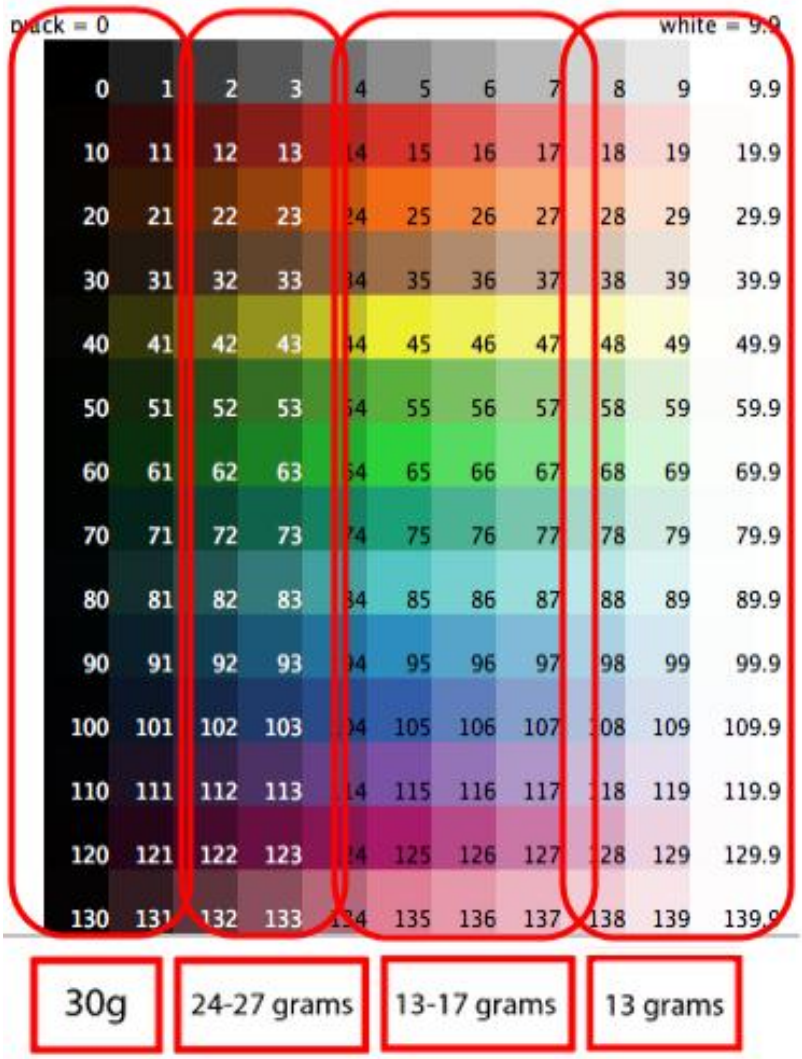
Pre-Treat curing & garment color profiling

The following shirt color chart will help with the ranges. Please note that the weight of the shirt may also determine the amount of pretreat. A lighter weight of a color may require lesser amount of pre-treat for the window it falls into. This is a very good starting point but you will need to setup and profile for your product(s) and conditions in your facility.
NOTE:
It is very important to know that certain colors can and will cross over into dark or light gram settings and profiles. Depending on the brand and color you may need to pre-treat a dark color like a light color and vice-versa. The only way to determine this is when you see issues. This is a worldwide known issue and there is no other way of knowing if the shirts you have ordered are defective or contaminated upon visual inspection. Whenever a sealer such as (Scotchguard) pre-treat and laundry detergent are introduced to garments they act as an “activator” and will reveal flaws if any in the garment(s).

Note: The numbers within the color ranges are garment color indicators they are for visual only and not intended to be used in conjuction with the pretreatment profile settings.



Standard pretreatment profiling:
This is your initial profiling information and depending on your work volume it is recommended to re-profile your color garments gram settings weekly to monthly as needed. This pre-treat looks “milky white” and should never have any other color variance or look to it when mixed or in use. If you do see a color variance it is contaminated. It must be discarded immediately and replaced with a new mix. The container(s) used must also be completely cleaned of contaminants or replaced.

