insignia's guide to:

Blank Labels

Thermal printing technology has become widespread across the globe for printing labels, tags and tickets due to its ease, speed and efficient output. These labels and tags can be the vital link in getting your product to your customer, promoting your brand, identifying your assets, or labelling for compliance.

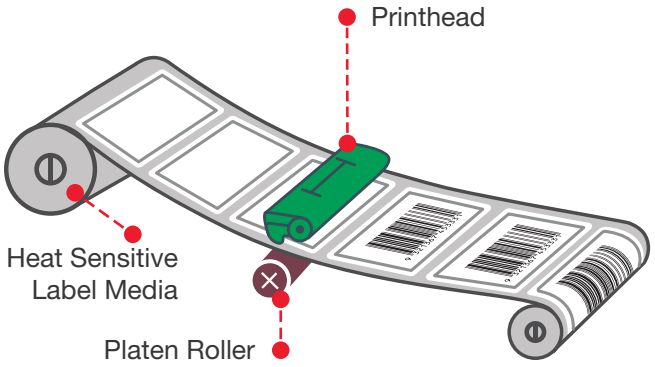
Today there are many different types and grades of labels and label material available, and each can offer a different benefit. However if the label label material is wrong for the application, the label can either fail to perform or conversely, offer poor value if 'over-spec'ed, so a comprehensive understanding of how and where the label is used is essential to determine the right label for the job.

This introductory guide explains thermal printing technology and explores some operational and lifespan factors that should be considered in determining the ideal material for your label or tag.

THERMAL PRINTING OVERVIEW

Thermal printing is a digital printing technology where a thermal printhead uses heat to apply a mark or print to a surface. There are two different thermal printing methods: thermal direct and thermal transfer.

Thermal Direct



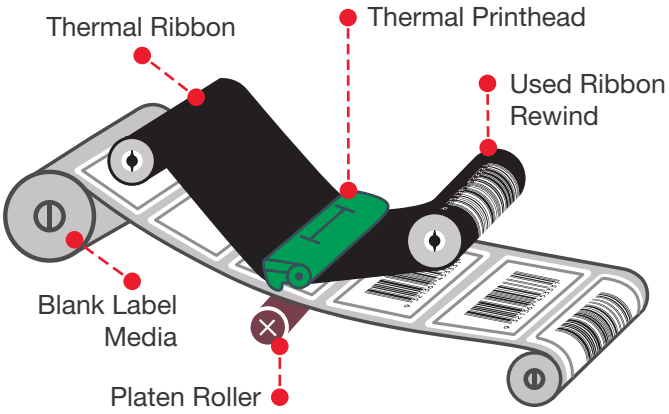
Thermal direct printing uses a heat sensitive label paper, which blackens when it passes through the thermal printhead, creating the printed image. The thermal direct method does not use any ribbon or toner, making it a fast and easy option for high volume printing. Since thermal direct labels react to heat, they are also sensitive to sunlight which can cause labels to blacken with prolonged exposure. Also, the thermal image may fade after a significant period of time.

Direct thermal printing is ideal for applications such as carton and pallet barcoding; labelling items stored away from sunlight and heat; labelling short-life or high turnover items, or in cold environment applications such as meat packing and perishable goods.

Often a smooth top-coat is added to the label material which aids in resisting moisture and scuffing whilst also protecting the print and your printhead.

> ***insignia's*** *direct thermal labels are produced using premium quality, top-coated thermal paper. Both* ***insignia's*** *'standard' and 'economy' label ranges feature a general purpose permanent, rubber based adhesive with superior tack and adhesion. The choice of using an 'economy' or 'standard' label stock comes down to the application and life expectancy of the label. The 'economy' range uses a lower grade top-coat, which offers great value for short-term shipping labels.*

Thermal Transfer



Thermal transfer printing uses a heat sensitive carbon ribbon which 'melts' the ink onto the label material as it passes through the thermal printhead.

Thermal transfer technology creates a permanent, crisp print, and is ideally suited for long-life product labelling, and for products stored outdoors or in direct sunlight.

> ***insignia's*** *thermal transfer labels are produced with an ultra-smooth coating that creates a permanent scratch resistant bond with thermal ribbon, and can reduce printhead wear, extending printhead life.*

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Thermal Ribbon

There are three different formulations of ribbon - Wax, Wax/Resin and Resin.

