

Product Development Lab Menu



A Detailed Description of IDENTCO's R&D Laboratory's Label Testing Capabilities

IDENTCO International is a global supplier of high-quality, pressure-sensitive labels, graphic overlays and die-cut products. For more than 30 years, IDENTCO has been a leader in the world of flexible solutions. This focus and approach allows IDENTCO to be a responsive and flexible global supplier of competitively priced products, consistently delivered on time. The end result for customers is a long-term, mutually rewarding relationship with a reliable supplier.

CPP™ – CUSTOM PRINTED PRODUCTS

- Brand Recognition Labels
- Graphic Overlays
- Specialty Group - Prime & Pharma Labels
- UL / CSA Nameplates
- Informational & Instructional Labels
- Security & Anti-Counterfeiting Labels



TTP™ – THERMAL TRANSFER PRODUCTS

- Stock Thermal Transfer Printable Labels
- Custom Blank Thermal Transfer Printable Labels
- Labels for Automatic Placement Equipment
- Warning & Compliance Labels
- Thermal Transfer Ribbons
- Thermal Transfer Printers & Label Software
- Scanners, Rewinders, Dispensers & SMT Label Feeders



DCP™ – DIE-CUT PRODUCTS

- Gaskets and Seals
- Adhesives & Bonding
- Cushioning / Shock and Vibration
- EMI / RFI Shielding
- Conductors / Insulators
- Mask / Protective Films
- Thermal Management Solutions
- Filters / Covers



WMP™ – WIRE MARKING PRODUCTS

- Heat Shrink Sleeves
- Self Laminating Labels
- Cable Marking Tags
- Dual Sided Printers
- Continuous Shrink Tubing



HEADQUARTERS

IDENTCO International Corporation
28164 W. Concrete Dr. • Ingleside, IL 60041 P:
+1.815.385.0011 • Toll Free 1.800.533.2559 F:
+1.815.385.0359 • www.identco.com

Locations: USA, Mexico, Europe, Asia

Label Testing Menu



A Detailed Description of IDENTCO's R&D Laboratory's
Label Testing Capabilities



TABLE OF CONTENTS

Chemical Resistance Testing	4
Peel Adhesion Testing	5
Accelerated UV Exposure Testing	6 - 8
Abrasion and Rub Resistance Testing	9
Temperature & Humidity Cycle Testing	10-11
Water Bath Testing	12
Wire Wrapping and Flagging Testing	13
Listening, Innovating, Delivering	14

CHEMICAL RESISTANCE



Test Objective: To determine the affect of specified chemicals on the permanency and legibility of pressure-sensitive materials and printing inks that comprise a label. Method and duration of chemical exposure is based on customer specification or through modeling of potential exposure during normal use of labeled product.

Data Reporting Format: Pass/Fail based on criteria supplied by customer or UL/CSA industry standards.

Additional Information: Chemical testing is offered on any chemical that is considered safe to handle in a standard vented laboratory hood environment. IDENTCO reserves the right to decline chemical resistance testing with any chemical that cannot be determined to be safe to handle in a standard lab environment.

Chemicals Maintained in Lab:

CLOROX BLEACH
DISPATCH BLEACH
ACETONE 100%
ISOPROPYL ALCOHOL 99% AND 70%
BACIOL PLUS - DISINFECTANT
BACIOL AF - DISINFECTANT
STERILLIUM - DISINFECTANT
MIKROZID AF LIQUID - DISINFECTANT
XJN+ (AQUANOX)
WINDEX

ETHANOLAMINE 99%
BATTERY ACID FLUID
BIOACT EC-7R - DEFLUXER
METHANOL, ANHYDROUS 99.8%
MINERAL SPIRITS
TOLUENE
5W AND 10W MOTOR OIL
HFE-72DA ENGINEERING FLUID
GASOLINE
1-METHOXY-2-PROPANOL 99.5%

Other chemicals can be acquired based on customer's requirement. Customer wanting to supply test chemicals must submit an MSDS for review and approval prior to sending chemical to IDENTCO.



PEEL ADHESION

Test Objective: To determine the force required to separate a pressure-sensitive material from a specific application surface at an angle of 180°.

Data Reporting Format: Peel adhesion values are normally reported as ounces of force per square inch of surface area.

Additional Information: IDENTCO stocks test panels used for application surfaces in stainless steel, aluminum, glass, ABS plastic, polyester and polycarbonate. Test panels are available for other application surfaces as required through special order.



