Difference Between Thermal and Direct Thermal Printing

With the recent addition of ***Direct Thermal*** (DT) and ***Thermal Transfer*** (TT) materials to our product line, you may have questions as to which type of printer is most suitable for your specific application. The information provided within this article should provide a basic understanding of the functionality behind printing technologies for both ***thermal roll label*** materials.

Direct Thermal Labels

Direct Thermal printers don't require ink, toner or ribbon.
Great for bar code applications such as shipping labels, receipt labels, and nametag labels.

Direct Thermal printers utilize a chemically treated material that blackens when the thermal print-head applies heat to the surface of the material. This type of printer requires no ink, toner, or ribbon to apply print to the label surface. Direct thermal printers are not able to print in color.

The printed area from a Direct Thermal printer can potentially fade over time. If the label is exposed to excessive light or heat the material will darken to the point that text may become unreadable and barcodes may lose their ability to be scanned. For this reason, Direct Thermal printing cannot be recommended for "lifetime" applications. While the readability of labels printed with Direct Thermal printing can vary greatly depending upon the environment that the labels are used in, the printing technology still provides enough of a lifespan for common bar code applications such as shipping labels, receipt labels, and nametag labels.

Thermal Transfer Labels

Some Thermal Transfer printers can print in color.
Its durable material makes for great long term use.

Thermal Transfer printers, on the other hand, do require a ribbon to apply print to the label surface. A thermal print-head applies heat to the ribbon, which in turn melts ink on to the label surface to create the printed image. The ink is absorbed into the label material. Thermal Transfer printing provides a very high print quality and durability when compared to other types of printing technologies. Another advantage to thermal transfer printers is the ability to print a logo, graphic or text in color using a higher-end printer.

Thermal Transfer printers have the ability to accept a wider variety of material types than their Direct Thermal counterparts. While we currently only provide paper based label material for Thermal Transfer printing, these types of printers can also print on polyester and polypropylene materials.

Because environmental factors will not alter the print quality when using a Thermal Transfer printer, this type of technology is known to create an incredibly durable printed area that can withstand extreme temperatures and contact with chemicals. The most commonly used applications for Thermal Transfer printing include product identification, inventory and asset labeling, as well as bar code labels that need to last longer than six months.

The type of printer that you require will ultimately depend upon the nature of your application. To decide between direct thermal or thermal transfer printing, consider all associated costs of maintenance as well as the lifespan needed for your labels. For example, if your printing application requires color, more durability and a longer lifespan than the obvious choice would be a thermal transfer printer. If you decide not to incur the additional expense or hassle of ribbons and need a short-term label application, than Direct Thermal may be the best available option.