



Scratch  
resistance

Water  
resistance

UV  
stability

## Durable Digital Graphics: Jump Into An Exploding Marketing

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# Overview of Durable Graphics

- What is a durable graphic?
  - Output that lasts as long as...
  - Fastest growing segment in the print-for-pay industry:

<u>Application</u>	<u>Percent of Graphics</u>
Floor Graphics	1%
Bus Wraps/Transit Graphics	4%
Billboard/Barricade	5%
<b>Fleet/Vehicle Graphics</b>	<b>10%</b>
Point-of-Purchase	16%
Tradeshow Graphics	18%
<b>Banner</b>	<b>22%</b>
Presentation	10%
Proofing/Prepress/Comps	6%
Fine Art Reproduction	4%
Wall Covering	2%
Other	2%

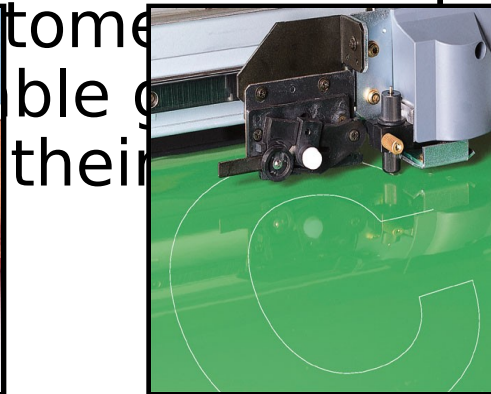
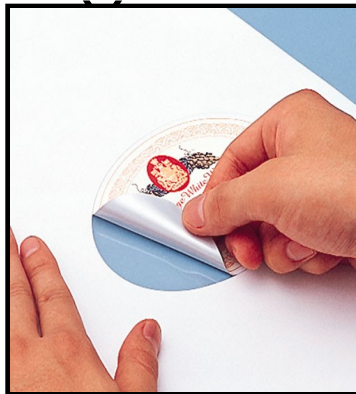
# Types of Durable Graphics

- Vinyl Signs and Banners
  - Most vinyl signs and banners will last years...
- Inkjet Prints
  - Most inkjet prints will require **overlamination** to protect the output from the elements, abrasion and normal



# Overview of Durable Graphics

- How are you creating your graphics today?
  - Inkjet printing, vinyl cutting, screenprinting, etc.
- What are your customers' expectations?



# Inkjet Printers

- Types of inkjet inks/printers

- Water-based (pigment) inkjet

- Typically low-cost
- Require coated material
- Limit to outdoor durability



- Mild-solvent inkjet

- Various sizes and price points
- Excellent general purpose printers



- Solvent inkjet

- Typically grand format
- Excellent high-volume production machines



# Roland Inkjet Printers

- Roland offers the following inkjet printers:
  - VersaCAMM (SP-300V/SP-540V)
    - 4-color mild solvent ink printer/cutter
  - SOLJET PRO II V (SJ-645/SJ-745/SJ-1045)
    - 6-color mild solvent ink printers
  - SOLJET PRO II V (SC-545)
    - 6-color mild solvent ink printer/cutter

# Industry Terminology

## Overview

- Will any uncoated media work?
  - Is there a profile for the media?
  - PVC versus papers and other types of films
- Uncoated media versus premium media
- Are all inks created equal?
- Longevity of ink depends on application!
- Finishing is key

# Industry Terminology

- Dry Time Versus Cure Time
  - Dry Time - time it takes for inks to feel dry to the touch
    - Most inkjet media (when properly profiled) should take no more than five minutes to feel dry to the touch
  - Cure Time - time it takes for ink colors to stop changing
    - Pigment based inks on coated media usually take about an hour to cure
    - Mild solvent inks on coated media also take about an hour to cure, but take much longer on uncoated media
    - Hot solvent inks on uncoated media can also take hours to cure



# Industry Terminology

## Durability and Fading

- Weatherproof versus Waterproof
  - Waterproof means just that!
  - Weatherproof denotes outdoor durability

Two main test sources for analyzing data:

- Conventional testing
  - Interior, behind glass
  - Exterior, direct weathering
    - Materials endure natural environment outdoors for designated time period
- Accelerated testing
  - Natural Light
  - Artificial Light
    - Materials endure weathering device to simulate outdoor conditions

# Industry Terminology

## Durability and Fading

### Physical Performance Considerations:

- Water Resistance
- Abrasion
- Salt Spray
- Chemical Resistance
- Tensile Strength & Elongation
- Dimensional Stability

Results vary by region (Southwestern U.S. versus colder Northern climates versus tropical conditions)

