

Introduction:

Most commonly picking of paper is defined as the damage of the paper surface during the printing operation. At the time the printing form is lifted off the paper the ink is exerting a certain force on the paper. This force is increasing with an increase in the viscosity and tack of the ink and the printing speed. When this force exceeds a certain value, the surface of the paper will be damaged. This test can be used to determine the delamination of paperboard as well. In IGT leaflets W31, W65 and W75 the standard pick test is described: making a print at an increasing speed and assessment of the speed at which picking begins.

More or less imitating what happens in practice in a multi colour printing press is the method in which a paper sample is printed for several times at a constant speed. After the first time of printing the ink is penetrating into the paper, so the tack and viscosity are increasing. Printing for several times on this printed paper lead to higher splitting forces and after a certain number of prints the paper can be damaged.

This method is a rather popular method which is often used as an internal method of paper mills. With the IGT printability testers AIC2-5T2000 and Global Standard Tester 2, 3 and 3H this method is carried out with an aluminium disc (W86) or a coated rubber covered disc with a hardness of 85 Shore A (W87) or 65 Shore A (W88).

Principle:

Using the IGT-printability tester the paper to be tested is printed with a standard tack graded ink at a constant speed for several times. If the paper shows a damaging, the number of printings is mentioned as the value for the paper. The higher the number of printings, the better the paper is.

The method is carried out with a standard pick test ink, but sometimes an own ink from practice is used.

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, GST, High Speed Inking Unit and 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, the pick test oil and the equipment during >6 hours in the standard atmosphere.
2. Cut the paper strips (preferable 55 x 340 mm, 3 strips per sample) and mark them with top and/or bottom side, machine and/or cross direction and a code for the type of material.
3. Place the printing disc on the (upper) printing disc shaft of the tester and mark the side of the disc at the point which is toward the sector.
4. For AIC2-5T2000 only:
 - 4.1 Mount the packing on the sector. See W100.
 - 4.2 Adjust the printing force of the upper printing disc shaft to 1000 N and pay attention for the right backlash. See W100.
 - 4.3 Adjust the desired printing speed in the constant speed mode (□). NOTE: Dependent to the paper quality it is advised to choose the speed between 1 and 4 m/s; the lower speeds for weak papers and the higher speeds for strong papers.
5. For GST 2/3/3H only:
 - 5.1 If not present, mount the sector with clamps. See W100.
 - 5.2 Mount the paper packing on the sector. See W100.
 - 5.3 Select the menu "Passes aluminium" in the display. NOTE: If this menu is not present, select "Print mottle".
 - 5.4 If necessary adjust the printing force to 1000 N.

Materials / testing conditions

1	IGT AIC2-5T2000 or IGT Global Standard Tester 2 or IGT Global Standard Tester 3 or IGT Global Standard Tester 3H	710.000.000 412.000.000 416.000.000 467.000.000
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	408.000.200
5	Printing disc, aluminium, 50 mm, ø 65 mm	402.331
6	Huber pick test ink, low viscosity or Huber pick test ink, medium viscosity or Huber pick test ink, high viscosity or Huber pick test ink, very high viscosity	404.800.001 404.800.002 404.800.003 404.800.004
7	Packing, paper, 55 mm	404.001.005
8	Sector with clamps (for GST/2/3)	361.000.000
9	Strips of paper to be tested, preferable 55 x 340 mm, 5 strips per sample	
10	Lint free rags	
11	Cleaning naphtha	

Printing force	1000 N
Printing speed	Constant, speed at choice
Pick test oil film thickness (volume)	2.4 µm (0.10 cm ³)

- The numbers 1 thru 8 are available at IGT Testing Systems.
- The numbers 5 thru 7 can be obtained as Multi pass Pick Testing Set (aluminium) for AIC2-5T2000, GST 2/3/3H, article number

