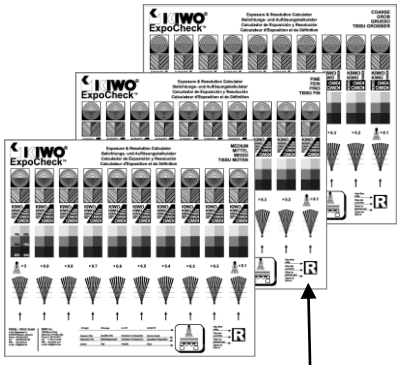
# KIWO ExpoCheck™ Instructions

The KIWO ExpoCheck consists of three film positives of different resolution and a neutral density (grey) filter film. The combination not only allows for the determination of the exact exposure time and exposure tolerances, but also the degree of printability of any artwork on the respective mesh count.

**ExpoCheck™ Instructions:**

1) Choose the appropriate resolution film – coarse, medium or fine

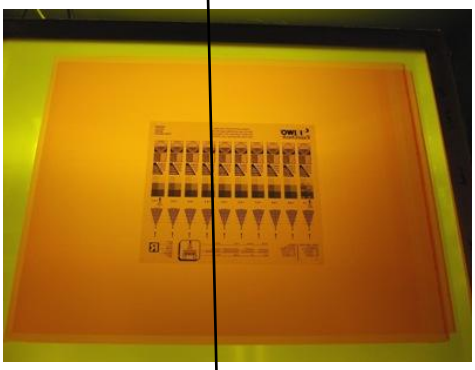


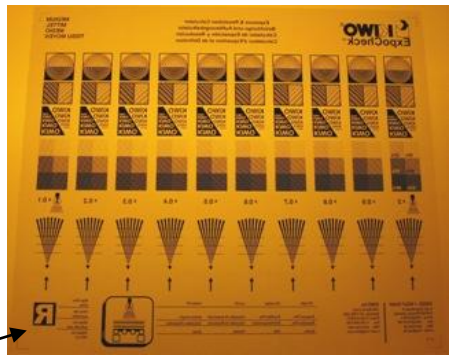
Choose the Resolution Film that best represents your artwork for your given mesh count. Follow the guide below to determine the most appropriate artwork resolution to mesh relationship.

| Resolution Film | Mesh Count tpi (tpcm) | Thread Diameter |
|---|---|---|
| Coarse | 110 & ▼ (43 & ▼) | 80 microns or ▲ |
| Medium | 110 – 260 (43 – 102) | 40 – 80 microns |
| Fine | 260 & ▲ (102 & ▲) | 40 microns or ▼ |

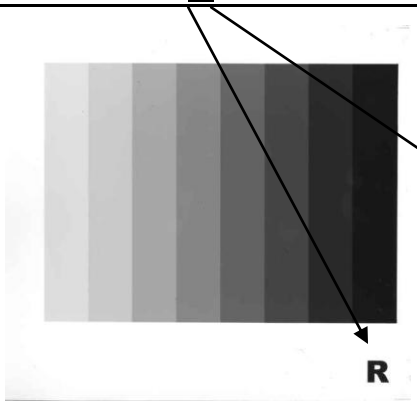
**KEY**: tpi = Threads per inch, tpcm = Threads per centimeter

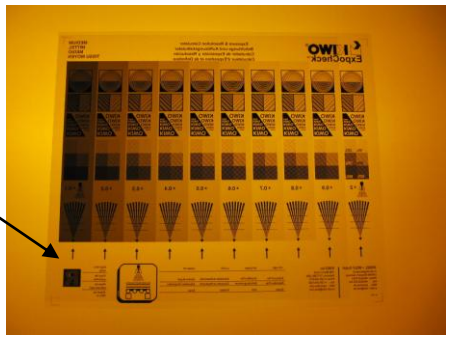
2) Place the resolution film onto the screen face down in the usual orientation - emulsion (right reading) side down





3) Place the neutral density filter film (below left) over the already positioned resolution film, aligning it with the R



