

DUPONT™

Tyvek®



Mask Bag, designed by Shou Tao 曹桃, China

# DuPont™ Tyvek® Graphics EMEA Printability Guide



Water Resistant



Paper-like



Light



Tear Resistant



Recyclable



Printable

# DuPont™ Tyvek® Graphics EMEA Printability Guide

DuPont™ Tyvek® is a popular printing substrate due to its light weight, smooth surface, high dimensional stability, opacity, toughness and durability. Uncoated Tyvek® can be printed using most digital and commercial printing processes. Some digital presses and some aqueous ink jet printers require a special coating. Tyvek® can be printed either sheet or web-fed. Tyvek® can be printed the same way as paper, although some of its physical properties do require special attention. To achieve excellent print quality, both the designer and printer must understand the unique properties and characteristics of Tyvek®.

Tyvek® is made of continuous high-density polyethylene filaments. By using heat and pressure, these filaments are bonded into a base material for printing which turns out to be neither paper, cloth nor plastic film, but it integrates the advantages of those three materials.

Tyvek® material has a melting point of 135°C and is a water-resistant and non-absorbent material with superior dimensional stability, high strength, and a smooth matt surface. Most traditional printing technologies can be used for Tyvek® printing, as well as some digital printing. The following Tyvek® printing quick reference guidelines have been summarized based on our current knowledge and the relevant contents will be updated continuously.

## Which printing technologies are suitable for Tyvek® printing?

### 1. Traditional printing

Printing method		Tyvek® 10 series	Tyvek® 14 series
Offset Lithographic Printing	- Traditional sheet-fed offset printing - UV sheet-fed offset printing - UV web-fed offset printing	Suitable	Suitable
Flexographic Printing	- Water-based - Solvent - UV	Suitable	Suitable
Rotogravure Printing	- Water-based - Solvent - UV	Suitable	Suitable
Screen Printing		Suitable	Suitable

For detailed operating procedures, please contact us: [graphics@dupont.com](mailto:graphics@dupont.com)

## 2. Digital printing

With the growing demand for personalized and short lead time for orders, digital printing is used more frequently for the printing of Tyvek® brand materials, especially for the HP Indigo machine. Since the fusing temperatures of laser printers commonly seen on the market are much higher than the melting point of Tyvek®, they are not suitable for Tyvek® printing. However, the ProC7100X, 9100X machines of the Ricoh series have already been demonstrated for Tyvek® printing (such as the printing of Tyvek® 1082D certificates) because their fixing temperatures can be adjusted to suit Tyvek® materials.

Printing method		Tyvek® T10	Tyvek® T14
HP Indigo	- Sheet-fed - Web-fed	Suitable Suitable (refer to next table)	Unsuitable Suitable (refer to next table)
Laser printing	- Conventional - Ricoh Pro C7100X and C9100X series	Unsuitable Frequently used on 1082D but was not subject of authenticated tests of the equipment	Unsuitable Unsuitable
Narrow web-fed label printing machine	- Water-based ink-jet printing - UV/LED ink-jet printing	Unsuitable Frequently used but was not subject of authenticated tests of the equipment	Unsuitable Not used

### HP Indigo suitability

Tyvek® styles	HP Indigo web-fed (roll to roll)			HP Indigo sheet-fed (only for one-shot technology)	
	20000	WS6xx0	WS4xx0	HP Indigo 7xxx	HP Indigo 5xxx
1025D	not tested	Certified	Certified	failed authentication	
1057D	not tested	Certified	Certified	Not certified but frequently used for racing numbers	
1058D	not tested	Certified	Certified	not tested	not tested
8740DL	not tested	Certified	Certified	Certified	Certified
1073D	not tested	Certified	Certified	Certified	Certified
1082D	Profiled	Certified	Certified	Certified	Certified
4158D	not tested	Certified	Certified	not tested	not tested
4173D	not tested	Certified	not tested	Certified	Certified
1442R	Profiled	Profiled	not tested	Unsuitable	
1473R	not tested	not tested	not tested	Unsuitable	

Note : 'failed authentication' means that the authentication test was conducted but didn't meet the evaluation requirements for testing result, which was likely due to the specifications of the materials exceeding the limits of the equipment.

### DuPont™ Tyvek® DigiGo™ 75 for HP Indigo 10000 and 12000 – one-shot technology

Tyvek® DigiGo™ 75 are sheets of 75g/m<sup>2</sup> Tyvek® with a surface finish that enhances print quality. They are available in B2 size (75 x 53 cm). Thanks to this new finish, the print colours will be even stronger, more vivid and more durable than on traditional Tyvek® material.



