

## UGRA 82 IS IT DIGITAL OR FILM?

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### SUMMARY

The technological development in the printing industry has resulted in high expectations by customers in the printing quality. In relation to these customer demands, investigators looked for different solutions for better image quality. UGRA 82 is an internationally accepted standard control strip which controls both the pose quality of the plate and secondly the printed image quality.

In the presents study, the UGRA 82 control strip, which was manufacturally prepared to become sensitive to the light, was passed through the surface of the conventional plate by imposing in two ways. UGRA 82 control strip prepared as an original film by UGRA and the digital UGRA 82 film in the EPS folder format prepared in the computer by UGRA were imposed into film and montaged with original UGRA 82. This montage was imposed into the plate in the optimum conditions. The dot gain values were obtained by measuring the dot values with a densitometer from UGRA 82 at the surface of the plate. A print was prepared on a coated paper with a computer controlled ofset print machine. The dot gain was measured by a spectrophotometer via UGRA 82 printed to the paper. Finally, the qualities of digital and film UGRA 82 were compared.

### INTRODUCTION

The standardization studies in printing industry is a necessary movement for increasing printing quality and the cost control especially due to the advance of the technology and demands. Most important criterion is the integration capability where from the beginning of the printing process to the finishing of it. Nowadays, printing industry improves and regenerates itself depending on the technological developments so that printed materials quality are constantly in increase. If the quality control is not efficient during the printing process, the result will be defected. After finishing the printing process when quality control has been applied that is nothing to do. The important thing is taking necessary precautions when production starts and is in progress. According to contemporary quality control understanding, taking the precautions which obtain quality requirements during the production process, instead of quality control in

post production. ‘Taking precautions before making mistakes’ this logic approach has been started to understand by Printing Industry.

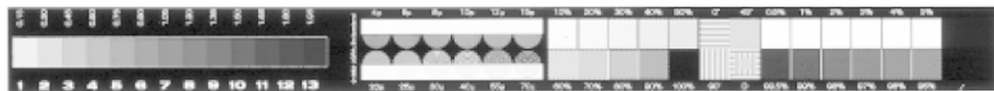
The quality control in offset Printing is made by print control strips. There are a number of control strips available but widely used strip is The UGRA 82 control strip. The UGRA plate control wedge is designed to control the plate making process. At the same time it can be used to evaluate proofs and print tests. UGRA 82 is produced as a digital file and a film for different purposes. The question is the quality difference between two types of control strips.

Our aim is to enlighten that subject which is the quality differences with making comparison with the offset printing tests in this study. All the tests are printed by offset printing under the standard conditions.

We hope the results are especially assist for printing houses technical problems.

## UGRA 82 CONTROL STRIP

As known 4 colour printing process is applied by using Cyan Magenta, Black, Yellow colours separations. All the colours on the printed media which are obtained from trigromic inks mixture of certain rates. If we take under control of CMYK colours, we can control the tone reproduction. Film control strips are produced by photographic way, exposed on the films. The companies producing this type of control device guarantee the accuracy of their products.



**Picture 1.** Film UGRA 82 Control Strip



**Picture 2.** Digital UGRA 82 Control Strip

‘UGRA 1982’ control strip is designed to control the plate making process in offset printing, also it can be used to evaluate proofs and test prints.

On the printing plates these criters are evaluated;

- Exposure
- Exposure latitude
- Resolution
- Gradation
- Rendering of half tone dots (screen dots)

Related to proofs and test prints evaluated criteris;

- Slur and doubling
- Tone reproduction (dot gain, dot size, dimension)

### **Control Areas of the Control Strips**

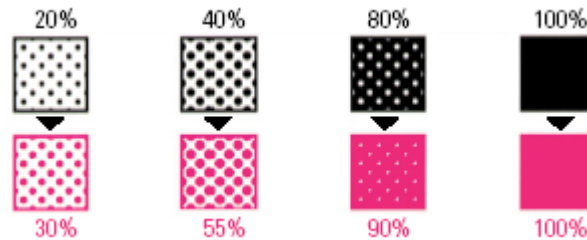
#### **Solid Density Patches**

This patches (areas) can be seen for every process colour. CMYK colours solid density should be measured when the print densitometer on 'Density' mode. Before measuring the printed area white paper should be measured. Solid density values on the surface of printed sheets should be measured regularly during the printing process by printing densitometer..

