

QUICK MODE

1. Estimate the likely time T.
2. Step = $T \times 1.5 / 10$.
3. Expose band 1, then 1+2, then 1+2+3...
4. Develop, then choose the sharpest band.
5. Final time = $(11 - \text{band no.}) \times \text{step}$.

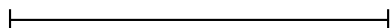
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EXPOSURE CALCULATOR

Screen printing — 10-band exposure test

Single test film — realistic 45° halftones

Print at 100%, maximum black, no page scaling.



Scale check: this ruler must measure exactly 50 mm

45° HALFTONES (%)					TEXT	POSITIVE LINES (mm)						GAPS (mm)					SOLID		
20	35	50	65	80		0.3	0.5	0.75	1	1.5	2	0.5	0.75	1	1.5	2			
1						8 10 12 A.BUISINE 18													
2						8 10 12 A.BUISINE 18													
3						8 10 12 A.BUISINE 18													
4						8 10 12 A.BUISINE 18													
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EXPOSURE CALCULATOR

Cumulative method, 10 bands

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INSTRUCTIONS & DIAGNOSIS

Screen printing — choosing the right exposure time

Quick formula

$$\text{Step} = T \times 1.5 / 10$$

$$\text{Final time} = (11 - \text{chosen band}) \times \text{step}$$

Example: $T = 120 \text{ s} \rightarrow \text{step} = 18 \text{ s}$. Chosen band 5 $\rightarrow$ final time = 108 s.

1 Prepare the test

Print the test page at 100% on transparent film, in the most opaque black possible. Turn off fit-to-page and check the 50 mm ruler.

Coat and dry the screen as usual. Place the film black side against the emulsion for the best optical contact.

2 Expose the bands

- 1 Cover all bands except band 1.
- 2 Expose for one step.
- 3 Then uncover bands 1+2 and expose for one more step.
- 4 Continue to band 10, then develop as usual.

3 Choose the right band

Correct exposure

Sharp edges, legible text, open halftones, solid fills after development.

Under-exposure

Fragile emulsion, detail too open, soft edges, veiling or parts washing away.

Over-exposure

Small gaps clogged, detail hard to open, fine text that won't develop.

4 Workshop sheet to complete

Date	
Emulsion	
Mesh	
UV source	
Lamp-screen distance	
Likely time T	
Calculated step	
Chosen band	
Final time	
Notes	

Tip

Keep one sheet per emulsion / mesh / lamp / distance combination. The result only holds if these parameters do not change.

EXPOSURE TIME

Step test, guides by UV source and quick diagnosis

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HowTo

Related products: emulsion

Related products: exposure

Method: step test

Direct answer

The correct exposure time fully hardens the emulsion without closing fine detail. It depends on the emulsion, UV power, lamp–screen distance, film opacity and coating thickness. The only reliable method is the step test: expose bands at increasing times and keep the first zone that is firm on development, with cleanly open detail.

Practical guide — fastest to slowest

Speed	Light source	Photopolymer / pre-sensitised	Diazo / two-part	Workshop note
1	Metal halide 3000–5000 W	10 to 40 s	30 s to 1 min 30	Very fast, suited to busy shops. Excellent UV output with good vacuum contact.
2	UV LED 395–405 nm — compact frame	45 s to 2 min 30	2 to 6 min	Efficient and economical. Times vary widely with real power, distance and LED quality.
3	UV mercury vapour	1 to 3 min	2 to 5 min	Efficient but hot UV source. Watch heating, film warping and loss of contact.
4	UV blacklight fluorescent tubes	2 to 5 min	8 to 10 min	Use genuine UV tubes around 350 nm. Tubes age and crossing light can reduce resolution.
5	HPR bulb / compact UV lamp	8 to 10 min	12 to 16 min	Efficient but narrow beam. Use several bulbs or more distance for large formats.
6	500 W work-site halogen lamp	6 to 10 min	12 to 20 min	Stop-gap only. Very hot and poor in usable UV: a bad choice for regular use.

Step-test steps

1. Coat and dry the screen.
2. Place the calculator on the screen, film black side against the emulsion.
3. Mask the bands and uncover one more band at each step.
4. Expose with perfect film/screen contact, then develop with a low-pressure jet.
5. Keep the first time giving a firm emulsion with open detail.

Quick diagnosis

Under-exposure: soft, soapy emulsion, soft edges, fragile stencil or one that washes away.

Over-exposure: small text, fine lines and gaps that no longer open. Also check the positive's opacity.

Correct exposure: solid fills, sharp edges, open halftones and clean detail after development.

Mind the exposure distance

Always keep the same lamp–screen distance to preserve your times. Moving the source away drops exposure sharply: as a rule of thumb, distance $\times 2$ = time about $\times 4$; distance $\times 1.5$ = time about $\times 2.25$. Always note the distance used along with the emulsion, mesh and UV source.

To complete	Workshop value	Note
Emulsion type	diazo / photopolymer / dual-cure	Same brand and same coat = reproducible time
UV source and distance	LED / metal halide / tubes / HPR / other	Don't compare two times at different distances
Mesh and coating	mesh + number of coats	The thicker the coat, the longer the time can get