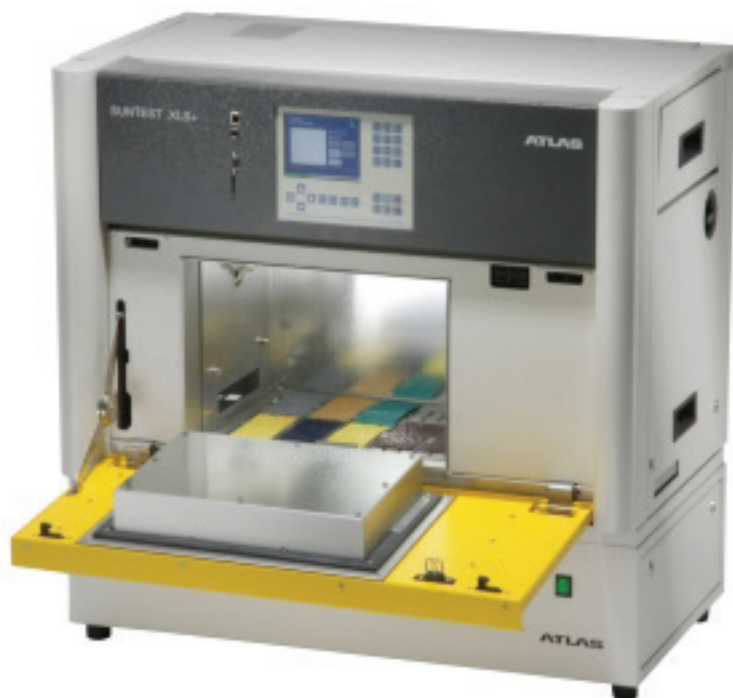
180° Peel Adhesion
Tester

ACCELERATED UV EXPOSURE

Test Objective: To determine the affect of exposure of UV light contained in sunlight on pressure-sensitive materials and printing inks that comprise a label. Acceleartion of exposure is achieved through the use of an air cooled xenon arc chamber. The chamber provides light at a similar spectrum as sunlight but with exposure significantly higher. Actual exposure during testing is determined using a standard 8 step Blue Wool Scale. Material is evaluated for shrinkage, curl, lifting, yellowing, and chaulking. Printing ink is evaluated for legibility and color difference between exposed and unexposed samples.

Data Reporting Format: Criteria for exposure level and Pass/Fail are established through consultation with the customer.

Additional Information: Correlation of exposure in xenon arc chamber to years of outdoor exposure is difficult due to geographic differences in the amount and intensity of sunshine. See Blue Wool Table on page 8 for further details.



Xenon Arc Chamber

THE BLUE WOOL SCALE



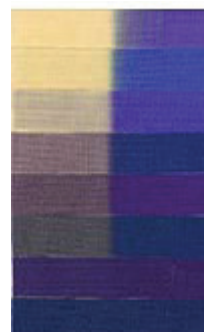
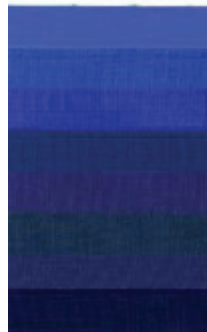
The Blue Wool Scale measures and calibrates the permanence of colouring dyes. Traditionally this test was developed for the textiles industry but it has now been adopted by the printing industry as a measure of "lightfastness" of ink colourants and also within the polymer industry for measurement of pigment & colour stability (lightfastness). Lightfastness is the chemical stability of the pigment or dye under long exposure to light.

Note: this should not be confused with permanence or fastness which refers to the chemical stability of the pigment in relation to any chemical or environmental factor, including light, heat, water, acids, alkalis, or mold. For example, the pigment ultramarine blue is extremely lightfast, but it will fade if brushed with a dilute acid. The Ultraviolet (UV) radiation in light is responsible for the ink fading and hence the change in the blue wool. Hence the blue wool scale has been widely adopted as a standard during UV exposure or UV weathering tests.

The normal procedure is to take two identical dye or pigment samples. One is placed in the dark as the control and the other is placed in the equivalent of sunlight for a 3 month period. The amount of fading is then measured by comparison to the original colour and a rating between 0 and 8 is awarded. Zero denotes extremely poor colour fastness whilst a rating of eight is deemed not to have altered from the original and thus credited as being lightfast. Most apparel will have a light fastness of 4 whereas most furnishings will have a light fastness of 6 and most polymer materials for outdoor use would require a light fastness of 7 or above.

