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Thermal Transfer Printing

Thermal transfer printing is a process that requires thermal transfer ribbons, software and a substrate (i.e., label or tag stock). As the ribbon passes between the printhead and the substrate, the printhead is heated to melt the wax, wax-resin, or resin-based ink off of the polyester coating to transfer the image onto the substrate.

Direct Thermal Printing

Direct thermal printing also uses a print head to generate images but instead of using ribbons to transfer ink, it creates an image directly on the label or tag. Direct thermal printing requires the print head elements be in direct contact with the label material as it is pulled across the print head. This print technology uses chemically treated, heat-sensitive media that turns black when it passes under a heated print head.

TT vs DT









Thermal Transfer

Advantages	Disadvantages	
Excellent durability	Media/Ribbon loading process is not always "user friendly"	
High bar code integrity/quality-achieves highest scan rates	Multiple SKU's to purchase and store	
Prints extremely small images/bar codes		
Good achievability		
Up to 16 ips print speed		
Longer printhead life due to ribbon back		
coating		
4 color printers available		
Lower cost materials		
Variety of ribbon formulations for diverse		
applications		

Direct Thermal

Advantages	Disadvantages	
Single consumable requirement	Limited media options	
High speed capability	Limited resistance to chemicals and	
	light	
Extremely portable	Limited resistance to heat and steam	
New Products - High Speed 10"/Sec.,	Limited resistance to oils and	
High Heat Resistance & UV Stable	plasticizers	
Doesn't smudge	Reduced printhead life	
HIPPA compliant – no spent ribbon with	BPA/BPS/leuco dye based	
patient information		

DT vs TT - Which is Less Expensive...You Might Be Surprised!

	Direct Thermal	Thermal Transfer	Comments
Label Cost	\$145,544	\$114,760	11.3MM labels
Printhead 38% life	\$40,950 (91 heads)	\$ 15,750 (35 heads)	69.2mm linear inches
Ribbon cost Premium	\$0	\$27,800	3910 ribbons/yr.
Option: GP Wax		\$18,064	
Total Cost 38% life	<mark>\$ 186,494</mark>	<mark>\$ 158,310/\$148,574</mark>	Annual Media Spend
Annual Savings		<mark>\$ 28,184/\$37,920</mark>	15%/20% GP vs. Premium

**According to article published by SATO America, direct thermal printheads provide an expected lifetime of 25-50% of a thermal transfer printhead. This analysis assumes 38%, and average life of 2,000,000 linear inches of per printhead in TT mode.

Assumptions:

- 11.3 MM 4 X 6 shipping labels. 1000 labels/roll.
- Ribbon usage = 3910 ribbons @ 1476' length.

By switching to IMP's thermal transfer ribbon, our customer was able to save between 15-20% on their annual ribbon/label spend, depending on which ribbon (general purpose or premium) they selected.

Why Thermal Transfer Printing?

- **High Volume Printing Requirements**. Thermal transfer printers are designed to complete a full label-printing job in one run.
- **Reliability**. Thermal transfer printers have one moving part the paper feed roller.
- Printers are very **reliable and are designed to operate in harsh conditions**, including both warehousing and manufacturing environments.
- Bar Code Legibility. Thermal transfer printers create bar codes with good scan quality Read rates (98%-100%)
- **Durable Print Images.** Thermal transfer ribbons have the capability of printing images that can resist extreme temperatures. In addition, thermal transfer ribbons allow for varying degrees of smear, scratch and solvent resistance.
- **On-demand Printing Capability.** Thermal transfer printing gives the user printing flexibility. Users can print on demand and don't have to pay the extra costs associated with working with an outside supplier to create pre-printed labels.
- **Supply Chain Stability.** Over the past several years there have been several price increases on direct thermal labels due to a global shortage in a key raw material component, leuco dye. In addition, many direct thermal papers contain Bisphenol A (BPA) which has been shown to cause adverse health effects with exposure. Thermal transfer labels do not contain these chemicals and have become more competitively priced due to increased global production capacity. Lastly, lower cost wax thermal transfer ribbons have helped drive down the total cost of thermal transfer printing.

Remember, every thermal transfer label sale NEEDS a thermal transfer ribbon! <u>Reach out to</u> <u>us</u> or contact your IMP representative today for pricing, <u>free ribbon samples</u>, or just to strategize on ways we can help you expand your ribbon and label sales.



Established in 2013, IMP is headquartered in Atlanta, Georgia with a western distribution center in Los Angeles. IMP is the world's only vertically integrated manufacturer of thermal transfer and hot stamp ribbons – extruding our own PET base film and coating ribbons. This unique capability allows us to offer the best ribbon price/performance value in today's market.