# Industry Terminology

## Durability and Fading

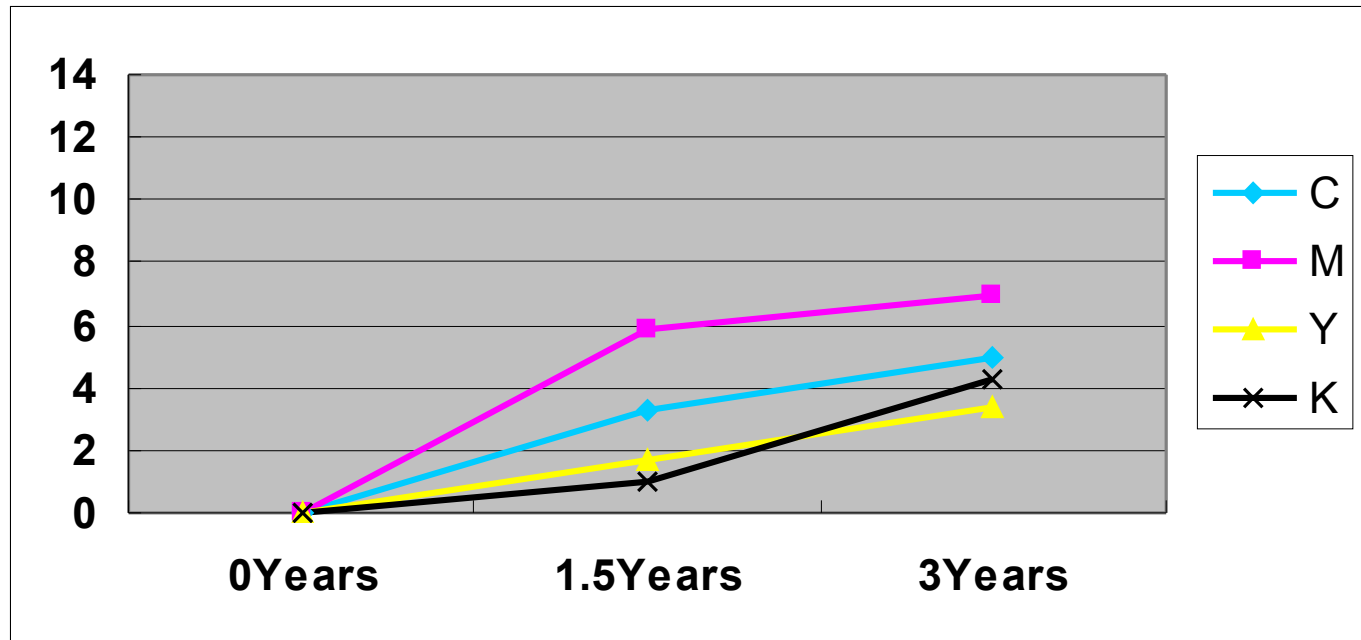
### Color Performance:

- Measured with a spectrophotometer before, during, and after natural & artificial weathering
- Color durability is evaluated as a color difference or shift in CIELAB Delta E units
- Standard allows a maximum Delta E shift of approximately 10 units

# Industry Terminology

## Durability and Fading

DeltaE



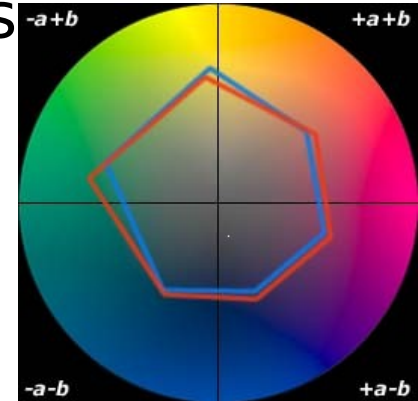
- Lower Delta E Values are desirable
- Delta E shift of less than 10 are generally unnoticeable to untrained eye
- Results based on Acceleration Tests conducted on SPVCB Banner Media by Roland DG Corporation

# Industry Terminology

## Ink Overview

### Characteristics of eco-solvent inks

- Good color gamut
- Great indoor longevity
- Good outdoor longevity
- Typically low cure time
- Prints great on treated/coated media
- Generally prints well on uncoated media
- May require heat assist for optimal performance
- Also environmentally friendly



### Applications:

- Used for outdoor applications such as banners, signage and vehicle graphics
- Also used for a variety of point-of-purchase and display graphics such as floor and window graphics

# Industry Terminology

## Graphic Finishing

Generally two types of finishing:  
Overlamine films and liquid laminates

Function of overlamine films:

- Protect print from:
  - Abrasion/graffiti
  - Moisture/dirt/oils
  - UV light
- Provide finish/gloss level (glossy or matte)
- Allow for easier cleaning of graphic

Liquid laminates provide similar protection but to a much lesser degree

# Industry Terminology

## Graphic Finishing

Overlaminated films offer certain advantages over liquid laminates:

