

Printing smarter with inkjet technology (Durables)

Avery Dennison
Labels and Packaging Materials

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Printing smarter with inkjet technology (durables)

Presenters



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Introduction

- **Q:** Why the durable label market is attractive for digital Inkjet label converters?
- **Q:** How does the UV Inkjet perform with respect to durable labels?

In this seminar we will provide you with guidance on how to approach durable label market and we will share a new service Avery Dennison offers to label converters.

Printing smarter with inkjet technology (durables)

Digital printing used for narrow-web label printing

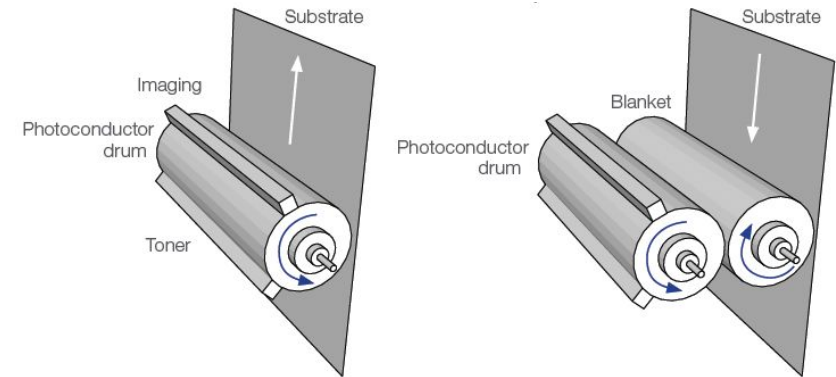
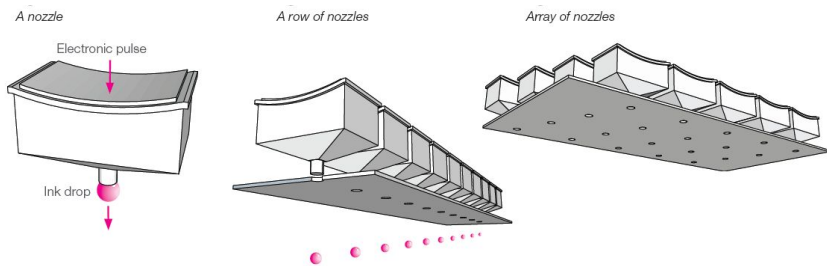
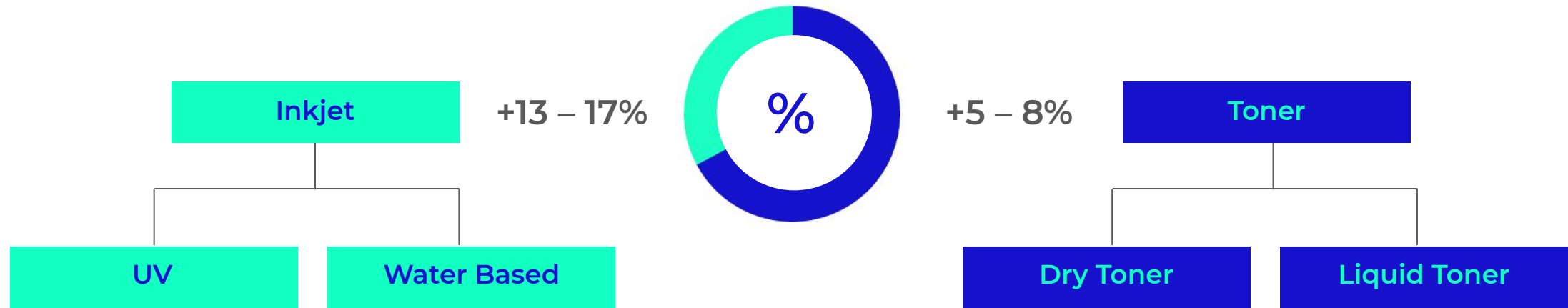


Image source: Xeikon

Printing smarter with inkjet technology (durables)

Digital technologies — main markets and applications

Pharmaceuticals



Food



HPC + Removables



Wine + Beverages



Durables



Printing smarter with inkjet technology (durables)

Durable Goods — applications

- Automotive
- Appliances
- Electronics
- Chemicals
- Tyre labels



Printing smarter with inkjet technology (durables)

How durable is a UV Inkjet print?



