UL Labeling 101

Converters, printers and OEMs save resources, meet compliance requirements, improve market entrance speed and ensure high quality labeling solutions

- Understand Underwriters Laboratories (UL) and the labeling industry.
- See how UL tests and certifies marking and labeling systems and materials.
- Learn the value in partnering with the right label material supplier.
- Save time and money with pre-approved label combinations.

For more than 40 years, UL has been providing certification, testing and training services to the labeling industry to ensure delivery of compliant labels that meet individual project specifications and the demands of the global marketplace. With the right label material supplier, converters, printers and OEMs can obtain compliant, pre-approved label solutions with efficiency and ease – eliminating the burden of managing and executing the UL approval process themselves. For years, Mactac® has worked with UL to deliver our customers durable pre-approved UL label solutions to help you go to market faster while saving time and money.

Already have a general understanding of UL's purpose and the UL testing and certification processes in the labeling industry? Feel free to jump ahead to learn how Mactac has been helping printers, converters and OEMs meet their UL labeling needs better and faster.

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There are five category code numbers (CCN) that comprise UL's '**Marking and Labeling Systems**' and each UL label falls within one of these categories:

1. **PGDQ2:**
   Printed labels – manufactured by label printers/converters – generally sold as die-cut, finished labels.

2. **PGJI2:**
   Printed labels and unprinted stocks – blank or preprinted with blank areas – sold by label material suppliers (bulk roll) or by label printers/converters (die-cut labels).

3. **PGGU2:**
   Materials used to make labels (blank label stocks, laminating adhesives and overlaminates) – sold to printers/converters for production of PGDQ2 and PGJI2 labels.

4. **PGIM2:**
   Printed in-mold labels (embedded into molded plastic during molding) – manufactured by label printers/converters – sold as die-cut, finished printed in-mold labels.

5. **PGIS2:**
   Labels, cord tags and placards – evaluated for compliance with specific, less stringent UL end-product standards – use limited to product type covered by standard.

A Snapshot: UL

UL is one of the most recognized, independent conformity-assessment providers in the world. The mission of UL is to promote safe living and work environments by providing knowledge, expertise and services that help navigate supply chain complexities and support every stage of the product life cycle.

UL is considered a global leader in testing, inspection, certification, auditing and validation. The well-known 'UL Mark' is the single most accepted Certification Mark in the United States – appearing on 22 billion products from 71,000 manufacturers annually. UL has been in existence since 1894, and works with a diverse array of stakeholders – including adhesive and label suppliers – to ensure both products and their labels are high quality.

The Breadth of UL:

- 113 countries with UL customers.
- 44 countries with UL employees.
- 159 UL testing and certification facilities throughout the world.
- Evaluates more than 100,000 products annually.

UL Labeling: A Global Need for a Growing Industry

From electrical appliances and devices to safety equipment and more, there are thousands of durable products that require permanent marking or labeling of specific safety-related information, such as hazards, warnings, cautions, installation instructions, product classifications and electrical ratings.

UL works with adhesive and label suppliers to test and certify marking and labeling systems and materials – specifically ink and substrate combinations – to ensure this imperative safety information remains permanently affixed to the durable product via either a nameplate, tag or traditional label.

UL labels specific to indoor use products must withstand 72 hours at 23+2 degrees Celsius, 50+5%RH; water immersion for 48 hours at 23 degrees Celsius; and, 10 days in an air oven with temperatures at 20 to 30 degrees Celsius higher than rating temperature

UL labels specific to outdoor use products must withstand 7 hours in a low temperature cold box at a temperature of -23 degrees Celsius or lower; 750-hour UV and water exposure; and various immersions

UL Testing: Four Primary Components

When marking and labeling systems are tested by UL, a number of factors are considered, such as label curling, wrinkling, shrinkage, loss of adhesion, resistance to defacement and legibility. UL tests against these factors by exposing labels to various environmental conditions like high humidity, water, elevated temperatures, sunlight or chemical agents.

