About dot shapes

You can specify the dot shape in the **Calibration & Screening** section of output process templates.
Note: This topic only applies to regular (rational tangent) screening. For IS screening, see IS screening.

With CTP there is little difference between dot shapes in the plating process, but there are some subtle differences on press.

In film workflow, mechanical gain in the imaging and plating process exacerbated mechanical gain on the plates and caused nonlinearities where neighboring dot structures touched, causing a tonal jump right on the plate. This problem was further compounded by mechanical gain on press, leading to even larger visual tone jumps where the dots met.

Thermal CTP eliminates all mechanical gain in the plating process. Even where neighboring dot structures touch, there is no bleeding of the pixels or dot shape into one another, like there is in an analog and/or Gaussian-based exposure system. The result is accurate tonal reproduction onto the plate, so that Round, Euclidean, and Elliptical all produce the same physical dot area on the plate. However, there are subtle mechanical differences between the dot shapes, based on how they respond on press, because the compounding effect of plating gain has been eliminated and the tone jumps are not nearly as obvious.

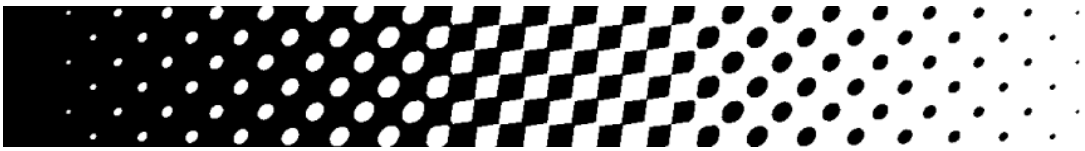
The accuracy of pixel-for-pixel reproduction, and therefore the edges of each halftone dot, is wholly dependent on the optical resolution of the device and media. For CTP devices that do not deliver accurate reproduction of each pixel, differences will be less subtle.

The choice of dot shape is more critical when the plating system produces mechanical gain or loss on plate greater than 4%. Most thermal CTP systems produce linear output and do not affect your choice of dot shapes. Photopolymer plates such as those found on violet CTP and modern high speed negative thermal plates produce measurable levels of gain on plate and users should take note of tone jumps in the tints where neighboring dot structures touch. Choosing a dot shape that avoids tone jumps in critical areas may be important in selecting the best dot shape for your print application or typical subject matter.

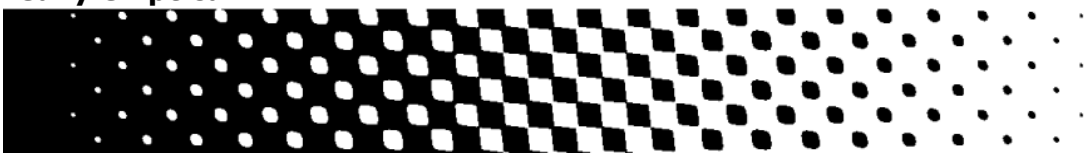
Generally, Round, Euclidean, and Elliptical dots produce similar physical dot area on the plate, but they may respond differently on press. Also, subtle mechanical differences may be seen where the dots touch.

Elliptical

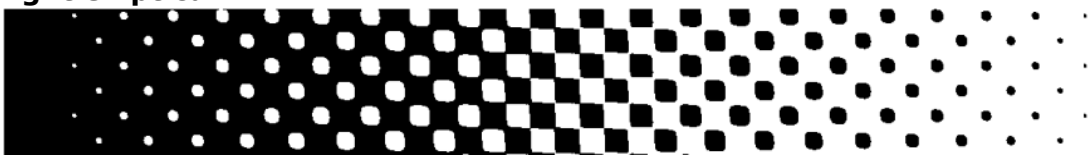
> This dot shape is used to avoid the sharp transition at 50 percent that is characteristic of the Euclidean dot shape. This is an excellent dot shape for general use. However, it is not suitable for printing flesh tones, as the chaining of the Elliptical dots at 40 percent and 60 percent may cause visible streaking in the skin tones under certain printing conditions.



Heavy elliptical



Light elliptical



Line

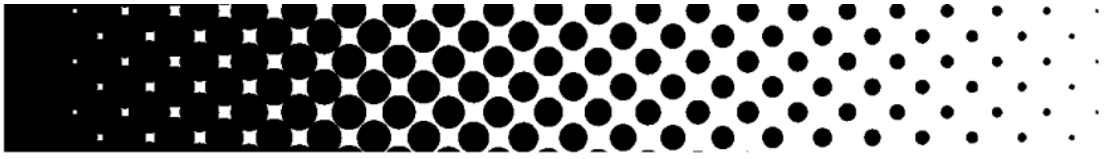
Line1

Rhomboid

This information is not yet available.

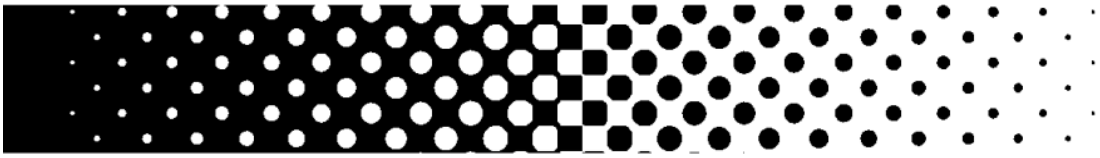
Round

This is a commonly used dot shape that gives a smooth appearance in highlights and midtones. It is commonly used in imaging flesh tones and images with high and medium key detail. Dot gain and tonal jumps can be a problem in the shadow areas, because the white space at the center of four adjoining circles can easily become filled with additional ink as the dots grow and begin touching. However, with accurate and stable imaging, shadow detail is preserved remarkably well on press.



Roundsquare (Euclidean)

Also known as Euclidean, this general purpose dot shape reduces dot gain in the shadow areas, but creates a tonal jump at 50 percent where the corners of the checkerboard touch and cause excess ink to bridge between the dots. The RoundSquare dot shape is used for general applications, where the midtone tints are not critical to the image. It is particularly suited to high and low key images.



Square

Square1