Printing smarter with inkjet technology (durables)

How to evaluate the durability of a printed label

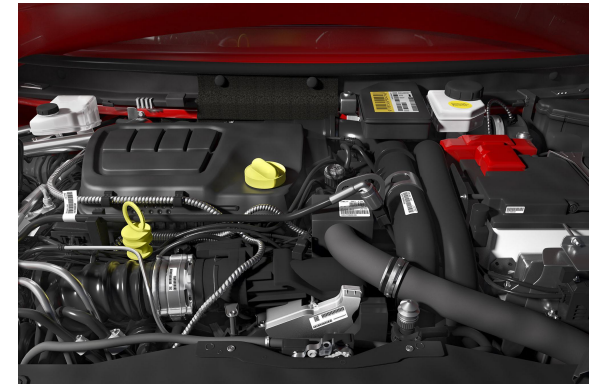
Visual Quality



Chemical Resistance



Temperature Resistance



UV Resistance



Weathering Resistance



Scratch Resistance



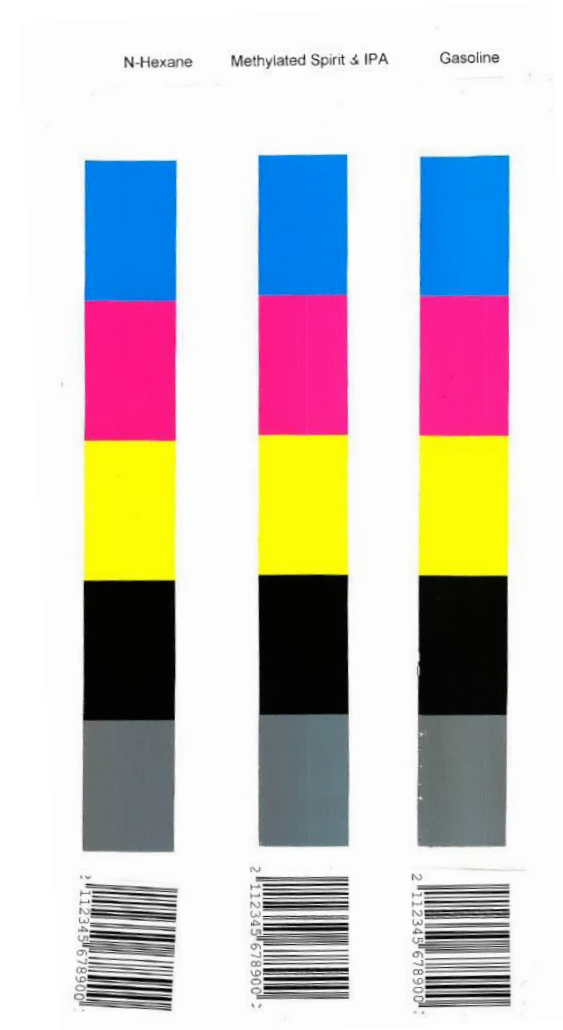
Printing smarter with inkjet technology (durables)

Chemical resistance — chemical rubs

UV Inkjet printed — material used:
TRANSFER PET WHITE TOP



Acetone



Printing smarter with inkjet technology (durables)

Chemical resistance — chemical rubs

UV Inkjet printed — material used:
TRANSFER PET WHITE TOP



15 days at: 150°C



15 days at: 180°C

Printing smarter with inkjet technology (durables)

Abrasion resistance — taber test

UV Inkjet printed, material used:
TRANSFER PET WHITE TOP

UV Flexo



WBIJ



Liquid toner



UV Inkjet Printed

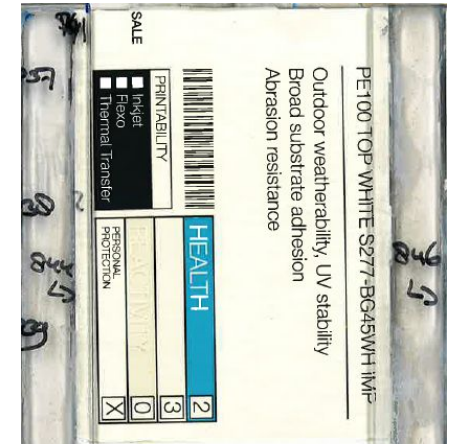


Printing smarter with inkjet technology (durables)

