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ANALYSIS OF EFFECT OF PRIMER COAT ON SOLID INK DENSITY OF METALIZED SHEETS PRINTED WITH DRY TONER BASED DIGITAL PRINTING

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ABSTRACT

The purpose of this analysis is to determine the relationship between primer coat and the solid ink density by printing the primer coated metalized board and non primer coated metalized board with a dry toner based digital printing process. The results showed that there is some effect of primer coat on solid ink density of metalized sheets printed with dry toner based Digital Printing process. The solid ink density of primer coated metalized boards printed was found higher in primer coated boards then the non primer coated boards.

INTRODUCTION

Print providers raise their profiles either by broadening the spectrum of materials they can process or by specialising in selected materials and/or formats. However, substrates are often the cause of vociferous complaints from customers. This study report provides an overview of working on Digital printing machines with metalized materials, particularly the effect of primer coat on solid ink density.

Metalized boards

Metalized boards have a foil covering on the base paper board. It can be accomplished by a common glue lamination technique, which utilizes heat, pressure and hot glue to bond foil to the base. Glue lamination is performed by several paper companies. A foil surface can also be created by the process of vacuum metalizing, on machines commonly referred to as vacuum metalizers. Many different types of foil coatings can be selected, depending on the finish desired. In this study, an aluminium based foil is used. Tinted or laser patterned foils also may be used. Both the glue lamination and vacuum metalizing techniques commonly yield foil on one surface of the base.

Ink-density:

Print density is a measurement of light reflected off of the press sheet. A densitometer measures ink density on a color bar, telling the press operator how to adjust the ink level. Proper density values are checked in each ink zone using a color bar or other areas of solid single-color ink coverage. Print density has historically been the primary control element used on press to ensure accurate color. Print density is measured using a densitometer or spectrophotometer as well.

Metalized board is a special type of cardboard laminated with metalized films. This substrate is widely used today for various types of folding cartons. Popularity of such technique is growing day by day. This substrate is often used for premium cartons for confectionary, cosmetics, toiletries, alcohol, greeting cards etc. Printing on metalized board requires UV inks and UV curing.

The base board is, usually, cellulose or recycled cardboard of different weights. Metalized board is manufactured by laminating the board with various films – matt, mirror, holographic or colour.

The adhesion of inks to the substrate is of paramount importance for printing on metalized board. All factors, such as the right choice of inks, dampening solution and substrate play important parts. Substrates need to be primer coated in order to enhance surface tension and adhesion when printed with offset printing process.

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In our Analytical study we analysed the effect of this primer coat on solid ink density of the print while printing it with digital printing process. Primer coated and non primer coated metalized boards were printed on a digital printing process and solid ink density of each colour namely CMYK was measured and finding of the measurement are as written in the table below

Solid Ink Density (With Primer Coat Digital)				Solid Ink Density (Without Primer Coat Digital)			
C	**M**	**Y**	**K**	**C**	M	Y	K
.09	2.01	1.86	2.52	2.06	2.02	1.9	2.55
2.21	1.92	1.9	2.57	2.07	2.01	1.89	2.42
2.11	1.98	1.75	2.56	2.03	2.09	1.88	2.59
1.96	1.98	1.88	2.52	2.14	2.04	1.86	2.57
2.05	2.01	1.86	2.45	1.96	1.98	1.73	2.57
2.13	2.08	1.73	2.56	2.05	2.01	1.84	2.54
2.04	2.07	1.85	2.51	2.14	2.09	1.93	2.57
2.01	2	1.93	2.48	2.04	1.97	1.82	2.51
2.04	2.02	1.92	2.53	1.98	1.96	1.85	2.49
2.07	2.04	1.87	2.58	2.05	1.97	1.7	2.57
2.12	2.03	1.93	2.58	2.09	2.01	1.76	2.43
2.01	1.99	1.92	2.57	2.04	2.02	1.86	2.46
2.07	2.03	1.87	2.59	1.99	1.97	1.74	2.53
2	2.01	1.79	2.55	2.06	2.01	1.7	2.42
2.16	2	1.79	2.57	2.07	1.99	1.85	2.56
2.04	2.02	1.84	2.53	1.98	1.99	1.88	2.36
1.95	1.94	1.87	2.59	2.03	2.01	1.87	2.52
2.18	2.2	1.93	2.61	1.96	1.95	1.94	2.38
2.01	2.02	1.93	2.53	2.07	1.95	1.74	2.6
2.13	2.03	1.87	2.55	2.09	1.96	1.87	2.41
1.97	1.98	1.88	2.31	2.04	1.97	1.83	2.56
2.06	2.02	1.87	2.56	1.98	1.99	1.87	2.32
2.14	2.02	1.86	2.57	2.05	2.01	1.88	2.55
2.07	2.01	1.89	2.4	2.15	1.97	1.89	2.58
2.02	2.01	1.9	2.45	2.08	1.96	1.71	2.54
2.03	2.01	1.89	2.53	2.01	1.93	1.86	2.56
2.11	2.02	1.87	2.41	2.04	1.95	1.89	2.54
2.05	2.01	1.89	2.41	2.1	1.93	1.71	2.56
2.04	2.03	1.93	2.58	2.06	2.01	1.88	2.57
2.11	2.03	1.8	2.48	2.03	2.01	1.84	2.59

Cyan (C)

When Solid Ink Density of cyan colour of primer coated boards was measured the average Solid Ink Density was found 2.06. Whereas when Solid Ink Density of cyan colour of non primer coated boards was measured the average Solid Ink Density was found density 2.04.

Magenta (M)

When Solid Ink Density of Magenta colour of primer coated boards was measured the average Solid Ink Density was found 2.01. Whereas when Solid Ink Density of magenta colour of non primer coated boards was measured the average Solid Ink Density was found density 1.99.

Yellow (Y)

When Solid Ink Density of yellow colour of primer coated boards was measured the average Solid Ink Density was found 1.86. Whereas when Solid Ink Density of yellow colour of non primer coated boards was measured the average Solid Ink Density was found density 1.83.

BLACK (K)

When Solid Ink Density of black colour of primer coated boards was measured the average Solid Ink Density was found 2.50. Whereas when Solid Ink Density of black colour of non primer coated boards was measured the average Solid Ink Density was found density 2.48.

CONCLUSION

During the analysis it was observed that the results obtained during the research were in accordance with the print quality standard range. On the bases of the research carried out the it wasfound that in both the cases i.e. primer coated and without primer coated metalized boards, the boards printed with dry toner based digital printing showed solid in k density 2.07 for Cyan , 2.03 for Magenta,1.85 for Yellow, & 2.50 for Black colours respectively. There was only a minute difference in solid ink density of primer coated boards and non primer coated boards in Cyan and Magenta colours.

It can be concluded that there is not much effect of primer coat on solid ink density when printing a metallised board with dry toner based digital printing process.

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