The testing standard used is known as **ANSI (American National Standards Institute)/UL 969** and, for a label to be certified, it must pass four primary components:

1. Visual examination to ensure there is no edge lift.
2. Legibility to ensure there is no print or ribbon smear.
3. Defacement to ensure there is no abrasion or edge lift when the label is scraped with a blade.
4. Adhesion to ensure there is no peel when exposed to varying extreme temperatures.

UL Recognition and Marks: A Seal of Approval

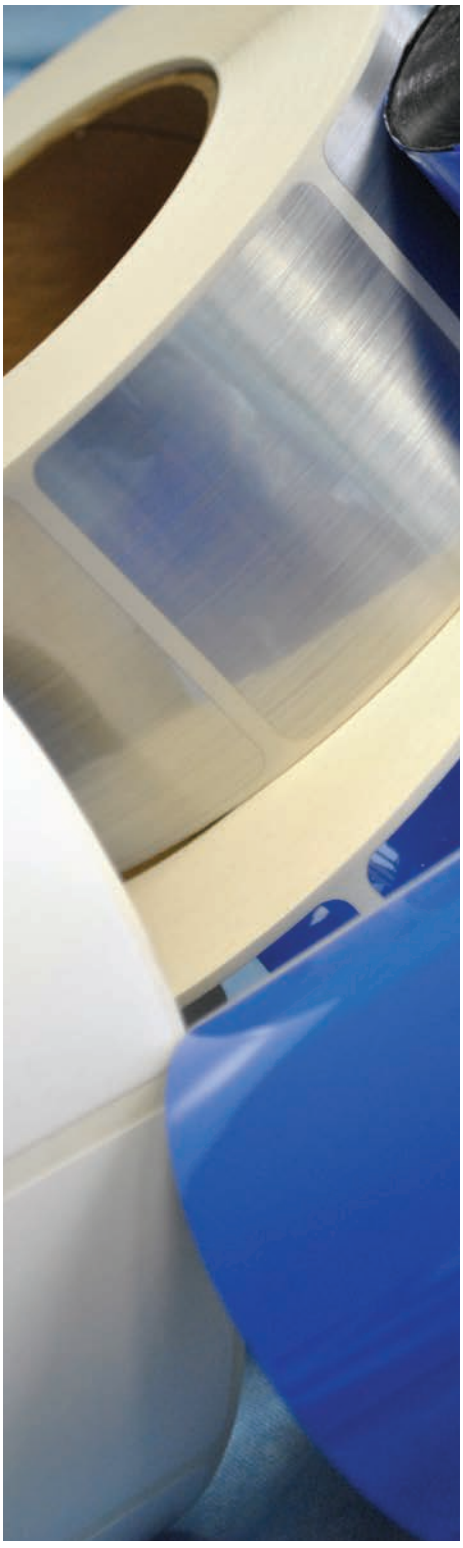
When a label passes UL testing, it becomes a UL Recognized Component, UL Listed or UL Classified label/product and can then bear a UL Mark.

UL Recognized Component	UL Listed	UL Classified
Used in the manufacturing of a complete, UL Listed product.	Tested according to nationally recognized Safety Standards.	Tested to specific properties, or suitability for use under limited or special conditions.
Cannot bear the UL symbol, but features the "Recognized Component Mark."	Free from reasonably foreseeable risk of fire, electric shock and related hazards.	Building materials and industrial equipment.
Switches, power supplies, printed wiring boards, etc.	Appliances, computer equipment, furnaces, heaters, fuses, electrical panel boards, smoke detectors, etc.	Immersion suits, fire doors, protective gear for fire fighters, etc.

UL Marks have specific meanings and significance, but there are two types of UL Service: Type R and Type L.

With **Type R Marks**, the manufacturer submits the layout of the proposed Mark for review and upon receiving an authorization stamp from UL, provides the stamped UL Mark layout to the supplier or customer for printing.