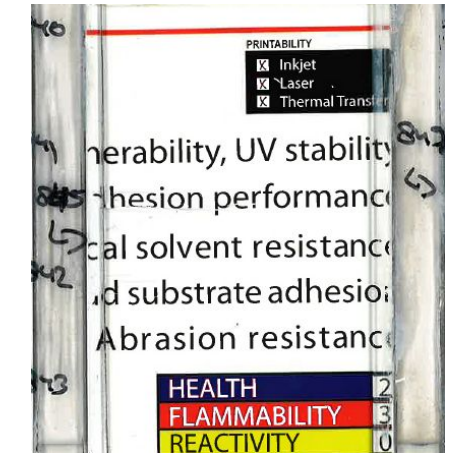
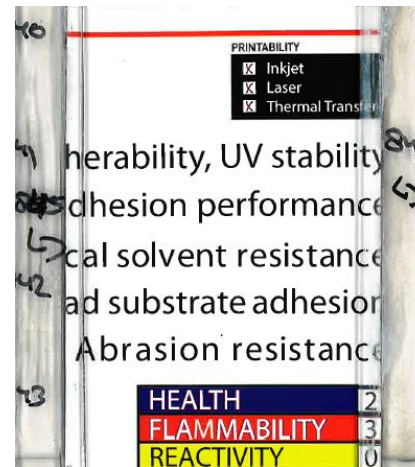
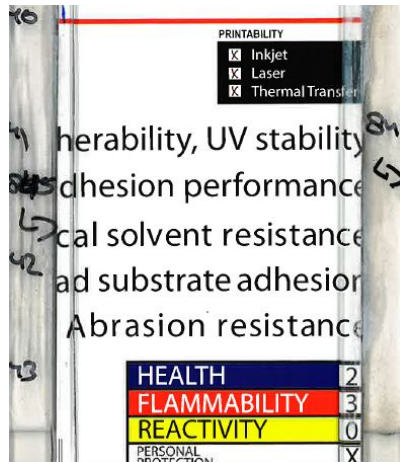
UV resistance — Super UV

Material used: PE100 TOP WHITE (BS 5609 Section 2 and 3 certified)

UV Flexo Printed



UV Inkjet Printed



T = 0

T = 18 months

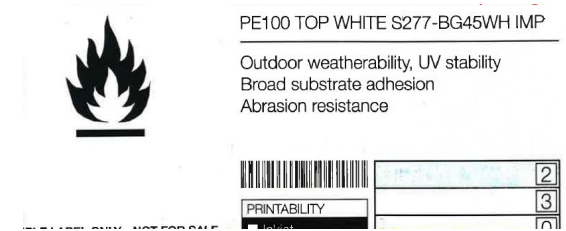
T = 72 months

Printing smarter with inkjet technology (durables)

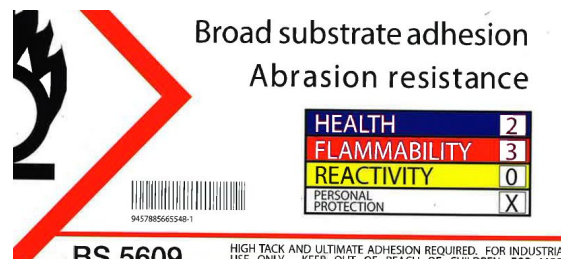
Outdoor weathering — Atlas

Material used: PE100 TOP WHITE
(BS 5609 Section 2 & 3 certified)

UV Flexo Printed



UV Inkjet Printed



T = 0



T = 12 months



T = 24 months

Printing smarter with inkjet technology (durables)

Digital UV inkjet durable guide


Three guides to select the right durable products:

- Test result overview
- List of certified products
- One guide for each UV Inkjet printing press.



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Label materials for tyres and petrochemical applications



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Test Methods

- Barcode readability: ANSI standard
- Resistance to bleaches: IEC EN ISO 15011 part 11.10: 10 seconds
- Aging with heat: 70°C
- Resistance to methylene spirit: IEC EN ISO 15011 part 11.10: 10 seconds
- Resistance to methylene spirit and acetone: 100°C
- Resistance to gasoline: TI, ISO 2434 C: 10 days with a gasoline-saturated cotton cloth, 70°C
- Temperature: IEC 608 part 7.1, 10 days at 10°C and 50°C
- Abrasion: IEC 608 part 7.1, 10 days at 10°C and 50°C
- Abrasion: IEC 608 part 7.1, 10 days at 10°C and 50°C
- UV exposure testing: SuperUV
- UV exposure testing: SuperUV
- UL 94 V0 Flaming and Smoking System*
- CSA-CSA C22 No. 0.15 (Petroleum Labels)

All materials presented in this document have been printed on a DOMINO® inkjet press using the standard 5 color ink set. The printing was done at a speed of 6000 ppm.

