



WHITE PAPER

WHAT GOES INTO MAKING A BARCODE LABEL DURABLE AND LASTING?

Do You Need a Durable Labeling Solution?

Barcode labeling products are not one-size-fits-all, nor should they be. There are a wide variety of products available because customers have a wide variety of applications and uses for them.

To determine the best solution for our clients, ID Label begins by consulting with you to understand key environmental and durability factors. These include:

- What kind of surface will the labels be applied to?
- From what distance will the labels be scanned?
- Will they be used inside or outdoors?
Exposed to direct sunlight?
- Will they be subject to bumps or scrapes from forklift trucks, pallets, etc.?
- Will they be used in cold or freezer storage environments?
- Will the labels come in contact with harsh cleaning solutions or chemicals?
- Will they be exposed to heat, static electricity, solder or other important environmental factors?



Barcode labels are not a one-size-fits-all proposition. A label's materials and construction should be suited for its intended purpose.

Poorly designed and manufactured labels that don't consider environmental factors are likely to be highly ineffective. They may degrade, fade, lose their adhesive values or become damaged. If any of these things happen, you're likely to encounter read errors that adversely impact operational speed, efficiency and costs, inventory management and tracking, label expenses and worker productivity.

Label Materials and the Manufacturing Process

Producing quality barcode labels starts with using the right materials and employing the proper manufacturing techniques, especially for applications where the labels need to be durable and long-lasting.

Label Construction

There are a number of factors in the manufacturing process that affect label quality and durability, from the base stock to the top coating to the printing technology used.



Gregg Schiltz

"A barcode label needs to scan accurately each and every time," said Gregg Schiltz, ID Label's general manager. "We take pride in knowing that our quality-manufactured labels do just that. That's because we first work with our customers to understand their application, environment and use. This knowledge allows us to

identify the best materials and print process to ensure durability and scan accuracy."

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Label Construction

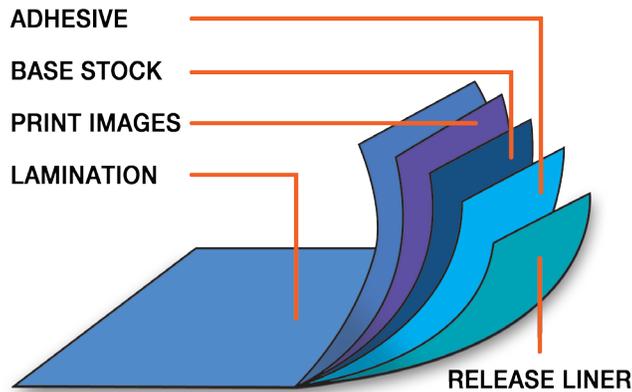
There are a number of factors in the manufacturing process that affect label quality and durability, from the base stock to the top coating to the printing technology used.

"A label is not a one-size-fits-all product," Schiltz said. "Materials and the physical construction of the label determine the durability, cost and suitability for the label's intended purpose."

A typical barcode label is made up of five key components:

- **Release liner** - This is the base carrier to which a label is adhered prior to its use. Paper is the most common release liner. It is coated with silicone so labels easily release from their rolls or sheets.
- **Adhesive** - This is the glue that binds the finished label to a surface. Adhesives can be permanent, temporary, removable or repositionable, and formulated for all-temperature or freezer environments. Understanding the environment in which the label will be used and the surface the label needs to adhere to are vital to selecting the most effective solution.

How is a Label Constructed?



A typical barcode label is made up of five key components.

- **Base stock** - This is the material on which the barcode and other label images and text are printed.

There are several different base stocks for label applications, including polyester, polypropylene, paper, film, vinyl and metal - each of which can vary widely in their ability to withstand environmental conditions.

- **Print image** - Imagery can be applied via different print technologies, such as thermal transfer (heat), laser, ion deposition (toner), aqueous and inkjet. These methods each have advantages and disadvantages relative to print quality, durability and cost.
- **Coating** - Barcode labels that are required to last and withstand daily use typically feature a protective top coating, such as a film laminate or varnish. This layer is applied on top of the print image, before labels are die cut. Lamination or varnish coatings help protect against environmental factors like physical bumps and scrapes, extreme temperatures and harsh cleaning solutions.



