**Introduction:**
When inks are used on a two-colour offset printing press the second ink film is printed over the first ink film while it is still completely wet. For multi colour presses the same can be said for the other colours. In order to do so the inks have to be trapped on tack and/or viscosity. The systems for measuring tack and/or viscosity measure these ones as it is in the tin, without the influence of absorption by the paper.
On the printing press, as soon as the ink is printed on the paper the low viscosity components of the ink will penetrate into the paper and the viscosity and tack of the ink will increase rapidly.
The longer the ink is on the paper, the bigger this increase of viscosity and tack will be. The time interval between individual prints differs considerably in various types of presses. In practice these interval times are between about 0.03 and 3 s. For proper adjustment of ink for wet-on-wet printing a printability tester is essential, operating from very short time intervals upwards.
Although in practice water is used and an emulsion is formed, this method gives very good results for testing wet-on-wet printing.
There are 2 methods:
W46 for a printing form with coated rubber of 85 Shore A for smooth papers (described in this leaflet)
W69 for a printing form with coated rubber of 65 Shore A for smooth and rather rough papers

**Principle:**
A set of two colours of offset inks is printed on each other on paper in both the colour sequences and with different interval times. The results are observed visually or with the help of a densitometer. The best print quality and the best ink transfer show the right colour sequence.
Also for a four colour series of offset inks the inks always must be tested in sets of two colours.

**Method of operation:**
• It is recommended to execute the test in the standard atmosphere; to most standards it is 23.0 ± 1.0 °C (73.4 ± 1.8 °F) and 50 ± 2% rh.
• For the operation of the AIC2-5T2000, the High Speed Inking Unit 4 and the ink pipette follow the instructions of the manuals, IGT information leaflet W100 and the displays accurately.
• Handle the samples carefully.

Preparation
1. Condition the papers, inks and equipment during >6 hours in the standard atmosphere.
2. If necessary cut the paper strips (preferable 55 x 320 mm, 4 - 6 strips per set of inks) and mark them with top and/or bottom side, machine and/or cross direction and a code for the type of paper.
3. Adjust the printing force of the printing disc shafts to 1000 N and pay attention for the right backlash. See W100.
4. Adjust the speed to constant (□), 1.0 m/s.
5. Check and if needed, move the slide in front of the sector into the constant speed mode (□).
6. Check the functioning of the AIC2-5T2000 following the instructions in the chapter "Execution".
7. Fill the ink pipettes with the inks to be tested.
8. Adjust the High Speed Inking Unit with the settings mentioned in note 2.
9. Check the functioning of the High Speed Inking Unit.

Execution
1. Adjust the interval time in the display.

| **Materials / testing conditions** | | |
|---|---|---|
| 1 | IGT AIC2-5T2000 | 710 |
| 2 | IGT High Speed Inking Unit 4 (with 4 segmented top roller for conventional inks) | 466.410.100 (466.003.003) |
| 3 | Printing disc with coated rubber, 85 Shore A, 50 mm (2x) | 402.333 |
| 4 | Strips of art paper, code Ka, 55 mm | 404.009.004 |
| 5 | IGT ink pipette (2x) | 408.200 or 408.400 |
| 6 | If necessary strips of paper to be tested (55 x 340 mm, 46 strips per set of inks) | |
| 7 | Inks to be tested | |
| 8 | Densitometer (if required) | |
| 9 | Lint free rags | |
| 10 | Cleaning naphtha | |

| | |
|---|---|
| Printing force | 625 N |
| Printing speed | 1m/s |
| Interval times between 2 colours | at choice |
| Ink film thickness | 2.4 µm |

The numbers 1 thru 5 are available at IGT Testing Systems.
The numbers 3 thru 4 can be obtained as Wet-on-wet Printing Set for AIC2-5T2000, article number …..

2. Attach a test strip on the sector.
3. Turn the sector into starting position.
4. Apply 2.4 µm of both inks to two separated segments of the inking unit and distribute the inks (indication: 2.4 µm for art paper). See note 3 or the manual of the inking unit.
5. Place the printing discs on the printing disc shafts of the segments of the inking unit and ink the discs during the preset time.
6. Take the discs from the inking unit and place them on the printing disc shafts of the tester: the 1st colour at the top shaft and the 2nd colour at the bottom shaft.