Wax Ribbons	Wax ribbons are suitable for general purpose printing on paper stocks, making it ideal carton labelling applications. The high ratio of wax in the formulation means these ribbons have a lower melt point, so a lower heat setting can be used on the printer and high print speeds are achievable. Wax ribbons are the most economical ribbon.
Wax/Resin Ribbons	Wax/Resin ribbons provide a finer image on very smooth, coated and gloss paper labels and some synthetic stocks (e.g. polypropylene, polyethylene, polyolefin). The printed image is more durable than wax, ensuring excellent resistance to scuffing or rubbing which can be a common problem for freight.
Full Resin Ribbons	Full resin ribbons provide excellent performance in harsh conditions including high temperatures, corrosive or UV applications. They are suitable for synthetic and specialty label stocks.

Thermal Ribbon rolls are available with the carbon-side (ink side) facing in or carbon facing out. Different printer makes and models will specify which style of ribbon they require.

Also, the roll length of the ribbon needs to match the printer model.

Printer Brand	Model	Carbon side IN	Carbon side OUT
ZEBRA TECHNOLOGIES	All		✓
datamax·oneil	Since 2010	✓	✓
	Pre 2010 models	✓	
BIXOLON	All		✓
Intermec	PC Range		✓
	PD, PM & PX ranges	✓	✓
valentin DRUCKSYSTEME	Micra & Pica		✓
	Bita, Compa, Spectra & Duo Print	✓	✓

insignia *stocks quality thermal ribbons to bring out the best in your printer and prolong the life of your printhead. All ribbons meet strict quality specifications of printer manufacturers and have a special coating on the back of the ribbon to protect your printhead.*

It is important to match the appropriate ribbon to the label material and also ensure correct label printer settings for best results.

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LABEL MATERIAL CONSIDERATIONS

There is a wide variety of facestock and adhesive combinations. Understanding the conditions and processes the label faces during its life is crucial when choosing label materials, ensuring the best outcome for the label and product.

Facestock

Labels can be manufactured from paper or a variety of synthetic facestocks. The choice of facestock will depend on the expected service life of the product and the conditions it is expected to withstand.

Synthetic stocks (polyethylene, polypropylene and polyolefin) offer properties that can lengthen the life of the label.

Adhesive

Acrylic or Hot Melt adhesives are commonly used. Factors affecting adhesive choice are temperature (both at the time of application and for the service life of the label), the nature of the product's surface, and other conditions likely to occur within the supply chain environment. Adhesives react differently depending on the surface energy of the product, for example carton vs glass vs different types of plastic.

THERMAL TRANSFER LABEL STOCKS

Code	Facestock	Adhesive	Application Temperature Range	Service Temperature Range
AG04	Paper - Thermal Transfer	Permanent Acrylic	+5˚C > +70˚C	20˚C > +100˚C
	Ideal for use through high speed printer applicators			
AG23	Paper - Thermal Transfer	Permanent Hot Melt	-5˚C > +70˚C	-40˚C > +70˚C
	General purpose labelling, high adhesion level makes it ideal for recycled cartons			
AG30	Paper - Thermal Transfer	Permanent Hot Melt	-25˚C > +40˚C	-50˚C > +70˚C
	Freezer applications where frozen product needs to be labelled			
AG32	Paper - Thermal Transfer	Removable Acrylic	+5˚C > +40˚C	-20˚C > +70˚C
	General purpose labelling where labels need to be removable. Performs well at low temperatures			
BA01	Paper - Brilliant Gloss	Permanent Acrylic	0˚C > +80˚C	-20˚C > +80˚C
	General purpose prime label stock. Performs well in hot fill applications			
BB15	Paper - Brilliant Gloss	Permanent Acrylic	+5˚C > +40˚C	-30˚C > +70˚C
	Highly aggressive adhesive with excellent water resistance suitable for cold, heavily condensated surfaces			
BB22	Paper - Brilliant Gloss	Permanent Hot Melt	-5˚C > +70˚C	-40˚C > +70˚C
	General purpose prime (product) label applications. Suitable for chilled and condensated surfaces			
BB30	Paper - Brilliant Gloss	Permanent Hot Melt	-25˚C > +40˚C	-50˚C > +70˚C
	Prime (product) label applications where labels are applied in a freezer or to slightly frosted products			
BB32	Paper - Brilliant Gloss	Removable Acrylic	-10˚C > +40˚C	-30˚C > +60˚C
	Prime (product) label applications where label removability is required. Performs well at low temperatures			
DE18	Polyolefin	Permanent Acrylic	+5˚C > +60˚C	-20˚C > +80˚C
	Ideal for applications where continued flexing is expected eg squeeze bottle			
DG25	Polypropylene	Permanent Acrylic	+5˚C > +70˚C	-20˚C > +100˚C
	General purpose prime (product) label applications not suitable for squeeze bottles			
DL25	Polyethylene	Permanent Acrylic	+5˚C > +70˚C	-20˚C > +100˚C
	Dedicated thermal transfer stock designed for longer life applications, eg drum labelling			