Services and minimum ordering quantities are subject to change. The information available in this document is valid as of June 2019.

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Code	Label	Adhesive	Adhesive technology	Adhesive layer thickness (µm)	Label thickness (µm)	Label width (mm)	Label height (mm)	Chemical drum & Lubricants	Print quality	Barcode readability	Chemical resistance	Temperature testing	Abrasion	Aging (bleaching)	UV testing	Flammability	Services	Lead time						
AF110	PE100 White	S217	Solvent Rubber	21	110µm ± 10%	110µm ± 10%	110µm ± 10%	Chemical drum & Lubricants	***	A	***	***	***	100°C	80°C	100	✓	Pass	Pass	✓	EXT	870	1 day	
AF112	PE100 Top White	S217	Solvent Rubber	21	110µm ± 10%	110µm ± 10%	110µm ± 10%	Chemical drum & Lubricants	***	A	***	***	***	100°C	80°C	100	✓	Pass	Pass	✓	EXT	870	1 day	
AS050	PE100 Top White	S217	Solvent Rubber	21	110µm ± 10%	110µm ± 10%	110µm ± 10%	Chemical drum & Lubricants	***	A	***	***	***	100°C	80°C	100	✓	Pass	Pass	✓	EXT	870	1 day	
AM66	Transfer PET-C10	S445N	Rubber Hottel	30	100µm ± 10%	100µm ± 10%	100µm ± 10%	Chemical drum & Lubricants	**	A	***	***	***	100°C	70°C	51	100	✓	Pass	Pass	✓	EXT	870	1 day
AP200	TSP	S445N	Rubber Hottel	30	100µm ± 10%	100µm ± 10%	100µm ± 10%	Chemical drum & Lubricants	**	A	***	***	***	100°C	70°C	57	100	✓	Pass	Pass	✓	FTO	1000	1 day
PP film																								
AB200	PP MG Top White Plus S445N SGP	Rubber Hottel	30	100µm ± 10%	100µm ± 10%	100µm ± 10%	Chemical drum & Lubricants	***	A	***	***	***	***	100°C	70°C	48	75	✓	Pass	Pass	✓	FTO	1000	1 day
AF150	PP MG Top White	TS5000 SGP	Rubber Hottel	30	100µm ± 10%	100µm ± 10%	100µm ± 10%	Types	***	A	***	***	***	100°C	70°C	48	75	✓	Pass	Pass	✓	FTO	1000	1 day
AB200	PP MG Top White	TS5000 SGP	Rubber Hottel	30	100µm ± 10%	100µm ± 10%	100µm ± 10%	Types	***	A	***	***	***	100°C	70°C	48	75	✓	Pass	Pass	✓	FTO	1000	1 day
AF170	PP Light Top Silver	S217	Solvent Rubber	21	107µm ± 10%	107µm ± 10%	107µm ± 10%	Lubricants	***	NA*	***	***	***	100°C	80°C	***	***	✓	Pass	Pass	✓	FTO	1000	7 days
AC200	PP Light Top Silver	TS5000	Rubber Hottel	30	100µm ± 10%	100µm ± 10%	100µm ± 10%	Types	***	NA*	***	***	***	100°C	70°C	***	***	✓	Pass	Pass	✓	FTO	1000	7 days
Polyester film																								
AB85	OO-EX100	S445N	Rubber Hottel	30	100µm ± 10%	100µm ± 10%	100µm ± 10%	Chemical drum & Lubricants	***	A	***	***	***	100°C	70°C	75	100	✓	Pass	Pass	✓	CTO	1000	7 days
PVC film																								
AF114	PVC-White	S217	Solvent Rubber	21	100µm ± 10%	100µm ± 10%	100µm ± 10%	Chemical drum & Lubricants	**	A	***	***	***	100°C	80°C	97	100	✓	Pass	Pass	✓	FTO	1000	1 day