#### **Dot Gain Patches**

Printing control strips have steps of half tone (screened) percentage areas these areas permit evolution of dot gain, especially steps of 40% and 80% areas are measured by densitometer. 'Dot gain' mode should be chosen. Before measuring the printed area white paper should be measured first. While evaluating the dot gain of the colour firstly solid density should be measured later dot gain. Dot gain on the surface of printed sheets should be measured regularly during the printing process by printing densitometer

CMYK colours densities show difference according to used type of paper.



**Table 1.** The dot gain values which has been published ISO 12647-2

#### **Micro Lines**

12 patches of micro lines determine to find the exposure time. To the optimum resolution of the plates is determined by the reduction of the micro lines.

#### **Slur and Doubling**

Slur is caused by different speed of two cylinders and it is realised If the vertical lines are spread to the printing direction.

Doubling can be caused by register problems between different units of the multicolour press.

Doubling shows two misregistered images one is lighter than the other. Slur makes the lines broader. The two images of doubling can be seen at the high light dots (areas)

### Continuous-Tone Patch

The density values are written on top of the continuous-tone patches. The continuous tone indicates the exposure time according to given type of light sensitive materials. Exposure time is decided for darkness and lightness of the patches.

## EXPRIMENTAL PART

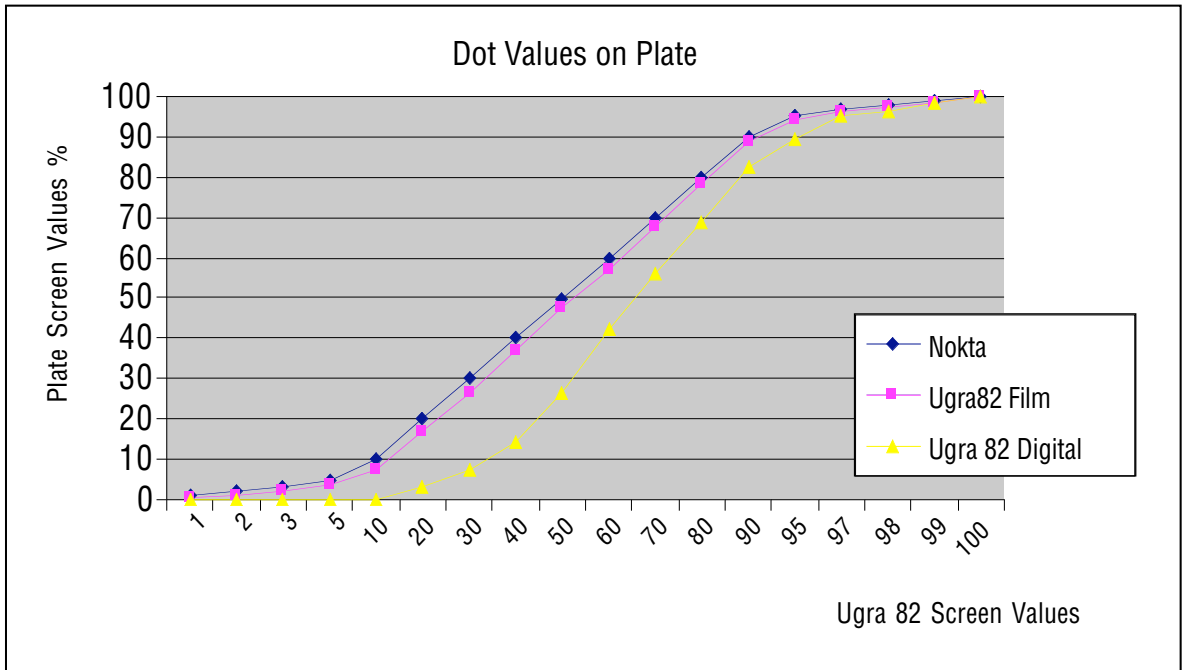
The UGRA 82 control strip is produced both digital and film. This study's target is to evaluate two strips printing qualities and to make a comparison with them.. The printing applications have been done appropriate to International Standards under the Standard conditions and Standard values in this research. Offset printing machine size 36 x 52 has been used and coated paper has been used in this research.