<u>14”x16” or 14”x14” spray area</u>
Dark colors: 30 grams
Medium colors: 24 – 27 grams
Light colors: 14 – 17 grams.
Some light colors may need to be 13 or 10 grams to avoid heavy halo and or scorching. This may be needed depending on the brand(s) used. Colors and brands react differently depending on the manufacturer and where the shirts we made. Because garments are manufactured in different regions of the country and world the waters used in conjunction with the dying processes will show a difference in the final print and wash-ability. Some pre-treat machines are only able to provide as light as15 grams minimum. Contact your pre-treat machine manufacture for further details.

Curing Pre-treat (heat press) = 35 sec at 356 F (180 C) with 75 – 80psi
Curing Ink (heat press) = 35 sec at 356 F (180 C) with 10 – 20psi
Curing Ink (Dryer) = 3.30 minutes at 320 F (Time is while garment is in dryer tunnel only).

Pre-treat mixing ratio:
The following is the mixing ratio of the Brother concentrated pretreatment for the end user and is intended for the Brother brand of GT garment printers. The pretreatment comes concentrated and needs to be diluted. The ratio of mixing is 1:2, 1 part pre-treat to 2 parts distilled water. Weigh out a predetermined amount of concentrated pre-treat (i.e. 16L) then add double the weight of the distilled water (i.e. 40L). So putting this all together the formula looks something like this.

Mass (weight): 56L (60kg) **=>** *16L (20kg) CPT* **+** *20L (20kg) distilled water* **+** *20L (20kg) distilled water*

Many customers’ use the Volume Formula for mixing pre-treat, but the preferred method for mixing pre-treat is the Mass Formula. The reasoning behind using the Mass Formula is that you get more mixed pre-treat then with the Volume formula. See the formula below for comparison.

Volume: 48L (52kg) **=>** *16L (20kg) CPT* **+** *16L (16kg) distilled water* **+** *16L (16kg) distilled water*

Also by using the Mass Formula it can help with slight scorching that might be seen on lighter color garments (Light blues, Pinks, Heather Grays, etc). Be sure to agitate the mixed pre-treat daily (stir well) and use up promptly. Always use only “distilled water” and only mix and use as needed for your production volume. Never mix for shelving or storage. Using other pre-treat brands may result in low white ink vibrancy and or wash-ability issues. Brother pre-treat solution is intended for use with Brother Inks and Brother Garment printers only.

Setup profiling of T-Shirt grams:
Weighing the pre-treat solution lay down on the garment as follows.

1. Use a scale that has gram settings, always profile in “grams”
2. Turn your scale on and set to grams, make sure your scale is calibrated correctly (refer to manual). You can use a US five cent Nickel to verify as it weights five grams and will let you know If the scale needs recalibrating (refer to the scale manufacture’s manual).
3. Set a “dry” T-shirt on the scale and zero it out (some scales my read “Tare” to zero out) this will allow you to weigh only the pre-treat solution on the shirt.
4. Pre-treat the shirt fold or roll it up then set it on the scale “wet”. This will give you the exact amount of pre-treat that the pre-treat unit has sprayed onto the shirt.
5. Repeat the process as needed until you get the correct amount of grams needed for that color shirt. Move on to the next color shirt profiling until you have completed the process for each color settings according to this guide.

Depending on which brand and model of pre-treat machine you have the instruction manual will give you starting points for shirt colors to grams. Start with those instructions until you hit the gram levels listed for Brother profiling. Now you will be set to each color of t-shirt for its respective grams. It is important to profile by garment color as this does make a difference on the end result. Make sure the pre-treat machine is set to the proper spray amount, the initial setting (profile) needs to be done on a 14”x16” area. Some pre-treat machine brands may use a 14”x14” area be sure to check with the manufacturer’s instruction manual. Never use a shirt that has print of any kind, embroidery or contaminated in any way when setting your initial profiles. You will get inconsistent readings and weights and will have issues with failure on the printed results.

Pre-treat and ink curing settings:
After initial setup, when changing the spray area size on the pre-treat machine the pre-treat lay down will adjust itself accordingly. These new profiles will resolve the printing issue you may have experienced with light color garments. It is recommend that you perform wash testing as the profile conditions listed may change with different curing devices. Use a temperature gauge (probe) for consistency on your dryer and thermal labels (heat strips) on a regular basis to test for consistent heat on the press(s). You can find these items by Googling the internet. When using heat press(s) for high volume production always make sure to allow your heat press(s) time to ramp back up to the appropriate temperature (356 F / 180C) in between garment presses or you will not cure the pre-treat or ink 100%. This will cause failure on the wash-ability of the product and garments. If your printing production volume is medium to high we recommend using more than one press to guarantee heat temperature consistency.

