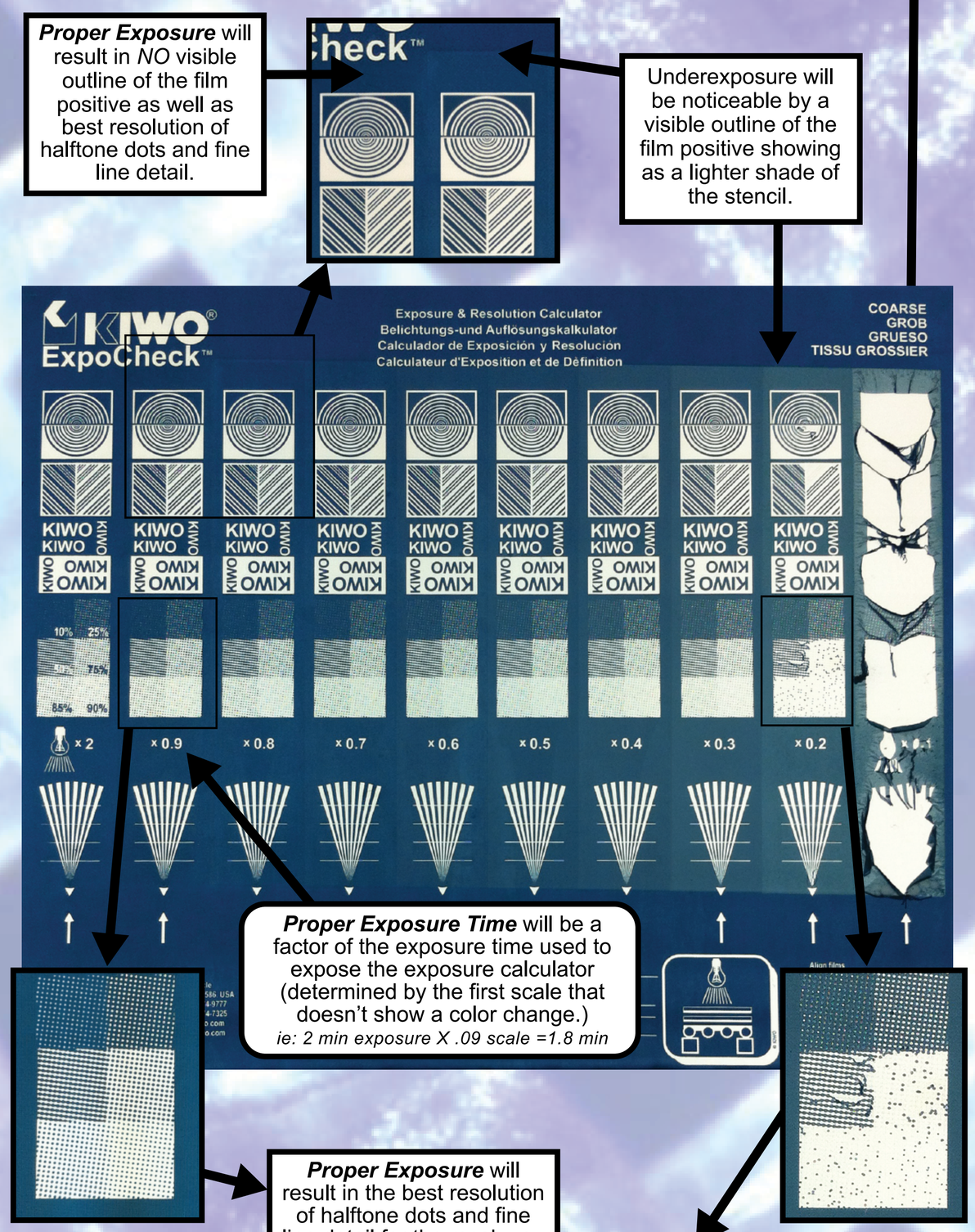
A GUIDE TO BETTER SCREEN MAKING

EXPOSURE CALCULATOR = AN ESSENTIAL TOOL FOR BETTER SCREENS

An exposure calculator is an essential tool for quickly finding the appropriate exposure range for a given screen making process. The user simply evaluates the screen to determine the optimal exposure. There are several manufacturers and types of exposure calculators available.

Proper Exposure will result in *NO* visible outline of the film positive as well as best resolution of halftone dots and fine line detail.