Blue wool textile fading cards or kits typically consist of 8 swatches of blue wool dyed to various levels. They consist of eight strips of wool mounted side by side on a small card; each strip or reference is colored with a blue dye that fades after exposure to a known amount of light. The dyes have been chosen so that each reference takes about two to three times longer to begin fading as the next lower reference in the scale. (Under normal solar testing conditions, reference 1, the least permanent, will begin to fade in 3 hours to 3 days, depending on geographic location, season, cloud cover and humidity; reference 3 will fade in 5 days to 2 weeks; reference 6 in 6 to 16 weeks; and reference 8, the most permanent, in 6 to 15 months.) These scales are used for paint lightfastness testing under international standard ISO 105-B, and are also used by gallery curators to measure the accumulated amount of light received by museum displays of paintings, textiles or photographic prints. The blue wool scale cards will normally be used in conjunction with grey scale cards in order to assess the degree of change.

**Blue Wool
Scale
UNEXPOSED**



**Blue Wool Scale
800 HOURS
EXPOSER**

THE BLUE WOOL TABLE

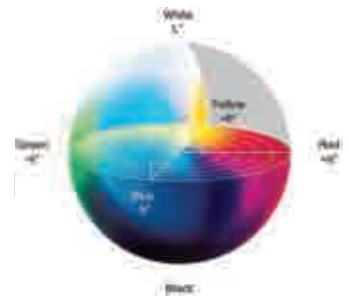
This table below gives one version of the eight blue wool lightfastness levels, from 1 (fugitive) to 8 (extremely lightfast), with the amount of light exposure required to produce a color change at each level and the approximate match between the eight blue wool and five ASTM lightfastness categories. This table is a guide for the selection of artist paints only and should not be used to extrapolate to other products.

Blue wool / ASTM lightfastness standards

Blue Wool	ASTM*	Comments
8	900	I. Excellent lightfastness. Blue wool 7-8. The pigment will remain unchanged for more than 100 years of light exposure with proper mounting and display. (Suitable for artistic use.)
7	300	
6	100	II. Very good lightfastness. Blue wool 6. The pigment will remain unchanged for 50 to 100 years of light exposure with proper mounting and display. (Suitable for artistic use.)
5	32	III. Fair lightfastness (Impermanent). Blue wool 4-5. The pigment will remain unchanged for 15 to 50 years with proper mounting and display. ("May be satisfactory when used full strength or with extra protection from exposure to light.")
4	10	
3	3.6	IV. Poor lightfastness (Fugitive). Blue wool 2-3. The pigment begins to fade in 2 to 15 years, even with proper mounting and display. (Not suitable for artistic use.)
2	1.3	
1	0.4	V. Very poor lightfastness (Fugitive). Blue wool 1. The pigment begins to fade in 2 years or less of light exposure, even with proper mounting and display. (Not suitable for artistic use.)

*ASTM: Megalux hours of exposure before fading becomes noticeable. Exposure to average indirect indoor lighting (120 to 180 lux) for an average 12 hours a day equals from 0.53 to 0.79 megalux hours each year. Sources: Mark Gottsegen, *The Painter's Handbook*; Karen Colby, "A Suggested Exhibition Policy for Works of Art on Paper" (*Journal of the International Institute for Conservation: Canadian Group*, 1992).

USING COLOR MEASUREMENT EVALUATE FADING



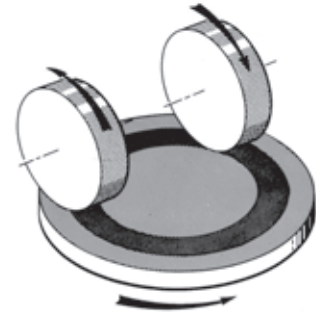
Most modern testing now uses colourimeters or spectrophotometers to accurately measure any colour change or colour differences after accelerated weather testing and report these as a Delta Eab reading. At IDENTCO we use the spectrophotometer measurement method using the L*A*B* colour space model along with Delta Lab readings. A full explanation and interpretation of this technique is supplied with our reports as standard.

The L*a*b colour space system defines the colour of an object as a 3 dimensional coordinate within a colour sphere. The L coordinate represents lightness and runs from 100 (complete lightness) to 0 (complete darkness), a is the red direction, -a is the green direction, +b is the yellow direction and -b is the blue direction. L*a*b readings taken are an average over a 2mm spot size in each case under standardised lighting conditions. Delta E* represents the difference in each of the L, a and b readings are compared to the initial readings and hence show the significance of change in each element. In quoting overall colour difference values it is common to produce a single value referred to as Delta E*ab; this is produced using Pythagoras theorem and gives an absolute value for the size of the colour difference (magnitude), but not the direction of change. A value of about 1 is just about perceptible to the human eye under normal lighting.



i5 Spectrophotometer

ABRASION & RUB



Test Objective: To determine the affect of abrasion and rubbing on pressure-sensitive materials and printing inks that comprise a label. Through the use of the Tabor Abraser, our lab can perform controlled, quantifiable abrasion testing with a range of severities and durations. This capability allows IDENTCO to design an abrasion test to meet customer requirements for label abrasion resistance as well as support new product development.

