

Light Resistance - Evaluation of Digital Toners (CMYK)

AIM: Determine the light resistance - Blue Wool Scale of the supplied digital toners: Cyan, Magenta, Yellow, Black prints

METHOD: Light resistance test
 Blue Wool Scale 1: poor light fastness
 Blue Wool Scale 8: excellent light resistance

RESULTS:

Commercial print samples	Light resistance: Blue Wool Scale
Cyan	BWS>7
Magenta	BWS>6
Yellow	BWS>7
Black	BWS>5 (Glossy appearance at BWS2)

EXPLANATION OF THE BLUE WOOL SCALE RESULTS

The Blue Wool Scale, as used by the printing industry, is a measure of the time it takes for an appreciable difference to appear between a masked and an exposed print of an ink system, printed at full strength.

An appreciable difference can be one of shade, colour, strength or any other change to the optical property of the particular system. Sometimes the grey scale 3 B:2662 (1962) is used as a standard measure.

The change time depends on an array of factors such as the number of hours of actual sun exposure, the angle of incidence, the latitude, humidity, changes in the stock, the resins of a particular ink system and also temperature.

Most of these conditions are difficult to duplicate exactly as the weather is a variable factor if anything is. Even more difficult is comparing Australian summer exposure to European daylight, as Australia has a very high UV, compared to Europe. However, a comparative list has been made which gives a rough idea of the values involved.

It must be understood that the BW Scale gives a set change at a certain time, but it is not known to what extent the changes continue in any one system beyond the values given in the table (i.e. rate of change). For example an ink may change colour in a few days, but will hardly change any further after that time. In the Research and Development Laboratory of Flint Ink, Penrose, Auckland, a fadeometer is used which is basically a carousel with prints facing inwards going around a Xenon UV lamp. The unit measures hours of exposure to the lamp at constant temperature and humidity. A visual check is made to determine the degree of change at any one time. The prints are compared to a standard patch of Blue Wool to compare the degree of change.

Below is listed a comparison of the various scales:

Blue Wool Scale	European daylight	Australian summer exposure	Fadeometer
8	18 months	3-4 months	290 hours
7	12 months	6 weeks	145 hours
6	6 months	3 weeks	72 hours
5	3 months	10 days	36 hours
4	6 weeks	5 days	18 hours
3	3 weeks	3 days	9 hours
2	10 days	24 hours	4.5 hours
1	5 days	- - -	2 hours

Sunrise to sunset - facing north at a 45° angle to the sun during an extreme summer.

Please note that any ink description containing the word 'FANAL' is neither light nor bleed resistant. If the word 'PERM' or 'PERMANENT' is in the description, the ink will be light and bleed resistant.