

TechLines

Technical Information Sheet

EPP4

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Line Screens for Halftones, Tints and 4/Color Images; Minimum/Maximum Dot Sizes for Halftones

RECOMMENDATIONS AS DETERMINED BY PRESS AND PAPER

For Sheet Press Reproduction

Coated stocks	175 line screen preferred up to 200 available	Halftones, duotones. 4/color images – allow 15% dot gain,* use UCR** at 300% total ink limit, 94% black limit.
	133 line screen	Recommended for tint screens. This screen value improves the reproduction of solid color type and art elements in a same-color screen.
Coated stocks to be UV coated		4/color images must use UCR at 280% total ink limit, 94% black limit to ensure adhesion.
Uncoated stocks	133 line screen	Halftones, duotones. 4/color images – allow 20% dot gain, use UCR at 270% total ink limit, 94% black limit.
	120 line screen	Recommended for tint screens. This screen value improves the reproduction of solid color type and art elements in a same-color screen.
Halftone Endpoints***	3% highlight dot	94% shadow dot

For Heatset Reproduction

#1, #2, #3 Coated	175 line screen	Halftones, duotones, tint screens. 4/color images – allow 19% dot gain at the 50% dot, UCR at 310% total ink limit, 94% black limit. ➤
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* **UCR (Under Color Removal)** – a procedure in the 4/color scanning process that removes the three process colors in dark areas and replaces them with an increased amount of black. The total ink limit is the sum of the screen values of each of the four process colors in the darkest area of the separation.

** **“Dot gain at the 50% dot”** – In offset lithography, the dots that make up halftones and tint screens increase in size due to successive film generations and the interaction between light and paper. The greatest amount of gain occurs in dots that are 30% to 70%. The dot gains listed above occur at the 50% dot. *For more information, please request our TechLines Sheet The Mystery of Dot Gain Explained (EPP6).*

*** **ENDPOINTS:** the specific size of the dot in the darkest (shadow) part and the lightest (highlight) part of a halftone. If the highlight number is lower than suggested, the area will most likely print without a dot. If the shadow number is higher than suggested, the area will most likely print as a solid black.

#4 & #5 Coated	150 line screen	Halftones, duotones, tint screens. 4/color images – allow 19% dot gain at the 50% dot, UCR at 300% total ink limit, 94% black limit.
Super Calendered & Uncoated Offsets	133 line screen	Halftones, duotones, tint screens. 4/color images – allow 22% dot gain at the 50% dot, UCR at 270% total ink limit, 90% black limit.
Halftone Endpoints		3% highlight dot 93% shadow dot

For Coldset/Non-Heatset Reproduction

Offsets	133 line screen	Halftones, duotones, tint screens. 4/color images – allow 30% dot gain at the 50% dot, UCR at 260% total ink limit, 90% black limit.
Groundwoods	120 line screen	Halftones, duotones, tint screens. 4/color images – allow 30% dot gain at the 50% dot, UCR at 245% total ink limit, 90% black limit.
Newsprint & Directory	100 line screen	Halftones, duotones, tint screens. 4/color images – allow 30% dot gain at the 50% dot, UCR at 235% total ink limit, 90% black limit.
Halftone Endpoints	3% highlight dot	92% shadow dot for black in halftones & duotones 85% shadow dot for Pantone colors in halftones & duotones

Image resolution

Image resolution is determined by the recommended line screen for each press and the available stocks.

For an output line screen less than 150 lines per inch (lpi), we recommend a minimum “quality factor” of 2. For example: for projects printing on uncoated stocks where plates/film will be output at 120 lines per inch (lpi), set the image resolution to at least 240 dots per inch (dpi) – **the lpi times 2.**

A quality factor of 1.5 can be used for 150 lpi or greater since these screen frequencies can resolve finer details.