* = Fail
 ** = Not recommended
 *** = Good
 NA = Not applicable

Agings


Outdoor Weathering
 Maximum number of months of outdoor exposure

Colour fastness
 Maximum number of cycles of UV exposure (Method 6) before color change (visual change score: Maximum number of months of UV exposure)

Service
 EXT = Exact service
 FTO = Prints to order
 CTO = Code to order

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Label materials for technical and industrial applications



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Test Methods

- Barcode readability: ANSI standard
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Clear film																							
BL800	Transfer PET White TT	58000	Emulsion acrylic	27	130µm ± 10%	130µm ± 10%	130µm ± 10%	Appliances, electronics	***	A	***	***	***	100°C	***	***	✓	Pass	Pass	✓	EXT	100	1 day
BL330	Transfer PET White Top	58000	Emulsion acrylic	27	130µm ± 10%	130µm ± 10%	130µm ± 10%	Appliances, electronics	***	A	***	***	***	100°C	***	***	✓	Pass	Pass	✓	EXT	100	1 day
SA600	Transfer PET White Top	58000	Emulsion acrylic	27	130µm ± 10%	130µm ± 10%	130µm ± 10%	Appliances, electronics	***	A	***	***	***	100°C	***	***	✓	Pass	Pass	✓	EXT	100	1 day
AM60	Transfer PET White Top	AL170	Solvent acrylic	24	130µm ± 10%	130µm ± 10%	130µm ± 10%	Automotive labels on metals	***	A	***	***	***	100°C	***	***	✓	Pass	Pass	✓	EXT	100	1 day
BN191	Transfer PET White Top	58000	Rubber hybrid acrylic	27	145µm ± 10%	145µm ± 10%	145µm ± 10%	Automotive labels on plastics	***	A	***	***	***	100°C	***	***	✓	Pass	Pass	✓	EXT	100	1 day
Mat White																							
BL800	Transfer PET Mat White TDS	58000	Emulsion acrylic	27	130µm ± 10%	130µm ± 10%	130µm ± 10%	Appliances, electronics	***	A	***	***	***	100°C	***	***	✓	Pass	Pass	✓	EXT	100	1 day
AN174	Transfer PET Mat White TDS	58000	Solvent acrylic	24	130µm ± 10%	130µm ± 10%	130µm ± 10%	Appliances, electronics	***	B	***	***	***	100°C	***	***	✓	Pass	Pass	✓	EXT	100	1 day
BN191	Transfer PET Mat White	58000	Emulsion acrylic	27	145µm ± 10%	145µm ± 10%	145µm ± 10%	Appliances, electronics	***	A	***	***	***	100°C	***	***	✓	Pass	Pass	✓	EXT	100	1 day
Chrome																							
AM60	Transfer PET Mat Chrome Top	58000	Emulsion acrylic	20	120µm ± 10%	120µm ± 10%	120µm ± 10%	Appliances, electronics	***	NA*	***	***	***	100°C	***	***	✓	Pass	Pass	✓	EXT	100	1 day
BL790	Transfer PET Mat Chrome Top	58000	Emulsion acrylic	27	130µm ± 10%	130µm ± 10%	130µm ± 10%	Appliances, electronics	***	NA*	***	***	***	100°C	***	***	✓	Pass	Pass	✓	EXT	100	1 day
AD201	Transfer PET Mat Chrome Top	58000	Solvent acrylic	24	130µm ± 10%	130µm ± 10%	130µm ± 10%	Appliances, electronics	***	NA*	***	***	***	100°C	***	***	✓	Pass	Pass	✓	EXT	100	1 day
AM60	Transfer PET Mat Chrome Top	AL170	Solvent acrylic	24	130µm ± 10%	130µm ± 10%	130µm ± 10%	Automotive labels on metals	***	NA*	***	***	***	100°C	***	***	✓	Pass	Pass	✓	EXT	100	1 day
BN191	Transfer PET Mat Chrome Top	58000	Rubber hybrid acrylic	27	145µm ± 10%	145µm ± 10%	145µm ± 10%	Automotive labels on plastics	***	NA*	***	***	***	100°C	***	***	✓	Pass	Pass	✓	EXT	100	1 day

* = Fail
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Key takeaways

- UV Inkjet can produce durable and reliable print results
- Guides to select the right materials based on the Durable application
- Tests based on industry standards, certifications that are already available
- Close collaboration with UV Inkjet print manufacturers

We look forward to discussing your specific needs.

Thank You

label.averydennison.com/labelexpo



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