Yellowing color on a shirt is from the heat press being too hot (scorching), pre-treat mixture is not at 2 to 1, or contaminated pre-treat. Verify that the temperature on the press is at 356 degrees and time set for 35 second. Verify that the pre-treat container is not contaminated (discoloration, dirt, lint, debris) if it is, dispose of it and use a clean and or new container. Verify that the pre-treat is being agitated (shaken well) and mixed correctly prior to use on a daily basis prior to pre-treating.

Printing on 100% polyester and blend T-shirts:
Refer to the section on (Polyester pretreatment profiling) for 100% polyester garments.
White ink will not work on 100% polyester or synthetics. When using white ink to print on blend garments you need to know the following. The percentage of cotton must be higher than that of the polyester or synthetic material, for example 80% cotton/ 20% polyester. This is because our inks and pre-treat solution is water base. When printing from a rage of 90/10 to 80/20 or less of a blend the white ink will retain its vibrancy and wash-ability very well. A blend of 50/50 will print and look good when wet prior to curing the ink but the quality and wash-ability will be poor. We don’t recommend 50/50 or higher when printing with white ink.
NOTE:
Printing with white ink on blends regardless if you use color ink in the image being printed will always look weaker than 100% cotton. Again this is due to 100% water based inks printing on a blend of organic and synthetic material. The water base ink will retain 100% on the organic part of the fabric but not on the synthetic.

Polyester pretreatment profiling:
This pre-treat is specifically designed for 100% polyester and blend garments. It is for ***color ink “only”*** and does not work with white ink. This pre-treat is clear and is ready mixed, it does not need diluting. The bottle comes with instructions on the back label. Unlike the “Standard pretreatment” it is forgiving in its use and can be applied using a typical spray bottle but you must test prior to using this method in production. It improves the vibrancy detail and depth (strength) of the color inks when used correctly.

It can also be used on mouse pads, coasters and other porous organic products. If you use it on 100% cotton it also works very well and will also improve the colors but may stain or pick up other garment colors during washing. Therefore if you chose to use the Ploy pre-treat on 100% cotton materials always do wash tests.

Typical use is as follows, but depending on the Poly pre-treat these settings may vary. Wash tests are recommended on all garments to determine the optimal amount of pretreatment fluid.

1. Evenly apply the correct amount of pretreatment using a spray bottle.
2. Heat press the garment for 20 to 30 seconds at 356 to 360 degrees F.
3. Print and cure using standard settings for the Brother GT printer(s).

Troubleshooting:

Poor White Ink Vibrancy

- White ink has not been agitated
- White ink daily maintenance has not been performed
- Missing nozzles; perform nozzle checks and head cleanings as needed
- Inconsistent pretreat spray on the garment
- Expired white ink or pretreat solution
- Improper mixture of pretreat solution
- Pretreat machine needs cleaning/maintenance (maintenance should be done weekly)
- Incorrect Design Mode, CMYK/RGB (Images must be edited and worked in RGB mode only)
- Contamination of Pretreat Solution

Scorching

- Improper pretreat amount or mixture
- Light weight fabric (too light for spray amount)
- Distilled water not used in the mixture
- Temperature setting too high
- Inconsistent heat press elements or temperature control (check press heating element)
- Brand of shirt needs testing and possible pretreat solution dilution
- Improper temperature or time setting of the heat press
- Improper temperature or time setting of the conveyer dryer
- Contamination of Pretreat Solution
- Some color and brands may need to be pre-treated with light setting

Wash-ability

- Incorrect ink curing settings: time, temperature. pressure
- Excessive pretreat application, can't cure properly (pre-treat and or ink over saturation)
- Improper washing methods (end user abuse of garment)
- Over use of detergent or other fluids in the wash cycle
- Incorrect ink settings: Highlight and Mask, for the design
- Contamination of Pretreat Solution