Underexposure will be noticeable by a visible outline of the film positive showing as a lighter shade of the stencil.



Proper Exposure Time will be a factor of the exposure time used to expose the exposure calculator (determined by the first scale that doesn't show a color change.)
ie: 2 min exposure X .09 scale =1.8 min

Proper Exposure will result in the best resolution of halftone dots and fine line detail for the mesh you are using.

Underexposure will often result in a weaker stencil, making small halftone dots or fine line detail difficult to hold when rinsing out.

Ask for our free
Finest Line Mesh Finder
Printed on inkjet film or laser film.
This tool will help you determine the finest line size that should be exposable for most common screen mesh counts.

Finest Line Mesh Finder

These are the finest lines and spaces you should try to expose on different mesh counts.

83	110	137	156	175	195	230
.020	.016	.014	.012	.010	.009	.007

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Exposure Time Variables

Dyed Mesh = 1.5X-2X exposure of white mesh

Mesh Thickness
coarser mesh = longer exposure
finer mesh = less exposure

Distance of Light Source to Screen
closer = faster exposure
farther away = longer exposure

Most emulsion data sheets give exposure times for a distance of 40" from screen to light source. Use the factors below for exposures at different distances.

at 20" normal exposure X .25	at 48" normal exposure X 1.44
at 24" normal exposure X .36	at 52" normal exposure X 1.69
at 28" normal exposure X .49	at 56" normal exposure X 1.95
at 32" normal exposure X .64	at 60" normal exposure X 2.25
at 36" normal exposure X .81	at 72" normal exposure X 3.24
at 40" normal exposure X 1.00	at 84" normal exposure X 4.41
at 44" normal exposure X 1.21	at100" normal exposure X 6.25

TROUBLESHOOTING

Image Washes Off

Screen is underexposed:
- Insufficient exposure times - perform exposure calculation.
- Thicker coating of emulsion requires longer exposure.
- Exposure lamps old or not working properly.

Other symptoms of underexposure:
- Outline of film positive edge is visible as color change in stencil.
- Excessive foam and scum on squeegee side of screen during washout.

Other possible causes of stencil breakdown:
- Moisture in stencil due to insufficient drying or excessive humidity.
- Screen degreased improperly or incompletely.
- Emulsion sensitized incorrectly, outdated, or subjected to freezing.
- Incorrect washout- avoid excessive hot water, pressure, or time.

Image Hard To Wash Out

- Screen is overexposed - perform exposure calculation.
- Insufficient black density of film positive.
- Poor film to emulsion contact - check vacuum.
- Outdated or expired emulsion.
- Emulsion pre-exposed by ambient or excessive light.
- Emulsion subjected to excessive temperatures.
- Thinner than normal emulsion coating.
- Mesh too coarse for image detail - see ***Finest Line Mesh Finder***.

Pinholes In Stencil

- Screen is underexposed - perform exposure calculation.
- Screen degreased improperly or incompletely.
- Exposure glass, film positive, or emulsion are dirty.
- Emulsion not allowed to rest after mixing.
- Coating stroke too fast creating air bubbles in emulsion.
- Insufficient emulsion coating- emulsion not coated through screen.
- Moisture in stencil due to insufficient drying or excessive humidity.

Screen Room Tips:

- ***Make time to do it right the first time.***
- Post a log of exposures for different mesh counts used.
- Sensitize your emulsion a day before you need it.
- Clean the glass on your exposure unit daily.
- Keep screen room clean, including any fans blowing on screens.
- Don't use cardboard to scrape emulsion back into bucket.
- Keep emulsion bucket covered when not being used.
- Use the proper sized (clean & nick free) coater for the frame size.
- Coat screens consistently using proper technique and coater edge.
- Coat the substrate side of the screen enough times to see emulsion coming through other side. Coat squeegee side last as needed.
- Dry screens squeegee side up / substrate side down.
- In high humidity, emulsions swell and become thicker... therefore need longer dry times, longer exposures, & hold less resolution.
- Check film positives regularly for proper UV blocking density.
- If you have a two-piece exposure system, mark the floor for a visual check on distance to be consistent.
- Take "time-out" to ensure trouble free screens. Improper procedures can lead to poor screens which can be more costly in the end.

Fundamentals Of A Better Screen

- A screen should have adequate, even tension.
- A stencil should have a consistent coating that is properly dried.
- A screen should have a quality positive to expose properly.
- Exposure should be consistent.
- Washout should be thorough.

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