With **Type L Marks**, labels must be processed through a UL Label Center and are strictly controlled, requiring written authorization from UL with detailed specifics. These labels may only be produced as authorized, in quantities specified, and ordered to print by the UL Label Center.



Ensuring Success: Partnering with the Right Label Material Supplier

With UL certified labels, converters, printers and OEMs have peace of mind that performance requirements are met – whether regulatory, certification-related or customer-specific. Additionally, products are deemed safe to use, improving consumer safety and reducing OEM, converter and retailer risk.

However, for many, the steps and resources required to complete the UL label approval process can be both challenging and time-consuming. For example, if an inappropriate label material is selected, problems could occur with printing, fading or tearing, or the label could peel or simply not stick to the substrate. Also, depending on the type of UL testing performed, UL evaluations may take a number of weeks to complete, up to 12, if necessary.

This can significantly slow production and go-to-market processes, while posing a number of other negative issues. To avoid problems like these, it's imperative to work with a label material supplier that will make the durable labeling task at hand easier all around – for printers, converters and OEMs alike.

What does the ideal label material supplier look like?

1. They manufacture a solid line of durable film products to meet the stringent needs of the durable labeling industry.
2. They understand your business and your labeling needs.
3. They offer superior customer service and can create cost-effective, customized products and solutions as needed for unique labeling applications.

And, most importantly… They have already tested a number of inks and substrates with UL – producing pre-approved combinations in 'off-the-shelf' product form that are immediately ready for use and don't require additional testing.

When ink and substrate combinations have been tested in advance, materials and ink systems are granted recognized component status and are securely stored in the label material supplier's UL file. A converter or OEM can then easily access their supplier's file and select one of the pre-approved combinations.

Not only does this offer significant time savings and peace of mind that the labeling product will work, it also reduces potential expenses for the converter or OEM to conduct UL testing.

For example, there are several steps required in submitting a label for UL recognition. By choosing a label material supplier that has already completed this process, the OEM or converter bypasses the need to determine the parameters for the end-user requirements. This includes items like identifying the substrate for the application, outlining the conditions that need to be met, determining how the label will be printed and what label constructions (material, ink, adhesive and liner) will meet necessary requirements, and so on.

And, while the cost for UL testing varies depending on the product and the scope of the UL evaluation, on average, each test can cost several thousands of dollars.

Mactac's MP690 high-performance acrylic emulsion adhesive is used with all of Mactac's UL-approved products.

- It can withstand temperatures of up to 302 degrees Fahrenheit.
- Offers superior application versatility as it is designed to hold up against fluids such as gasoline, acid, cooking oil and kerosene.

Mactac: All 25 Surface Categories and 5 Additional Conditions Tested = Numerous Pre-approved Combinations Available

With a full line of 10 durable film products designed specifically for tough applications where durable UL-recognized labels are needed, Mactac has tested all 25 surface categories with occasional exposure to cooking oil, fuel oil no. 1, gasoline splashing, kerosene and lubricating oil. Delivering extensive durability, Mactac's high-performance Durable Films product line encompasses a variety of polyester, polypropylene and vinyl base films to meet numerous end-user application needs.

As part of the UL approval process, our base materials have been extensively tested with a wide variety of inks, including UL-recognized flexo inks, digital inks and thermal transfer ribbon. Mactac's base materials can be used as stand-alone products or in combination with our versatile clear gloss polyester UL-recognized overlaminating film.

