

UVivid Flexo JD

Light Fastness & External Durability

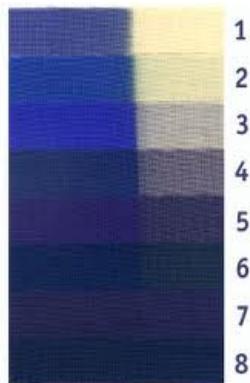
HINTS & TIPS

The light and weathering resistance of inks is very important when labels and products are to be exposed to extended periods of 'store' or natural light and the outside elements. The lifetime of any printed ink will be related to various factors, including film weight, substrate and varnish used; but the major factor will be the light fastness of the specific pigments used in each base colour. For this reason, it is very important to choose suitable base colours carefully when matching shades that need these specific resistance properties.

In the printing industry, light fastness is normally measured using the 'Blue Wool Scale'. This standard was originally developed for the textile industry to determine the colour fastness to light of textile materials.

The scale ranges from 1 to 8, with Blue Wool 1 having a low light resistance and Blue Wool 8 having a very high light resistance.

Blue Wools are essentially textiles coloured with blue dyes with different light resistance properties. Tests are made by exposing print samples and Blue Wool textile standards to high intensity light sources which accelerate any potential fading. Samples are tested in special light cabinets that can reproduce specific conditions to accelerate the fading. This means that much quicker results are possible compared to 'real time' tests done outside. The samples shown here have been exposed only on the right hand side, to show the difference in fade between each Blue Wool.



In the Fujifilm laboratory, controlled ink film weights are tested using two main methods using accelerated testing equipment.

- Durability 'behind glass' for applications that involve window or internal displays tested using a QUV Fadeometer equipped with a UVA351 lamp. This test exposes samples to a specific light source in **dry conditions**.

- External durability for applications where the print is exposed to climatic conditions 'outside' tested using a Q Sun Xenon Weatherometer that includes humidity and water spray cycles as well as high intensity light exposure. This is a far harsher test and prints often have a shorter external exposure lifetime.

The degree of fade is assessed by comparing the exposed area of print, with an unexposed or 'masked' area. This fade is then compared to a BS1006 A02 Grey Scale and the samples are exposed until a fade equivalent to Grey Scale 4 is achieved. At this point the exposed print is compared to the exposed Blue Wool standard and the print allocated a B/W rating equivalent to the standard with a similar degree of fade.

Methodology

UVivid Flexo JD base colours were tested by accelerated aging, using the QUV Fadeometer and the Q Sun Xenon Weatherometer, to determine colours that could be recommended for the following exposure specification.

- 12 months behind glass to a Northern European weather pattern.
- 6 months external exposure in a Northern European climate.

Base colours were printed as a solid block onto Fasson Top White PP substrate using a 360 lpi / 5.5 cm²m³ volume anilox. Samples were then placed in the equipment and exposed to the test conditions explained above.

Recommendations

Results from the in-house testing at Fujifilm indicate that the following base colours from the UVivid Flexo JD ink range can be used for applications as highlighted in the specification above.

UVivid Flexo JD

JD001	Black
JD009	Dense Black
JD025	Opaque White
JD064	Resistant Yellow
JD097	Red 032
JD127	Violet
JD164	Resistant Rubine
JD165	Resistant Rhodamine
JD240	Process Blue
JD260	Reflex Blue
JD320	Green
JD381	Mixing Base

Precautions

There are a number of factors that can dramatically affect the results of light fastness or weather resistance. It is important when printing substrates and labels that require light fastness the following issues are considered.

- Reducing the tint strength of a colour by inclusion of another ink or mixing base can reduce the light fastness of an ink.

- Film weight can affect the light fastness of an ink; the highest film weight feasible should always be used.
- The use of a suitable UV varnish can help to optimise the light fastness of a print.

The equivalent Blue Wool ratings for each of the base colours are listed in the Product Information sheet entitled 'UVivid Flexo JD'.

The information and recommendations contained in this Product Information sheet, as well as technical advice otherwise given by representatives of Fujifilm Speciality Ink Systems Limited and its associated companies, whether verbally or in writing, are based on our present knowledge and believed to be accurate. However, no guarantee regarding their accuracy is given as we cannot cover or anticipate every possible application of our products and because manufacturing methods, printing stocks and other materials vary. For the same reason our products are sold without warranty and on condition that users shall make their own tests to satisfy themselves that they will meet fully their particular requirements. Our policy of continuous product improvement might make some of the information contained in this Product Information sheet out of date and users are requested to ensure that they follow current recommendations.

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