• This leaflet contains article numbers per January 1st, 2006 •

- 5.5 Adjust the desired printing speed. NOTE: Dependent to the paper quality it is advised to choose the speed between 1 and 4 m/s; the lower speeds for weak papers and the higher speeds for strong papers.
6. Check the functioning of the tester following the instructions in the chapter "Execution".
7. Fill the ink pipette with the desired tack graded pick test ink. NOTE: Low tack ink for weak papers and high tack ink for strong papers.
8. Adjust the High Speed Inking Unit 4 with the following settings
 - Water bath: 23.0 °C (73.4 °F)
 - Top roller: 4-segmented, rubber for conventional inks
 - Mode: 2
 - Starting time: 5 s
 - Distribution time: 10 s
 - Distribution speed: 1.2 m/s
 - Inking time printing discs: 5 s
9. Check the functioning of the High Speed Inking Unit.

Execution

1. Attach a test strip in the front clamp of the sector.
2. Apply 0.10 cm³ of pick test ink to the inking unit. NOTE: It is not advised to add some ink after a test
3. Place the printing disc on the printing disc shaft of the inking unit and ink the printing disc.
4. Take the printing disc from the inking unit and place it on the (upper) printing disc shaft of the tester.
5. Move the printing disc into the position that the starting point of the disc is toward the sector.
6. For AIC2-5T2000 only:
 - 6.1 Turn the sector into starting position.
 - 6.2 Start the stopwatch.
 - 6.3 Press one of the side buttons to start the motor.
 - 6.4 Move the printing disc into printing position against the test strip.
 - 6.5 At a certain time, e.g. 10 s after having started the stopwatch, press the other button to make a print.

- 6.6 Directly observe the surface of the paper:
 - 6.6.1 If the surface has been damaged, note the number of the print after which the damaging occurred and continue with point 8.
 - 6.6.2 If the surface has not been damaged, continue with the next point.
- 6.7 Directly move the printing disc out of printing position.
- 6.8 Directly move the sector into starting position.
- 6.9 Directly turn the disc into the position that the starting point of the disc is toward the sector.
- 6.10 Directly press one of the side buttons to start the motor.
- 6.11 Directly move the printing disc into printing position against the test strip.
- 6.12 After 10 s after having made the print, make a print again.
- 6.13 Repeat the points 6.6 thru 6.11 for a maximum of 10 times.
7. For GST only:
 - 7.1 Make a print, keep pressed both side buttons to move the sector into the starting position again and release the side buttons. NOTE: From the moment of printing the timer starts counting down from 10 s to 0 s.
 - 7.2 Directly observe the surface of the paper:
 - 7.2.1 If the surface has been damaged, note the number of the print after which the damaging occurred and continue with point 8.
 - 7.2.2 If the surface has not been damaged, continue with the next point.
 - 7.3 Directly turn the printing disc into the position that the starting point of the disc is toward the sector.
 - 7.4 Before the timer in the display has reached 0 s, press the side buttons. As soon as the timer has count down to 0, a print is made and the sector is moved into the starting position; at this moment release the side buttons. NOTE: From the moment of printing the timer starts counting down from 10 s to 0 s.
 - 7.5 Repeat the points 7.2 thru 7.4 for a maximum of 10 times. NOTE: in the display the number of prints can be read.
 - 7.6 Press "Enter" to finish the test for this test sample.
8. Remove the test strip from the sector.
9. Take the printing disc from the shaft and clean it with rags and naphtha.
10. Clean the rollers of the inking unit or use the next segment for the following test.
11. Repeat points 1 thru 10 for every test strip. It is recommended to perform the test at least 3 times per sample.
12. After having finished the tests, clean and store all parts as described in the manuals.
13. Make an accurate record of the conditions and the results of the test.

Assessment

1. Observe the surface of the paper on damaging. If it has been damaged, note the number of prints after which the damaging occurred.

Notes:

- 1 The test results of the AIC2-5T2000, AIC2-5 and Global Standard Tester 2, 3 and 3H compare well with one another, on the condition that they have been carried out under the same conditions.
- 2 The maximum storage life of the pick test ink in the original packing is 3 years, in an opened packing 1 year.

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.