The abrasive wheel of the Tabor Abraser can be replaced with felt pad that cto perform controlled, quantifiable chemical rub testing.

Data Reporting Format: Criteria for Pass/Fail are established through consultation with the customer and include determining loss of legibility and cosmetic affect on label appearance.

Additional Information: The Tabor Abraser is part of the Canadian Standards Association Label Certification Program.



Tabor Abraser

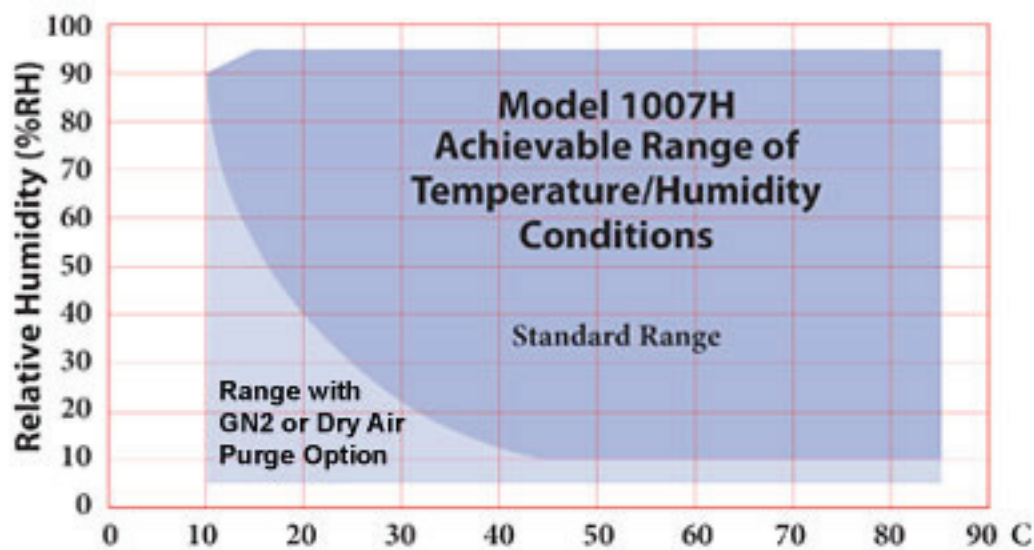
TEMPERATURE & HUMIDITY CYCLING



Test Objective: To determine the affect of temperature and humidity on pressure sensitive materials and printing inks that comprise a label. Through the use of our programmable test chamber, we can test the affects of a single temperature and humidity condition in addition to programmed temperature and humidity cycling. This chamber provides IDENTCO the ability to determine what effects temperature and humidity have on both the label itself and the adhesion to a specific surface.

Data Reporting Format: Criteria for Pass/Fail are established through consultation with the customer and include label lifting, curling, shrinking, cracking, running, and delaminating.

Additional Information: Chart below shows achievable temperature/humidity conditions in programmable test chamber.



Achievable temperature and humidity range in test chamber.

WATER BATH

Test Objective: To determine the affect of water submersion on pressure-sensitive materials and printing inks that comprise a label. Through the use of a temperature controlled water bath, we can test labels to determine the effects of water submersion at a specific temperature. This water bath provides IDENTCO the ability to determine what effects water submersion has on the label itself and its adhesion to a specific surface. The water bath can maintain temperatures above ambient room temperature $\pm .5^{\circ}\text{F}$ indefinitely.

Data Reporting Format: Criteria for Pass/Fail are established through consultation with the customer and include label lifting, curling, shrinking, cracking, running, and delaminating.