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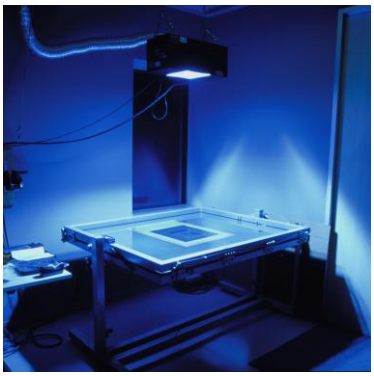
## 4) ExpoCheck test exposure – expose for double the approximate exposure time

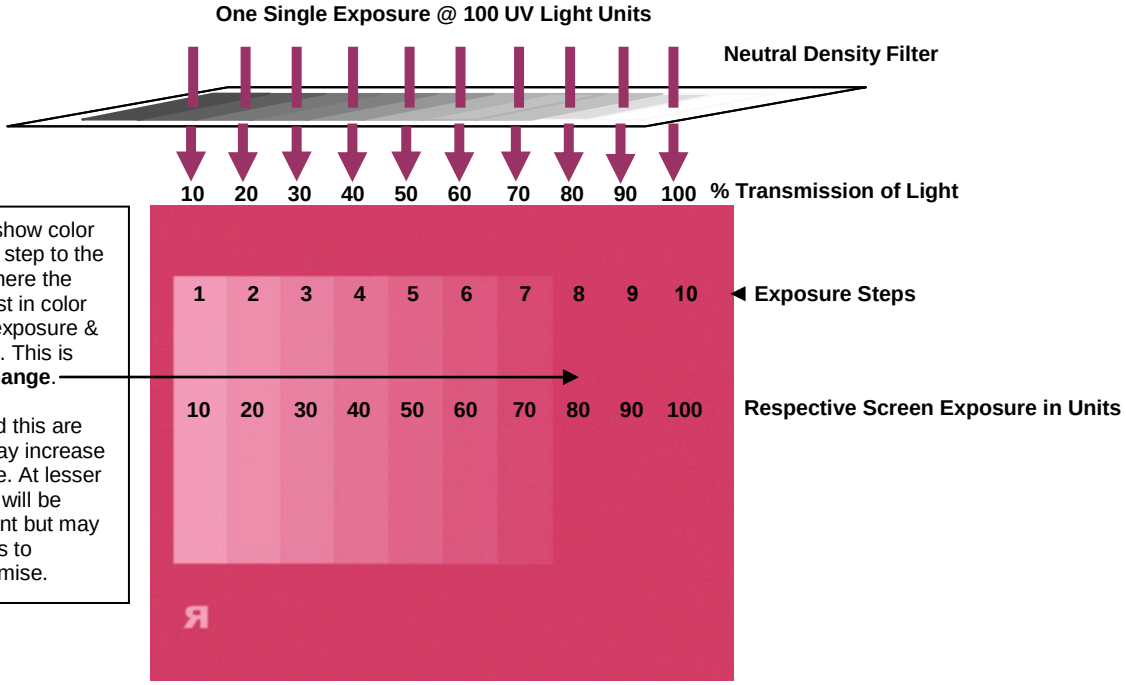


An approximate exposure time may be determined by experience, previous trials, or by contacting KIWO for assistance. Note your test exposure time for use in calculating optimum exposure in step 9.

By using the neutral density filter, 10 incremental exposures are created in one step, enough for evaluating a broad range of exposure times from under to over exposure. See example below.

Doubling the approximate optimum exposure time theoretically places the optimum exposure in the middle of the 10 steps. However, as the example illustrates, the optimum exposure may often fall a few steps away from the middle 50% step in either direction since the test exposure time was derived from an *estimated* exposure time.

Example:




The processed stencil will show color variations from one density step to the next. The exposure step where the stencil first becomes darkest in color indicates where complete exposure & full stencil hardness occurs. This is referred to as **No Color Change**.

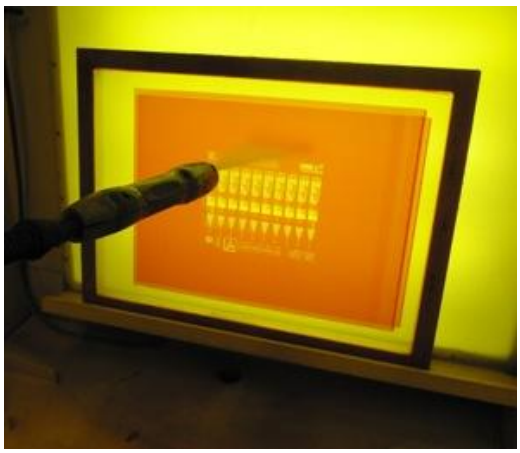
Exposure times that exceed this are usually unnecessary but may increase durability and ink resistance. At lesser exposure times, the stencil will be weaker and less ink resistant but may hold finer details. The key is to determine the best compromise.

