



Thermal Transfer & Direct Thermal labels explained

People are often confused about the differences between direct thermal label printers and thermal transfer label printers, and which type better suits their needs. While a lot of today's models are dual mode printers, meaning they can print either thermal transfer or direct thermal, direct thermal candidates may want to consider purchasing a true direct thermal, non-dual mode printer.

To help decide whether to select a direct thermal printer or thermal transfer printer (or whether you should use thermal transfer or direct thermal labels), consider the following questions:

- Will you ever need to print labels in colours other than black?
- Do the labels need to be scanned or have a shelf-life of over 1 year?
- Will you be printing high density bar codes (i.e. limited space)?
- Will the labels be subjected to heat or sunlight?
- Will you be printing on a variety substrates (i.e. papers, films and foils)?

If you answered "yes" to any of the above questions then you should consider going thermal transfer rather than direct thermal. Here are some printer comparisons:

Thermal transfer printers

Thermal transfer printers require the use of a carbon ribbon which gets transferred onto the substrate via heat, hence the name "thermal transfer." The ribbons can be different colours, so the user is not limited to black print. The printing is very crisp and durable so this method is excellent for high density bar-codes and labels that require longevity. The other benefit is that thermal transfer printers can print on paper, film, and even foil substrates. Please note that the proper selection and match of label stock and ribbon is critical to the overall quality and performance of printed media.

Direct thermal printers

Direct thermal printers require the use of heat activated thermal papers and films, but require no ribbon. The print colour is limited to black, and the printing is not as crisp as that of thermal transfer ribbon printing. Over time the labels will darken, particularly when subjected to heat and sunlight. However, a true direct thermal label printer utilizes a print head that is made of thicker glass, for print head durability. Direct thermal printing is popular in the foods industry, since most items are stored away from heat and sunlight, and the label shelf life is less than 1 year. The primary benefit is an overall lower cost since ribbon is not required. Once the print method is determined the next step is to find the appropriate model. The following questions will help to whittle down the options:

- What is the label usage per day? If usage is over approximately 500 labels per day then an industrial printer should be considered. If usage is merely a couple of hundred labels a day, then a small table-top printer should be considered.
- What is the maximum label width and length? What is the minimum label width and length? Some printers can handle wide width labels, but why pay for a 6" wide printer if the maximum label width is only 4"? Also, certain customers may require extra large labels, so a wide-web printer may be the only option. Extra-long label lengths may require memory cards installed in the printer. Finally, different printers have different requirements for minimum size labels.
- Will the printer be used to print graphics, and/or very high density bar-codes? If so, then high resolution printers should be considered.
- Connectivity- Is USB, parallel, serial, wireless, or ethernet the best fit for your application?
- Will the printer have access to a PC? If not, then a remote system (stand-alone) should be considered. These systems utilize a keypad, and optional battery pack. The label formats are created on a PC and uploaded into the printer's memory. The formats are then recalled and printed from any location. Note that variable information can be entered into the keypad at print time, and the time/date can be automatically stamped.