Advantages of Digital Label Printing

ID Label manufactures the vast majority of its products via state-of-the-art digital printing technology, which is ideally suited for many barcode label applications. Digital printing capabilities support:

- Multicolor, photo-quality labels
- Sequential barcode numbering
- Lamination for durability
- In-line die-cutting
- A variety of label shapes and sizes
- Cost-effective production of short or longer runs

"Digital label printing technology is quite advanced today," Schiltz said. "ID Label recently invested in two sophisticated digital inkjet presses. In a single pass, we can produce finished labels that feature four-color process images with ink instantly cured by LED lighting, sequentially numbered barcodes, extremely durable lamination and die-cutting to precise customer requirements."

Label Applications That Require Durability

Many applications require durable barcode labels to withstand harsh or rugged daily conditions. Let's look more closely at three common examples typical for ID Label clients: warehouse labels, asset labels and calibration labels.

Warehouse Labels - A typical warehouse or distribution center will require durable labeling on its racks and beams, which may have daily encounters with forklifts and pallets, as well as on totes and containers.

"For bulk storage and other areas, barcode labels may be affixed to flooring or hung from ceilings," Schiltz said. "Or they might be used in a cold or frozen storage setting where durability and adhesivestrength are important requirements."

Asset Labels - Barcode labels are frequently used to track and inventory assets like PCs, laptops, monitors, furniture, parts and equipment.

It's important to understanding the surface characteristics of each item. Labels should have an aggressive adhesive to properly bond to varying profiles like aluminum, engineered polymers, wood, plastic and steel surfaces.



Asset identification labels should have an aggressive adhesive to properly bond to varying profiles like aluminum, engineered polymers, wood, plastic and steel surfaces.

Durability is a common requirement, as these labels may be exposed to daily wear and tear, liquids, heat and ultraviolet light.

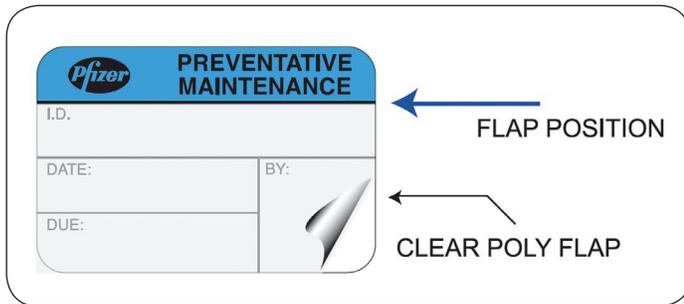


Barcode labels that may be exposed to heat, static electricity or solder - such as those used on printed circuit boards - undergo a highly sophisticated manufacturing process using specialized materials that help to reduce the occurrence of electrostatic discharge.



ID Label works with you to understand your application and environment. This knowledge lets us identify the best materials and print process to ensure durability and scan accuracy.

Calibration Labels - Thousands of hospitals, pharmaceutical companies, biomedical and clinical engineering departments and university research labs rely on specialized equipment labels to record maintenance, calibration and inspection activities.



This documentation is typically required to demonstrate adherence to industry quality standards or accreditation such as ISO and JCAHO. These labels are likely to be exposed to frequent sterile cleaning using chemicals and solutions, so durability and legibility are important considerations.

"It's important to work with an experienced label manufacturer that uses high-quality materials and adhesives, and label designs that have been proven in hospital, biomedical and clinical settings," Schiltz noted.



Consult with ID Label

ID Label manufactures extremely durable labels for a wide variety of applications. For instance, our BullsEye™ labels are custom-manufactured with specialized laminate coating for long-lasting, extreme durability while providing accurate scans 100% of the time. Aggressive adhesives allow these rigid labels to be applied directly to surfaces without requiring a placard or label holder, so they are easy and cost-effective to install.

If label durability is an important consideration for you, contact an ID Label representative to understand your best options. Our labeling solutions have been tested and used in operations around the globe for more than 20 years - extensive experience and knowledge we can bring to your specific requirements.

Interested in learning more? Contact us for details and free samples.



800-541-8506 • info@idlabelinc.com • idlabelinc.com