

# Thermal Transfer Technology

## **How it Works:**

Thermal transfer printing creates an image by melting solid ink coated on a film ribbon and transferring it onto a receiving material. The receiving material can be an uncoated paper, a coated paper or film. Though almost all pressure sensitive label stock can be printed by thermal transfer, the best results are achieved with the use of carefully selected materials. Depending on the type of print and level of quality that customers require, a suitable ribbon must be used in combination with an appropriate and correctly set printing device.

## **Printers and thermal print heads:**

Standard thermal transfer printers use flat thermal print heads. With flat-type print heads, the time taken to transfer the ink is sufficiently long so that the receiving face material doesn't need a special coating to enhance its absorbency or smoothness. High-speed printers with resolutions of 300-600 dpi use near-edge/corner-edge print heads. At printing speed higher than 10 in/s, the ink is transferred very quickly as the ribbon is removed while the ink is still molten. With this type of thermal head, a special ribbon is required as well as a special coating on the face paper. This coating should have specific absorption properties that allow fast ink transfer but allow the paper to retain good pre-press properties, including flexographic printing.

## **Label faces and ribbon compatibility:**

The chemical and physical properties on the surface of the label stock's face material determine the type of thermal transfer ribbon that will be compatible. There are three main types of ribbons.

**WAX Ribbons:** are the most commonly used ribbon type and provide an economical solution for thermal transfer. Designed for use with flat-type print heads, wax ribbons can be used with comparatively absorbent uncoated face papers.

**WAX/RESIN Ribbons:** supply high performance for a variety of end-uses. The mechanical resistance of the printed image is very good. Wax/resin ribbons are intended for use with non-absorbent material such as coated paper and films. Wax/resin ribbons can be printed with near-edge/corner-edge print heads.

**RESIN Ribbons:** are designed for use in very demanding applications. Images printed with a resin ribbon have very high resistance to mechanical wear, solvents and heat. This type of ribbon is usually used on film face materials like PE, PP and PET.



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