### 3. Wide-format ink-jet printing

HP Latex 3rd generation, Canon CrystalPoint™, and most UV/Inkjet presses are suitable for direct printing on Tyvek®. Water-based, solvent, and eco-solvent ink jet presses do not print with acceptable quality on Tyvek®.

Wide-format ink-jet printer		Tyvek®
Water-based ink-jet printer		Unsuitable (see note)
(Eco) solvent ink-jet printer		Unsuitable (see note)
UV/LED ink-jet printer		Suitable
HP Latex inkjet printer	3rd Generation ink	Suitable. Refer to next table
Canon Colorwave	CrystalPoint™	Suitable
Canon Colorado 1650	UV Gel	Suitable

Note: if water-based ink-jet coating or (slightly) solvent ink-jet coating is pre-coated on the surface of Tyvek® materials, it is feasible to directly print with water-based ink-jet printers or (slightly) solvent ink-jet printers.

### HP Latex suitability

Tyvek® styles	300 and 500 series	1500 and 3000 series
1025D	Certified	Profiled
1057D	Certified	Profiled
1058D	Certified	Profiled
1073D	Certified	Profiled
1082D	Certified	Profiled
1442R	Unsuitable	Unsuitable
1473R	Unsuitable	Unsuitable

For certification information, visit the website <http://www.hp.com/go/mediasolutionslocator> and search 'DuPont' in the HP PrintOS Media Locator. For information on all machines that have passed authentication for use with Tyvek® materials, click 'download' to enter the downloading page or consult DuPont sales and technical personnel.



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For further information, technical assistance or samples, please contact DuPont or your local distributor.

**DuPont de Nemours (Luxembourg) S.à r.l.,**  
**Tyvek® Graphics**  
**rue General Patton, L-2984 Luxembourg**  
**[www.graphics.dupont.co.uk](http://www.graphics.dupont.co.uk)**

**[graphics@dupont.com](mailto:graphics@dupont.com)**  
**Tel 0080038766838/ 001 5712092351**



# Appendix - Additional printing guidelines

## **Ink adhesion and corona treatment**

Tyvek® styles for graphics are corona treated to improve adhesion of inks, adhesives and coatings. Unlike polyethylene film and other synthetics, Tyvek® does not lose the effectiveness of corona treatment with time. If uncertain whether Tyvek® is corona treated, test the surface energy with commercially available dyne pens or perform a simple “Water Drop” Test. Corona treated Tyvek® has a surface energy of 38-42 dynes; Tyvek® without corona treatment has surface energy of about 30 dynes. Tyvek® styles with a B suffix (ex: 1059B) are untreated and are used primarily for applications where food contact is required.

## **Printing on the smooth or rough side or both sides**

Tyvek® has a smooth side and a rough side. When printing one-sided or where print clarity or full print coverage is most important, print on the smooth side. On hard structure Tyvek®, the difference is minor, but can usually be felt and can be seen easily under a low-power magnifying glass. Soft structure has a linen (smooth) and a rib (rough) side. The linen side is preferred for printing because of better ink hold-out and better surface stability.

## **Longer drying time may be required for conventional ink in offset and screen printing**

Tyvek® is not as absorbent as paper, so inks take longer to dry on Tyvek®. Allow up to two days to complete the printing process because extra drying time-up to 24 hours per side - may be needed to allow the first side to dry before printing the second side. The drying time depends on room conditions, as well as the amount and type of ink used.

## **Temperature and tension guidelines**

Tyvek® is more elastic than paper and should be handled under the lowest tension possible to avoid distortion and misregistration. Under tension, such as in printing or coating operations, we recommend temperature shall be no higher than 79°C to avoid deformation of Tyvek®. Heat transfer and dye sublimation printing are not recommended because the temperatures used to transfer the dyes exceed the melting point of Tyvek® which is 135°C.

## **Reducing static on Tyvek®**

Tyvek® styles for graphics are treated with an antistatic agent to reduce static during sheet handling operations; these include any style with a D or R suffix. Antistatic agents function best at 50% RH or more. Below 20% RH, antistatic agents lose their effectiveness and sheet feeding will become noticeably difficult. The above-mentioned styles have also been treated by corona discharge to improve adhesion of inks, coatings and adhesives. To further reduce static, use copper tinsel to connect Tyvek® to ground and install active static eliminator bars and devices.

## **Printing tips for Tyvek® having no antistatic or corona treatment**

Styles of Tyvek® without corona or antistatic treatment - B styles - can be printed using standard commercial printing equipment and suitable inks; however, special steps must be taken to obtain optimum printing results. When printing on Tyvek® B styles, we recommend testing before proceeding with production operations. When processing B styles, static charge can build on the roll and discharge to equipment or people. Static may also cause cut sheets to stick together.