Paper Type	Colour	Density
Coated Paper	C	1,55
	M	1,50
	Y	1,45
	K	1,85

Table 2 . ISO 12647-2 (1996) The density values which has been published ISO 12647-2

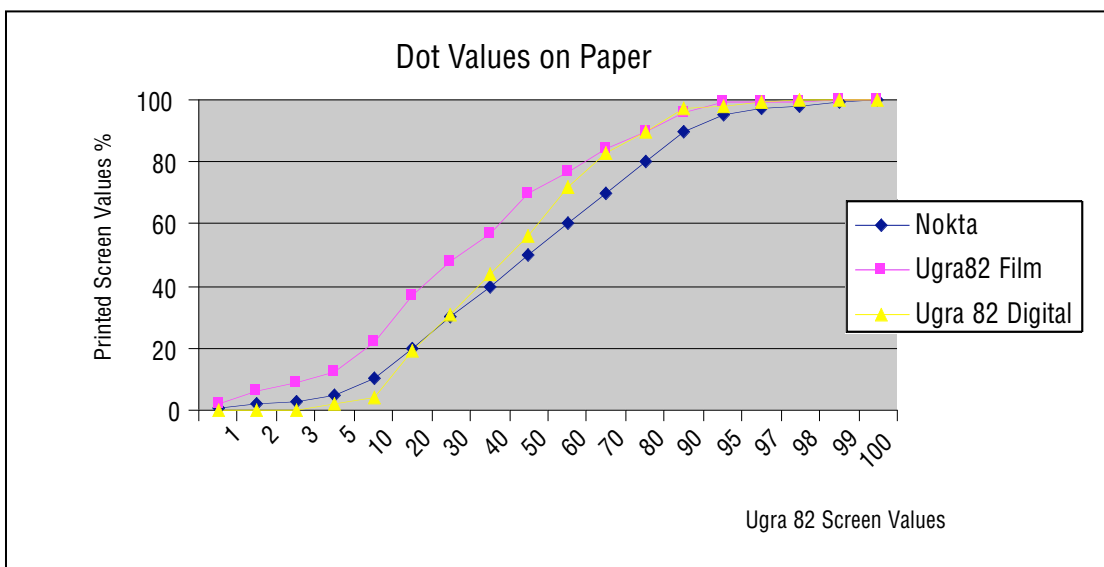
Coated Paper			Tolerance	Test Method
GRAMMAGE	g/m <sup>2</sup>	300	± 5 %	ISO 536
THICKNESS	µm	385	± 5 %	ISO 534
STIFFNESS / Md	mNm	12.0	± 15 %	ISO 2493
STIFFNESS / cd	mNm	6.6	± 15 %	ISO 2493
BRIGHTNESS	%	79,00	min.	ISO 2470
COBB <sub>60</sub>	g/m <sup>2</sup> -20	100	max.	DIN 53132
Test Conditions : 23 ± 1 OC - RH : 50 ± 3 %				

Table 3 . Specifications of the paper



**Table 4 . Dot Values on Plate**

Before printing process, ideal image on the film has transferred to the plate in the optimum conditions and dot values has been measured by IC Plate device. The Measured dot values as shown on the chart 4. End of the measurement The UGRA digital strip's dot values especially lower than highlights and midtone values. The UGRA 82 film strip scale shows the values on the normal level.



**Table 5 . Dot Values on Paper**

End of the measurement The UGRA digital strip's dot values especially lower than highlights and midtone values. The UGRA 82 film strip scale shows the values on the normal level.

#### **4. CONCLUSION**

The films and the plates which has been prepared under optimum conditions and prepared plates has been used for printing and measured by spectrophotometer.

The following results are the observation of our measurements.

The measurement of the plates which has been exposed by UGRA 82 film strip its values has been transferred to the plates as optimal values (Table 4)

The printed media has been measured; as a result, optimal tone values has been obtained. (Table 5)

Printing standardization with UGRA 82 film applications; the printing quality is acceptable for International standards, good tone reproduction, no image loss observed, ink consumption is in optimum amount.

While same printing process, the measurement of the plates which has been exposed by UGRA 82 digital strip its values has been transferred to the plates under the optimal values (Table 4) besides printed media dot gain values under the optimal values. Therefore some interventions and adjustments have been done to reach the optimal dot gain but it caused reduction of image quality and increase of waste paper .

Finally; When the UGRA 82 film has been used as a guide for printing standardisation, printing quality is suitable for international standards and there is no image loss of the quality (tone reproduction), ideal amount of ink consumption

When the UGRA 82 digital has been used as a guide for Printing standardization, Image quality (tone reproduction) is under the level of standards especially for high lights and midtones and Printing productivity is reduced.