- No direct contact with chemicals
- Generally a faster process (no drying time)
- Films add to thickness (increase stiffness)
- Much longer term durability

**Overlaminated film necessary** on graphics requiring long term outdoor durability (greater than a year) **especially on fleet graphics**

# Industry Terminology

## Graphic Finishing

What is an “edge seal”? Types:

- Extra edge of overlaminate film to seal graphic
- Edge seal tape
- Edge seal liquid

**Edge sealing is important!**

Different requirements depending on technology, but the benefit is extra protection against moisture/dirt/oils along with helping protect against edge lift



# Inkjet Warranted Solutions

## Roland Warranty

Typically, inkjet warranties cover materials only, but the benefit is longevity testing and durability ratings:

- Roland warranty with pigment inks = 50 months
  - Edge seal around graphics required
  - Use of liquid laminate discouraged (and not covered)
  - Transfer tape only laminated prints
- Roland warranty with mild solvent inks = 60 months
  - Edge seal not required
  - Liquid laminates a viable option (but not covered)
  - Transfer tape optional for all prints

# Outdoor Durable Graphics Opportunities



# Vehicle Graphics

- Business Opportunity
  - Production Costs
    - ✓ Adhesive-back vinyl = \$.40-.95 per sq. ft.
    - ✓ Ave. Ink Cost = \$.35 per sq. ft.
    - ✓ Cast Vinyl Overlamine = \$.78 per sq. ft.
    - ✓ Total = \$1.53-2.08 per sq. ft.
  - Selling Price
    - Finished Output = \$7.00 per sq. ft.
    - 2'X3' Cost = \$6.84 Retail = \$42.00
  - Or
    - Finished Output = \$11.00 per sq. ft.
    - 4'X8' Panel Cost = \$63.36 Retail = \$352.00



# Banner Graphics

- Business Opportunity
  - Production Costs
    - ✓ Scrim Banner Vinyl = \$.70-1.00 per sq. ft.
    - ✓ Ave. Ink Cost = \$.35 per sq. ft.
    - ✓ Total = \$1.05-1.35 per sq. ft.
  - Selling Price
    - Output Only = \$6-\$8.00 per sq. ft.
    - 2'X5' Cost = \$13.50 Retail = \$50.00



# Backlit Display Graphics

- Business Opportunity
  - Production Costs
    - ✓ Backlit Film = \$.85-1.18 per sq. ft.
    - ✓ Ave. Ink Cost = \$.35 per sq. ft.
    - ✓ Overlaminated film = \$.40-.78 per sq. ft.
    - ✓ Total = \$1.60-2.31 per sq. ft.
  - Selling Price
    - Finished Output = \$8.00 per sq. ft.
    - 3'X4' Panel Cost = \$25.80  
Retail = \$96.00



# Print & Cut Applications Tour



- Decals
- Labels
- Sign elements
- Prototype graphics
- P.O.P. advertising graphics
- Box prototyping
- Promotional graphics

- Vinyl graphics
- Banners
- Lettering
- Marking
- Auto graphics
- Vinyl signs



# Print & Cut Applications Tour



# Print & Cut Applications Tour





# Setting Expectations

## Intended Viewing Distance

- Have customers view sample print at intended distance
- 50/50 Rule
  - 50 feet away or 50 mph
- Prepare files according to viewing distance



# Setting Expectations

## Intended Viewing Distance

- Consider the distance that the graphic will be viewed from and adjust the ppi (pixels per inch) of the image file