## 5) Develop/wash out and dry the stencil

A. Start by fully wetting both sides of the screen, and then begin developing the image from the screen's substrate side. Finish with a final rinse on the squeegee side to remove any remaining emulsion residue.

B. Remove excess water from the screen by vacuuming, blotting, or use of compressed air.

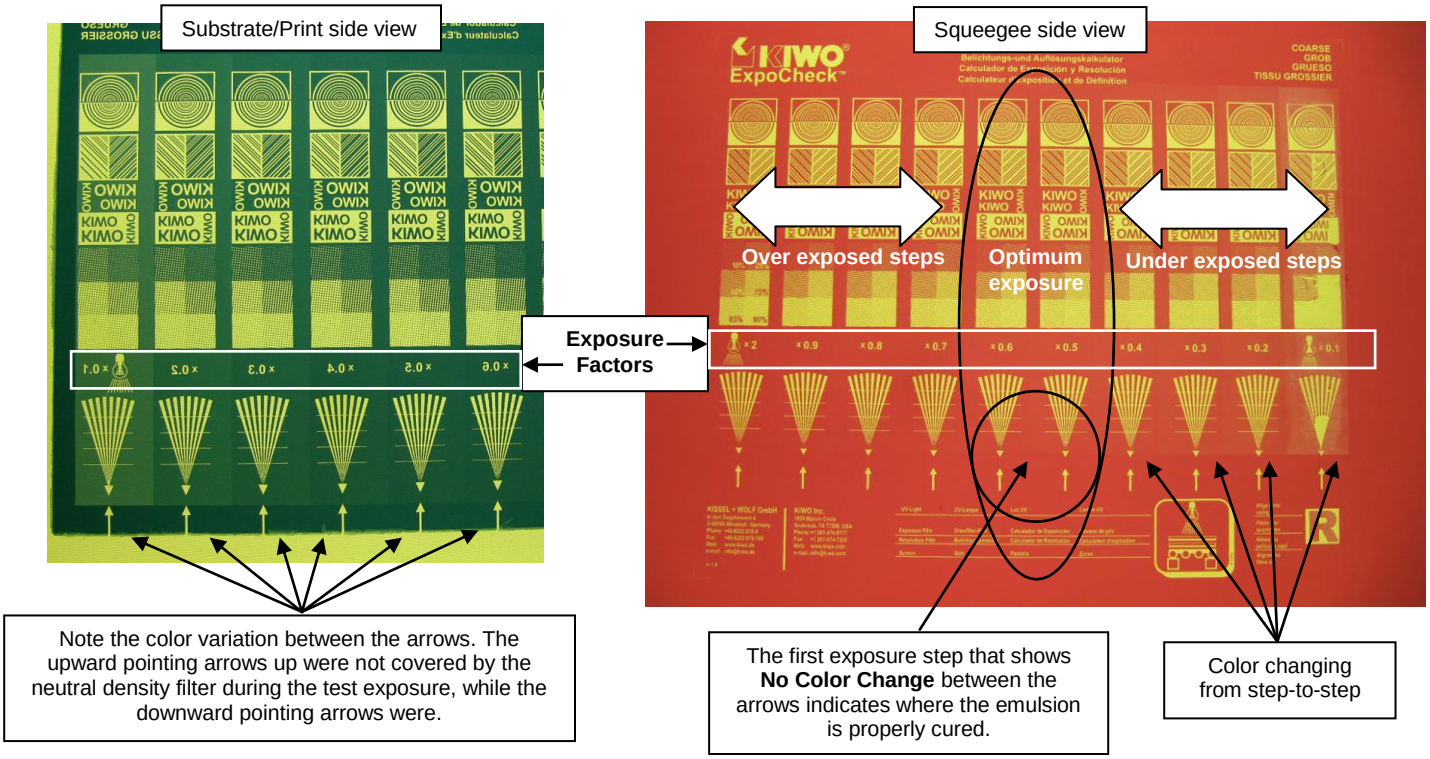
C. Allow the stencil to completely dry before moving on to the next step.*



* Unless you plan to use the stencil for printing water-based inks. If so, determine stencil hardness (described in step 6) *before the stencil dries* to maximize stencil durability/resistance.