Product Number	Face	Color	Finish	Adhesive	Liner	Min. App. Temperature	Service Range	Outdoor Durability	Abrasion Resistance
UL & C-UL Recognized DURABLE Overlaminates:									
FAB6914	1.0 Mil Clear PET	Clear	Gloss	MP690	3.2 Mil	+50°F	-40°F to 302°F	2+ Years	Excellent
UL & C-UL Recognized DURABLE Overlaminate or Base Material:									
BDE6914	2.6 Mil BOPP	White	Matte	MP690	3.2 Mil	+50°F	-40°F to 257°F	2 to 5 Years	Good
BDF6914	3 Mil BOPP	White	Matte	MP690	3.2 Mil	+50°F	-40°F to 200°F	6 Months - 1 Year	Good
VDG6911	3.4 Mil Flexible Vinyl	White	Satin	MP690	3.2 Mil	+50°F	-40°F to 200°F	5 Years	Good
FAD6914	2.0 Mil PET	Clear	Gloss	MP690	3.2 Mil	+50°F	-40°F to 302°F	2+ Years	Excellent
FCD6914	2.0 Mil PET	White	Gloss	MP690	3.2 Mil	+50°F	-40°F to 302°F	2+ Years	Excellent
FED6914	2.0 Mil Metalized PET	Bright Silver	Gloss	MP690	3.2 Mil	+50°F	-40°F to 302°F	2+ Years	Excellent
FFD6914N	2.0 Mil Metalized PET	Silver	Matte	MP690	3.2 Mil	+50°F	-40°F to 302°F	2+ Years	Excellent
FGD6914N	2.0 Mil Metalized PET	Brushed Silver	Gloss	MP690	3.2 Mil	+50°F	-40°F to 302°F	2+ Years	Excellent
FJD6914	2.0 Mil Metalized PET	Reverse Void Silver	Gloss	MP690	3.2 Mil	+50°F	-40°F to 302°F	2+ Years	Excellent

With a full line of Durable Film products that have successfully passed all UL approval requirements, Mactac's UL-approved films are often preferred over competitive offerings. Mactac has tested – and continues to test – more substrate-ink combinations than typical manufacturers, saving our customers significant time and money while giving them the peace of mind that they will quickly and easily meet necessary compliance regulations.

UL Label File Adoption: Obtain Mactac's UL-Approved Labels With Ease

In addition to our growing number of UL-approved ink-substrate combinations, Mactac makes the process for obtaining our UL-approved labeling solutions simple and easy with our file adoption program.

For a minimal flat fee, converters, printers and OEMs can adopt any UL-certified durable product for UL-recognized label applications and receive approval for the flexo inks, digital inks and thermal transfer ribbon. No additional UL testing is required as the process involves a simple paper transfer.

Additionally, file adoption requires limited resources from converters, printers and OEMs. And, using a Mactac pre-approved system:

- Streamlines the market entry process, reducing wait time for production.
- Shortens the UL qualification process.
- Eliminates excessive testing and/or re-testing and reduces follow-up service costs.
- Lowers the cost of sample labels and waste as customers can order products in exact quantity.

Listings	Category	Mactac File Number
Marking and Labeling System Materials - US	PGGU2	MH12627
Marking and Labeling System Materials - Canada	PGGU8	MH12627
Printing Materials - US	PGJI2	MH26726
Printing Materials - Canada	PGJI8	MH26726
Materials for use in Transportation Applications	OMRV2	E490667

Search for UL-approved files from Mactac by visiting the UL Online Database at www.ul.com (Certifications – Enter Search Criteria – Open File).