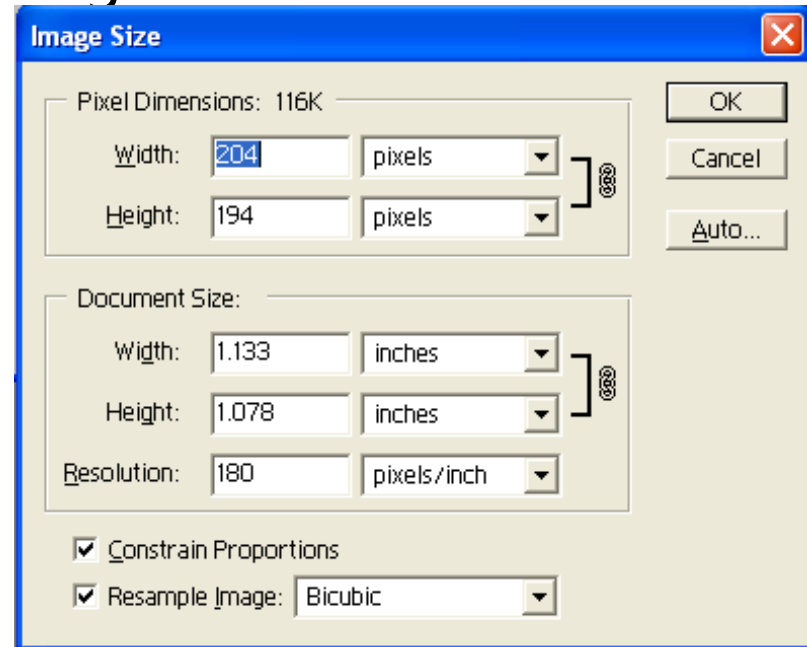
## Distance Factors

< 1ft = 180ppi

1-4 ft = 150ppi

5-9 ft = 100ppi

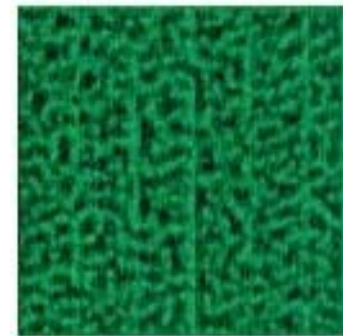
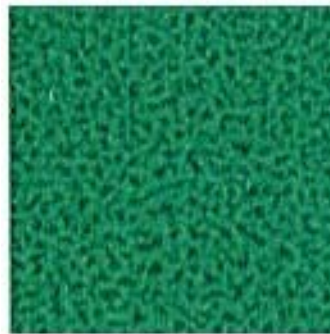
10+ ft = 50ppi



# Setting Expectations

## Uncoated Media Differences

- Ink pooling or puddling is a major challenge!
  - Caused when media can no longer absorb additional ink



**No Puddling** **Mild Puddling** **Puddling**

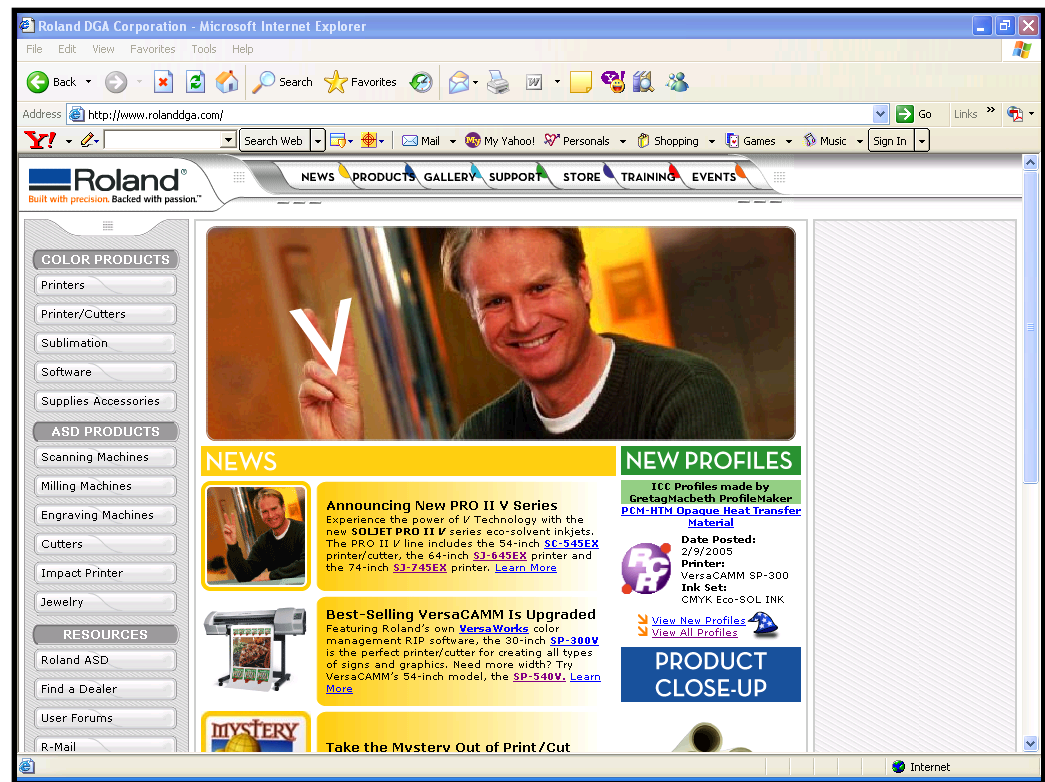
- Should we care about it?
  - Depends on viewing distance

# Tips and Tricks

- Costs
  - Consider alternative methods depending on quantity
  - Don't forget to factor in labor for graphic design
  - Research market pricing in your area
- Maintenance
  - Maintain your equipment for better performance
  - Organize print files by customer and job

# Roland Resources

- Roland University
- Roland Website
  - Support Site
  - User Forums
  - ICC Profiles



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