

Canson Artist Canvas Water Resistant Matte 390gsm

A finely woven natural white canvas with a relatively smooth surface which maintains ideal intersticing.
This product is ideal for photographic applications.
This 391 gsm/19.0 mil polycotton canvas produces superb D-Max, outstanding image articulation, and is very supple, stretching and mounting with ease.
It is water resistant and has a natural white appearance.
This canvas is optimized for pigmented inks but will also work with dye based inks given color adjustment.



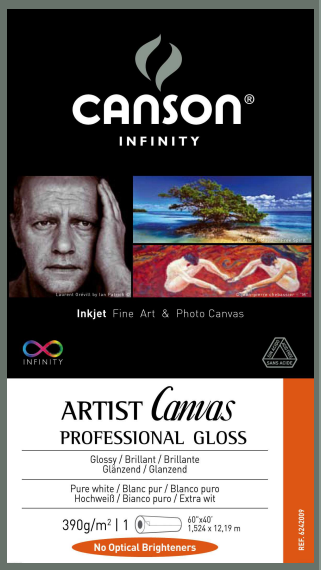
It may be varnished with water based or solvent based varnishes but must be tested for compatibility first. Ensure full outgassing has occurred prior to varnishing product.
As with all inkjet imagery, handle prints with care and avoid fingerprints and excessive contact with an unvarnished image – the unvarnished surface is subject to abrasion. This product must be used and stored within its functional temperature and humidity ranges.

Properties
Coating: Polymeric Non-toxic
Surface: White Matte, water resistant
Weave: 98 x 32 cotton/polyester blend
Caliper: .0190" (19.0 mil)
Weight: 391 g/m^2 (11.6 oz/yd^2)
Gloss (60^o): 2.3

Ratings
Health – 0
Reactivity – 0
Flammability – 1 not spontaneously combustible

Environment
Functional temperature range – 50^o to 85^o Fahrenheit
Functional relative humidity range – 30% to 65%
Ink dry time – varies with type and amount of ink, relative humidity and temperature.

Canson Artist Canvas Professional Gloss 390



A finely woven natural white canvas with a relatively smooth surface which maintains ideal intersticing.
This product is ideal for multiple applications where a glossy finish is desired. Can be used as a proof prior to varnishing if the same gloss level is maintained.
This 376 gsm/18.5 mil polycotton canvas produces extremely vivid color pop with beautiful chromacity.
Works superbly with either pigment or dye based inks.
This canvas is very supple, stretching and mounting with ease.
This product is not water resistant and must be used with solvent based or mineral spirit acrylic varnishes. All varnishes but must be tested for compatibility first. Ensure full outgassing has occurred prior to varnishing product.
As with all inkjet imagery, handle prints with care and avoid fingerprints and excessive contact with an unvarnished image – the unvarnished surface is subject to moisture damage and abrasion.
This product must be used and stored within its functional temperature and humidity ranges.

Properties
Coating: Polymeric Non-toxic
Surface: White Gloss
Weave: 98 x 32 cotton/polyester blend
Caliper: .0185" (18.5 mil)
Weight: 376 g/m^2 (11.4 oz/yd^2)
Gloss (60^o): 6.3

Ratings
Health – 0
Reactivity – 0
Flammability – 1 not spontaneously combustible

Environment
Functional temperature range – 50^o to 85^o Fahrenheit
Functional relative humidity range – 30% to 65%
Ink dry time – varies with type and amount of ink, relative humidity and temperature.

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FOR ALL 3 CANVASES - Storing
Store in cool, dry conditions around 70°F and 20-60% relative humidity. Always place in plastic sleeve when not in use. Never let roll lay flat on its side for extended period as damage could occur, store standing on end or suspended in box with end caps.

BOOKSMARTSTUDIO™

Appendix A - Applying Clearstar Waterbased Type C to Water Resistant canvas

Available in Matte, Semi-Gloss, Satin 30º, & Gloss

By Eric Kunsman, Booksmart Studio – www.booksmartstudio.com

The purpose of water based coatings is to help prevent users from having to use solvent based coatings, which must be applied within well ventilated environments. However, your canvas should be a water resistant canvas.

Why should we coat a canvas?
To protect canvas from the elements one must coat a printed canvas print even if manufacturer states you can avoid this process. Canvas is a porous material and the coating helps prevent pollutants from effecting the final printed image.

How do I apply a waterbased coating to a canvas?
There are many methods for applying coatings to your canvas to protect it after printing. It is always a good idea to protect your canvas prints after you allow for outgassing of the inks. To allow your prints to out gas you should wait 24-48 hours after printing to coat your canvas.

Types of Coating Techniques

• Elective Pretreatment
Some individuals will treat the canvas with a precoat of solvent aerosol such as Clearstar Type AFA or A2000 and then apply further coats with brushes or rollers. This helps those individuals that apply a lot of pressure during the coating process to prevent the removal of ink on the print.

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• Rollers & Brushes

The use of soft rollers can be used very effectively to apply waterbased coating evenly on water resistant canvas. Some individuals prefer to work with brushes to allow for either even application of possibly to introduce a minimal texture.

• Spray Application

The use of spray equipment can always be used to apply coatings to canvas. However, the Clearstar Type C needs to be diluted to allow for lower pressure spray guns. Many solvent based coatings actually have a diluted version for spray application compared to the brush & roll on. Even if you have access to a higher pressure spray gun you may want to dilute your waterbased coating to allow the coating to go further and create a even coating.

The following document explains how to use soft rollers with the Clearstar Type C coating on water resistant canvas. This process is one that any artist, photographer, or printer can apply without additional equipment needing to be purchased. It is also one of the easiest to apply in our opinion.

Materials Used: Clearstar Type C Gloss

Applicator: Smooth Foam Roller with coating in Roller Tray

Pour the liquid Type C into the tray and soak the roller in it. Remove the excess liquid by rolling the roller over the textured section of the pan.

Gently glide the roller over the canvas to cover the area of the canvas, start on one side and work towards the other side of the print. Once the coating starts to dry it becomes thicker and the roller should not be run over it again until it is completely dry. Otherwise, you may add texture to the coating due to the viscosity of the coating.

Apply multiple coatings to build the desired look to the canvas. Due not exceed 4 coats of the Clearstar material or the canvas may crack during stretching due to the coating and NOT the canvas.

In this test we are using Canson Artist Water Resistant Matte and coating with ClearStar Type C coating.
The print was created with an Epson 7880 with matte black ink and out gassed for 18 hours before coating.

Original Canson Artist Water Resistant Matte canvas without coating

Matte canvas with Clearstar Gloss Type C coating

This test displays shows the results utilizing a Canon iPF9000 printer with Lucia inks on the Canson Artist Matte Canvas. But the canvas was also tests with Epson Ultrachrome inks and HP vivera inks. We used the Type C Gloss coating to test whether the Gloss coating would affect the ink. It is always a good idea to perform your own test on different canvases.