Fig. 1: wet-on-wet printing

7. Press one of the side buttons to start the motor.
8. Move the printing discs into printing position against the test strip.
9. Press the other side button as well to make a print (also keep both buttons pressed during the interval time).
10. After the sector has stopped in the end position, release the side buttons.
11. Move the printing discs out of printing position
12. Remove the test strip from the sector.
13. Take off the printed paper strip from the sector.
14. Remove the printing discs from the tester and clean them with the rags and naphtha.
15. Clean the rollers of the inking unit or use the next segments for the following test.
16. Repeat the points 2 thru 15 for the next test strip in the opposite colour sequence.

IGT Testing Systems, P.O.Box 12688, 1100 AR Amsterdam, The Netherlands
Keienbergweg 25, 1101 EX Amsterdam, The Netherlands
Phone +31 (0)20 409 9300, Fax +31 (0)20 697 4842, E-mail: info@igt.nl Internet: www.igt.nl

17. Examine or measure the results as pointed out in the chapter "Assessment".
18. If desired, repeat the points 1 thru 17 for other interval times.
19. Repeat the points 1 thru 18 for the other types of paper or ink.
20. After having finished the tests, clean and store all parts as described in the manuals.
21. Make an accurate record of the conditions and the results of the test.

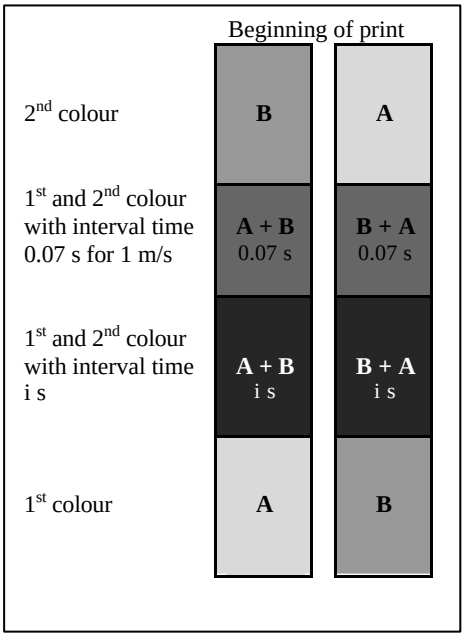


Fig. 2 Wet-on-wet printing

Assessment
See figure 2.

1. Visually
Judge the differences between the prints for different interval times of both colour sequences. The colour sequence with the smallest difference between the prints of different interval times is the best colour sequence.

2. Densitometrically

2.1. After > 4 hours after making the print measure the contrast density of all parts (both single colours and both colours) of the strips with the densitometer set for the 2nd colour.

2.2. Calculate the average of the measured densities per part.

2.3. Calculate the % of ink transfer with the formula:

$$F = \frac{D_{(1+2)} - D_1}{D_2} \times 100\ \%$$

In which: $D_{(1+2)}$ = density of both colours together
$D_1$ = density of 1st colour, $D_2$ = density of 2nd colour

2.4. The highest % of ink transfer is the best colour sequence.

**Notes**:

1. The test results of the AIC205T2000, AIC2-5 and Global Standard Testers 2 compare well with another on the condition that the tests have been carried out under the same testing conditions.

2. It is advised to use the following settings for the High Speed Inking Unit 4:
Water bath : 23.0º C (73.4º F)
Mode : 2
Starting time : 5 s
Distribution time : 10 s
Distribution speed : 1.2 m/s
Inking time printing discs : 5 s

3. To reach an ink film thickness of 2.4 µm on the High Speed Inking Unit 4 with a 4segmented toproller a quantity of 0.10 cm³ has to be applied. It is not advised to add some ink after a test.

4. In most of the cases the extra interval times of 3 and/or 6 s will be used. The time of 0.1 s will present as a result of the speed 1.0 m/s.

This information leaflet has been compiled with the utmost care. However, may you find any inadequacies or if there are any comments, we kindly request you to send these to IGT Testing Systems, Sales Department.

IGT Testing Systems, P.O.Box 12688, 1100 AR Amsterdam, The Netherlands
Keienbergweg 25, 1101 EX Amsterdam, The Netherlands
Phone +31 (0)20 409 9300, Fax +31 (0)20 697 4842, E-mail: info@igt.nl Internet: www.igt.nl