

# TechLines

## Technical Information Sheet

EPP3

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Updates in RED

## 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	<b>UV Coated</b>	4/color images <b>must</b> 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.
Halftone endpoints***	3% highlight dot	94% shadow dot

#### For Heatset Reproduction

#1 & #2 Coated	175 line screen	Halftones, duotones, tint screens. 4/color images – allow 19% dot gain at the 50% dot, UCR at <b>340% total ink limit</b> , 94% black limit.
#3 Coated	<b>150 line screen</b>	Halftones, duotones, tint screens. 4/color images – allow 19% dot gain at the 50% dot, UCR at 310% total ink limit, 94% black limit.
#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 Offset	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

Offset	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.
Groundwood	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 7 duotones.

## IMAGE RESOLUTION

### Image resolution is determined by the recommended line screen for each press and 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 will be output at 120 lpi, set the image resolution to at least 240 dots per inch (dpi) - **the lpi X 2**.

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

\* **UCR (Under Color Removal)** — A procedure in the 4/color scanning & adjusting 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 the interaction between ink and paper. The greatest amount of gain occurs in dots that are 30% to 70%. The dot gains listed occur at the 50% dot. *For more information, please refer to our TechLines Sheet **The Mystery of Dot Gain Explained**.*

\*\*\* **Endpoints** — The specific size of the dot in the darkest (shadow) and lightest (highlight) part of a grayscale image. 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 black solid.