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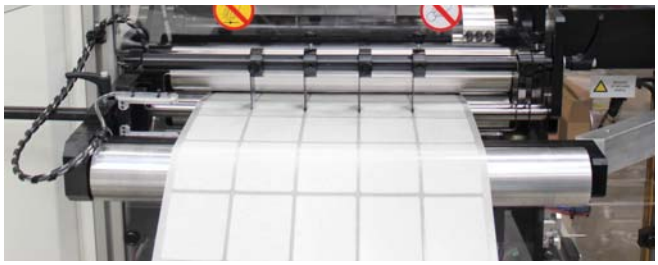
DIRECT THERMAL LABEL STOCKS

Code	Facestock	Adhesive	Application Temperature Range	Service Temperature Range
CA04	Paper - Direct Thermal	Permanent Acrylic	+5˚C > +60˚C	-20˚C > +60˚C
	Ideal for use through high speed printer applicators in general warehouse environment			
CA23	Paper - Direct Thermal	Permanent Hot Melt	-5˚C > +70˚C	-40˚C > +70˚C
	Shipping and logistics labels and short term food labelling or chilled product labelling			
CA30	Paper - Direct Thermal	Permanent Hot Melt	-25˚C > +40˚C	-50˚C > +70˚C
	Cold room storage applications where frozen product needs to be labelled			
CA32	Paper - Direct Thermal	Removable Acrylic	-10˚C > +40˚C	-30˚C > +60˚C
	Short term applications where labels need to be removable without defacing product. Performs well at low temperatures			
CE22	Paper - Economy Thermal	Permanent Hot Melt	-5˚C > +70˚C	-40˚C > +70˚C
	Thermosensitive coated stock suitable for high volume short-term shipping labels. Not suitable for wet or cold room applications			
ZM00	Thermal Card 180gsm			
	Direct thermal card (no adhesive) suitable for tickets and tags			

Die Cutting

A die or dies are used to cut the shape of the label. Rectangles, squares, circles, special shapes, perforations, undercuts (die cuts in label liner) are all options available to suit the application. This is a vital part of the manufacturing process as exact pressure is required for clean cutting, while not cutting too deep, causing die strike, and compromising the integrity of the liner.



Finished Format

For thermal printing applications, labels can be supplied on rolls, fan-folded into bundles or even supplied as continuous stock.

Rolls

Rolls of labels are supplied wound around cores. Both the inner diameter of the core and the outer diameter of the finished roll of labels may need to be defined based on the model of thermal printer. The number of labels on a roll will impact the outer diameter of the finished roll. When label volumes necessitate an auto print and apply solution, labels can be supplied on high capacity (jumbo) rolls to accommodate production volumes, and reduce downtime due to consumable changes.

Fanfold

Fanfold refers to those labels supplied in stacks with alternating folds, as opposed to being supplied on cores. This format suits the batch printing of labels, as the labels self-stack into a neat, manageable bundle during the printing process, offering an easy and convenient solution when affixing labels by hand around the warehouse. Fanfold labels are also used when printing very large batches of labels to minimise the frequency of roll changes.

Continuous or Tag Stock

Continuous or Tag stock is non-adhesive and provides an alternate form of visual communication to adhesive labels. Manufactured from cardstock or a range of synthetic stocks, these materials are suitable for thermal printing and use a printed mark on the back of the tag or a 'horse-shoe' notch cut from the side of the tag, allowing the thermal printer's sensor to recognise individual tags. Often tags are produced with perforations for the easy tearing of tags from the roll, and tag material can also be supplied as continuous stock, which can be cut into individual tags at the time of printing by a cutter accessory on a thermal printer.

Sheet format

Sheet format refers to labels that are cut so that each label or 'label-set' is on an individual sheet, and are often used when the labels are over-printed by a laser printer, rather than a thermal printer.

ABOUT INSIGNIA

We know how important your business is to you and how different it is from the next. This is why we work directly and collaboratively with you to understand your situation and needs, so we can create thermal label solutions tailored to add genuine value to your operations, and help build your market competitiveness.

Since 1967, insignia have been providing identification solutions to Australian industry. Our family-owned values, our people, our products and our services are the reasons we've become the nation's leading manufacturer of labels and tags, and distributor of top-tier thermal printing, marking and coding brands, including Datamax-O'Neil, Zebra, Bixolon, Intermec, Carl Valentin, and Domino.

Labelling & Coding Solutions For Every Industry

Helping you compete with confidence.

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