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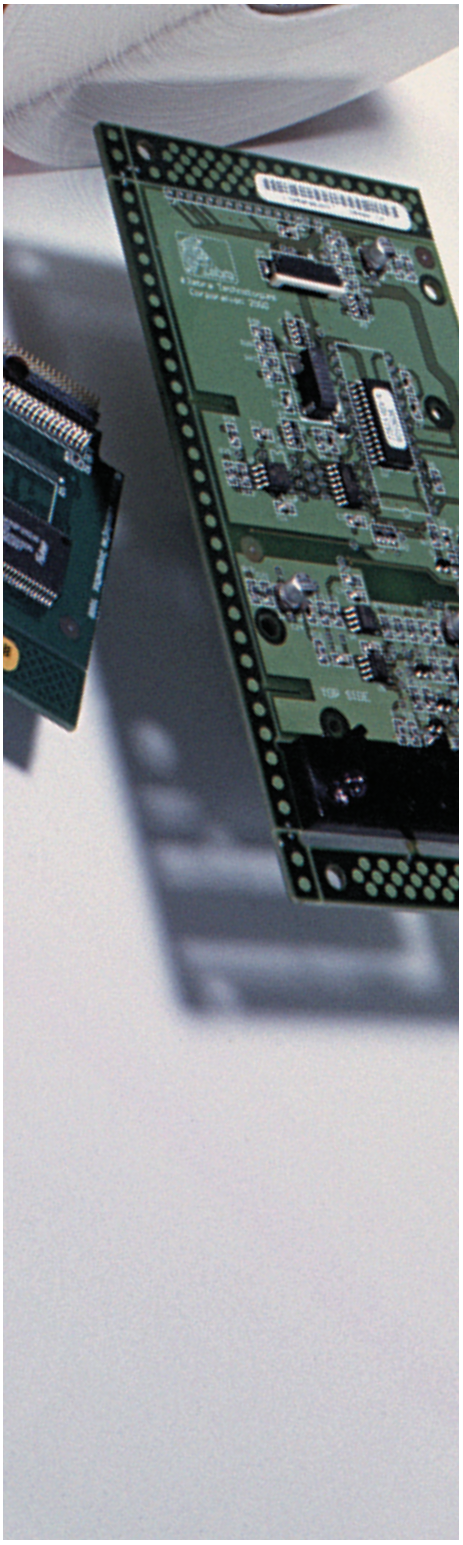

FAQs

- **Do I need to use an overlaminating film on my UL-approved Durable Films labels?**

  No, Mactac has received UL approval on all 10 Durable Films products with and without the use of an overlaminate. Our customers tend to appreciate this benefit as it often saves time and money associated with the purchase of an accompanying overlaminate.

- **If I pre-print using flexographic ink, can I still use an overlaminate? Does the overlaminate need to be UL qualified?**

  In this case, you can use an overlaminate, but it is not necessary. If you choose to use an overlaminate, indeed it will need to be UL qualified. UL prefers to test the entire base material, print and overlaminate combination to make sure the adhesive on the overlaminate doesn't affect the printing.

- **What is the outdoor durability for Mactac's UL Durable Films products?**

  Outdoor durability depends on each specific Durable Films product. For example, our polypropylene constructions often range in outdoor durability from 6 months to 1 year – with the exception of our BDE6914 product, which features built-in UV inhibitors giving it up to 2 years outdoor durability. Our vinyl constructions often tout a 5-year outdoor durability and our polyester constructions are generally 2 years or more.

- **What inks and printers work with Mactac's UL Durable Films?**

  Mactac has a number of inks and printers that work with our UL Durable Films. For more information, refer to our UL Recognized Components Guide, located at: http://www.mactac.com/fileadmin/user_upload/Roll/Sales_Literature/MAC3130_UL_Components_Guide.pdf.

- **Does Mactac require a minimum amount per order?**

  All of Mactac's UL-approved products are available within our Precise Program by 2,500'. Therefore, you can order any width by 2,500'.

- **Are there guidelines for advertising and promoting my associated UL programs?**

  Yes, the UL mark is a valuable marketing tool. For information on accurately promoting UL product certification, please visit UL's promotion and advertising guidelines web, located at: http://ul.com/corporate/marks/ul-listing-and-classification-marks/promotion-and-advertising-guidelines/.

- **What does the Marking & Labeling Systems UL Recognized Component Mark look like?**

  There are three variations of UL's Recognized Component Mark. Examples are shown below. The first is for the United States only, the second is for Canada only, and the third can be used in both the United States and Canada.

More Help

From beginning to end, Mactac is here to help you through the entire UL process. Feel free to contact one of our UL labeling experts at 800.255.9733 or mactac.americas@mactac.com. You can also visit www.mactac.com/rolllabel for more information. To learn more about UL certification or to submit a label adoption request with Mactac, visit www.UL.com.

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