## 6) Determine level of exposure (stencil hardness)

A. By looking between the upward and downward facing arrows, beginning with the first exposure step located above the R, determine at which exposure step there is no discernible color variation **(no color change)** between the arrows. This indicates approximately where you'll find your optimum exposure.
B. Mark or note the **exposure factor** (x0.1, x0.2, x0.3, x0.4, x0.5, x0.6, x0.7, x0.8 x0.9, x2) associated with the **no color change** step, as it will be used to calculate exposure times in step 9 below.
C. If you determine the resolution achieved from this exposure step meets or exceeds the resolution required for your production artwork, jump to step 9 to calculate optimum exposure time.

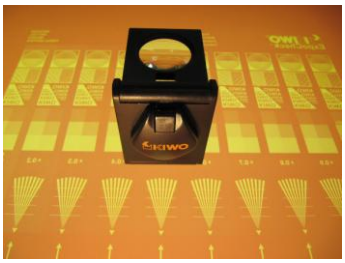



## 7) Retest if necessary

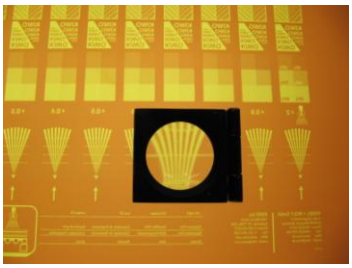
If the emulsion color changes throughout all 10 steps, the test exposure time chosen was too short. Repeat test using double the original test exposure time, as indicated in step 10 by the exposure factor (x2).

Conversely, if you cannot see any changes in color across all 10 steps (even at step 1 located above the R, the test exposure time chosen was too long. Repeat test using 10% of the original test exposure time, as indicated in step 1 by the exposure factor (x0.1).

## 8) Determine level of resolution



Evaluating the fan shaped concentric lines is a quick means to show resolution differences between the ten exposure steps. With under-exposure, the smallest lines at the base of the fan may wash away (not anchor to the threads). With over-exposure, these lines will fill in.



A. Evaluate the stencil's resolution, edge definition, and mesh bridging for all 10 exposure steps.
B. Determine the exposure step that best reproduces the artwork in both positive and negative detail.
C. Mark or note the matching exposure factor.
D. Compare this best resolution step with the no color change step established in step 6.
E. If no discernible differences are seen, use the exposure factor of the no color change step to calculate your optimum production exposure.
F. If no color change step does not meet or exceed the resolution required by your production artwork, assess each lower exposure step until the resolution requirements are met and then use its exposure factor to calculate the optimum exposure.

**TIP:** Use the no color change step whenever possible, as it will provide stronger more resistant stencils with fewer pinholes and breakdowns.

## 9) Calculate exposure

To calculate optimum production exposure, multiply the exposure factor of your desired step determined in 8E or 8F above by the test exposure time. For example:

| Exposure Factor of Desired Step | x | Test Exposure Time | = | Optimum Exposure Time |
|---|---|---|---|---|
| 0.5 | x | 10 minutes | = | 5 minutes |

| If desired exposure step is: | | Test Exposure Time | | Then optimum exposure is: |
|---|---|---|---|---|
| 0.4 | x | 10 minutes | = | 4 minutes |
| 0.3 | x | 10 minutes | = | 3 minutes |
| 0.2 | x | 10 minutes | = | 2 minutes |
| 0.6 | x | 10 minutes | = | 6 minutes |
| 0.7 | x | 10 minutes | = | 7 minutes |
| 0.8 | x | 10 minutes | = | 8 minutes |

## 10) Print & Evaluate (Optional)

Examination of an incrementally exposed stencil is a quick and useful way to determine exposure. Ultimately, however, the only conclusive way to determine optimum exposure is to make and evaluate an actual test print made with the stencil.

More information on exposure related topics can be found in the articles section on our website www.kiwo.com.