Introduction
Many times paper is printed on both sides. The ink penetrates into the paper from the one side to the other side. When the ink penetration into the paper is very strong the ink can be visible at the other side and reading the printed matter at the other side can be disturbed. In this case we speak about striking through. This phenomenon can be tested with the print through or striking through test.
This information leaflet describes two method:
W43-AMS print through with printing disc with rubber of 85 Shore A
W68-AMS print through with printing disc with rubber of 65 Shore A.

Principle
Paper is printed at one side. The ink penetrates into the paper. After a certain time the ink does not penetrate any more. The whiteness at the back of the print and at the paper without the ink is measured. The print through is calculated as a percentage of the original whiteness of the paper.

Method of operation
- It is recommended to execute the test in the standard atmosphere; to most standards it is 23,0 ± 1,0 °C and 50 ± 2% rh.
- For the operation of the AMSTERDAM, Inking Unit and ink pipette follow the instructions of manuals, W100 and displays accurately.
- Handle the samples carefully.

Preparation
1. Condition the papers, the ink and the equipment during >6 hours in the standard atmosphere.
2. Cut the paper strips and mark them with top and/or bottom side, machine and/or cross direction and a code for the type of paper.
3. Select method **Print through.**
4. Fill the ink pipette with the ink to be used.
5. Adjust the High Speed Inking Unit 4 with the following settings:
   - Water bath: 23,0 °C
   - Top roller: 4-segmented, rubber for conventional inks
   - Mode: 2
   - Startup time: 10 s
   - Distribution time: 20 s
   - Distribution speed: 0,5 m/s
   - Inking time printing discs: 15 s

Execution
1. Touch the button **PRINT** to rotate the 1st shaft into the start position.
2. Attach a test strip into the front clamp of the sector.
3. Apply 0,35 cm³ of ink to a segment of the top roller of the inking unit and distribute the ink during the preset or desired time.
   NOTE**:** It is not advised to add some ink after a test
4. Place the printing disc on the printing disc shaft of the inking unit and ink the disc during the preset or desired time.
5. Take the printing disc from the inking unit.
6. Place the printing disc on the 1st printing disc shaft of the tester.
7. Press both side buttons to make a print and to rotate the sector into the end position, then release the side buttons.
8. Take the printing disc from the tester and clean with rags and naphtha.
9. Take the printed strip from the sector and store at a safe place for at least 5 hours.
10. Clean the rollers of the inking unit or use the next segment for the following test.
11. For a following test start with point 2 or touch **BACK** and start with point 1. It is recommended to perform the test at least three times per sample.
12. After having finished the tests, touch **BAC**K, clean and store all parts as described in the manuals.
13. Check the result after 5 hours as described in the section “Assessment”.
14. Make an accurate record of the conditions and the results of the test and refer to the printing disc used:
    14.1. W43-AMS: Black rubber 85 Shore A.
    14.2. W68-AMS: Black rubber 65 Shore A

Materials / Testing conditions		
1	IGT AMSTERDAM 1, 2, 5 or 6	
2	IGT High Speed Inking Unit 4	466.000.710
3	Top roller with 4 segments for conventional inks	466.003.003
4	IGT ink pipette 0,01 ml resolution	408.000.200
5	Printing disc with rubber, 85 Shore A, pin, 50 mm (for W43)	402.634.720
	or Printing disc with rubber, 65 Shore A, pin, 50 mm (for W68)	402.687.720
6	IGT Set off ink	404.520.068
Strips of paper to be tested, preferable 55*340 mm², 3 strips per sample		
Lint free rags and cleaning naphtha		
Whiteness tester		
Printing force	625 N	
Printing speed	Constant, 0,2 m/s	
Ink film thickness (volume) (guide line)	8 µm (0,35 cm³)	
Checkbox Scan	Activated if desired	
►The numbers 1 thru 6 are available at IGT Testing Systems.		

Assessment
1. Measure the whiteness on the back of the blank paper on a stack of 1, 2, 3 and more sheets of this paper until the whiteness does not change any longer. The number of sheets of this paper forms the backing to use to measure the whiteness in the next points.
2. Measure the whiteness at the back of the paper strip on the place where the paper has been printed (L^*_b) and on the place where the paper has not been printed ($L^*_\sim$). Use the backing as developed in point 1.
3. Calculate the print through as:

   Print through = (L^*_b : $L^*_\sim$) x 100%

4. Repeat the points 2 and 3 for every strip.
5. Calculate the average and if desired, the standard deviation. Sometimes it can be useful to mention the highest and lowest values as well.

Notes
The storage life of the ink in the original packing is 3 years maximum; in an opened packing 1 year.