TEMPERATURE
CONTROLLED WATER
BATH

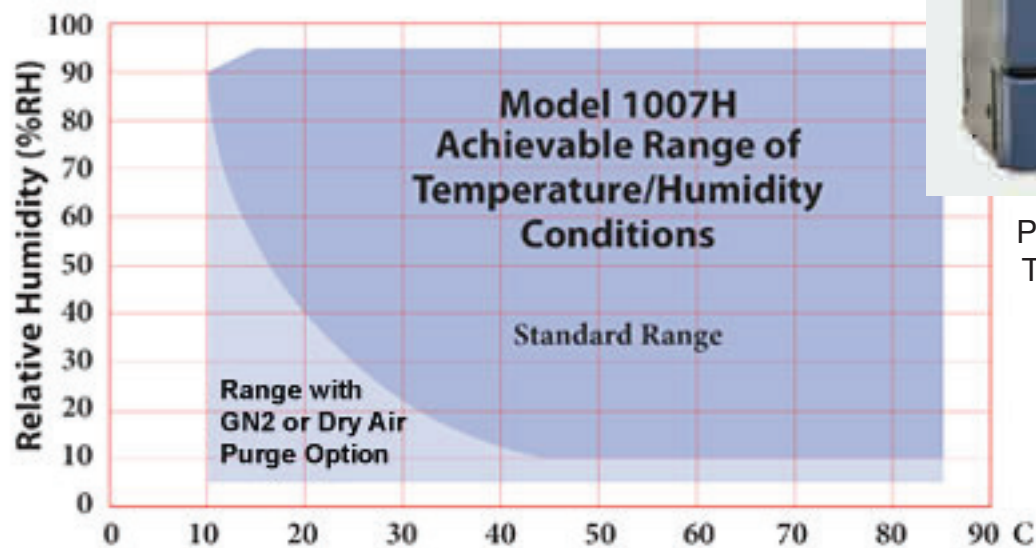
WIRE WRAPPING & FLAGGING



Test Objective: To evaluate the suitability of material constructions in wire marking and flagging applications, and the label's resistance to failure when exposed to a range of temperature and humidity conditions.

Data Reporting Format: Criteria for Pass/Fail are established through consultation with the customer and include label lifting, releasing, and curling.

Additional Information: Chart below shows achievable temperature/humidity conditions in programmable test chamber used in wire wrapping and flagging test.



Programmable Test Chamber

Achievable temperature and humidity range in test chamber.

LISTENING INNOVATING DELIVERING

The parameters for every high-performance die-cut product, pressure-sensitive label or graphic overlays differ and your solutions provider should be experienced and knowledgeable enough to meet all of your requirements. Since 1986, IDENTCO has been developing innovative and responsive pressure-sensitive products for Brand Owners, OEMs, ODMs, and EMS providers. Whether you need custom printed solutions, die-cut functional parts, or thermal transfer products, IDENTCO can deliver worldwide on-demand.

AGILE. RESPONSIVE. RELIABLE.

IDENTCO is committed to being your most responsive partner and we believe that the best solutions are achieved through collaboration. Together, we will design consistently high quality products that will meet your requirements. IDENTCO is determined to remain flexible and responsive, allowing your organization to better adapt to the changing demands of the marketplace.

IDENTCO's offices and manufacturing facilities in the United States, Mexico, Europe, and Asia are staffed with knowledgeable professionals, state-of-the-art equipment, and broad capabilities. This enables us to listen to your needs and then recommend effective solutions and products.

Whether your goals are to consolidate suppliers, reduce costs, enhance or create international brand consistency, IDENTCO is an agile partner you can rely on to provide innovative solutions on time and on budget.



ASSUME QUALITY, EXPECT PERFECTION.

HIGHEST QUALITY GLOBAL PRODUCTION

With IDENTCO quality-control safeguards we are able to ensure consistent, accurate production globally. To achieve this, we use the same equipment, materials, inks, and procedures in all of our facilities. So no matter where we produce your labels, they look and perform the same every time.

All of our locations are able to meet the same branding, performance, and regulatory specifications. We provide excellent color-matching capabilities and accuracy, as well as a fully-equipped testing laboratory with superior quality control processes. It's just another way IDENTCO can ensure our customers consistent success.

AGENCY RECOGNITIONS



UL: UNDERWRITERS LABORATORIES
UL-Authorized Label Supplier Program
UL-Recognized Label and Ribbon Combinations

CSA: CANADIAN STANDARDS ASSOCIATION



CENTER OF EXCELLENCE



Labels for Life.

www.identco.com

**UNITED STATES
HEADQUARTERS**

28164 W. Concrete Drive
Ingleside, IL 60041
Phone: +1 (815) 385 - 0011
Fax +1 (815) 385 - 0359

**MEXICO
MONTERREY**

Carr. a Laredo Km. 16.5 Interior
14B, Col. Moisés Sáenz, 66613
Apodaca, Nuevo Leon
Phone: +52 (81) 8008 - 0438

**GERMANY
FRANKFURT**

Güterbahnhofstrasse 3-7
63450 Hanau
Phone: +49 (6181) 440 830 - 0
Fax: +49 (6181) 440 830 - 99

**PRC
HONG KONG**

Unit 1708, 17/F, 9 Wing Hong St.
Cheung Sha Wan, Kowloon
Phone: +852 2959 2156
Fax: +852 2959 2019