

Introduction:

In offset printing, the fact that water as well as ink is transferred to paper may well lead to complications. Especially in process printing, where the paper is wetted several times, water may affect ink transfer because it changes the surface structure of the paper. For example, it is possible the water is weakening the paper surface to such an extent that paper particles are pulled off from the surface by the tack of the ink. This phenomenon is known as wet pick. Another possible effect of water is that the paper does not accept ink because the water did not completely penetrate into the paper. This is called wet repellence. Both phenomena may occur simultaneously and sometimes it is difficult to differentiate between them, because they both appear as white spots in the print.

During offset printing a moisture film of about 0.2 to 0.3 μm (0.2 to 0.3 g/m^2) per colour is applied to the paper. To investigate and check a paper for wet pick and wet repellence a water film of this thickness is needed and sometimes a thicker water film to imitate the multi colour process.

The occurrence of wet pick and wet repellence is also influenced by the time interval between damping and printing. This is the case in multi colour printing presses. The time lapse between two colours depends on printing speed and the distance between printing units. In practice this time is dependent to the type of printing press and varies between about 0.03 and 1 s.

The test can be carried out with the Global Standard Tester 2 with the damping unit.

This leaflet describes the method with a printing disc with rubber of 65 Shore A, W32 with a disc with rubber of 65 Shore A.

Principle:

The damping unit consists of a screened damping disc with doctor blade and a printing disc. An excess of damping fluid is applied to the disc, which is then metered by a doctor blade. The amount of fluid remaining on the damping disc is transferred to the paper, which is printed on with a standard ink, if required after the set time interval. After this the printed sample is checked on wet pick or wet repellence. There are damping discs available for the application of moisture films of 0.25, 0.5 and 1.0 μm .

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 $50 \pm 2\%$ rh.
- For the operation of the AIC2-5T2000, Global Standard Tester, High Speed Inking Unit 4 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 ink and the equipment during >6 hours in the standard atmosphere.
2. Cut the paper strips (preferable 55 x 340 mm, 3 strips per sample per test) and mark them with top and/or bottom side, machine and/or cross direction and a code for the type of paper.
3. For AIC2-5T2000 only:
 - 3.1 Mount the top three layers of a paper packing on the sector. See W100
 - 3.2 Adjust the printing force for both printing disc shafts to 625 N and pay attention for the right backlash for both shafts. See W100. NOTE: This type of printing disc (\varnothing 66 mm) is not the standard type for the AIC2-5T2000; for that reason the backlash must be adjusted.
 - 3.3 Adjust the desired printing speed in the constant speed



Fig.1: Damping unit AIC25T2000



Fig.2: Damping unit GST2

Materials / testing conditions

1	IGT AIC2-5T2000	710.000.000
	or IGT Global Standard Tester 2	412.000.000
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
	<u>For AIC2-5T2000 only:</u>	
5	Mounting shaft	450.054.710
6	Doctor blade holder	435.054.710
7	Damping disc for 0.25 μm of water or damping disc for 0.5 μm of water or damping disc for 1.0 μm of water *****	402.354.002.710 402.354.005.710 402.354.010.710
	<u>For GST2 only:</u>	
8	Doctor blade holder	435.031.412
9	Damping disc for 0.25 μm of water or damping disc for 0.5 μm of water or damping disc for 1.0 μm of water	402.354.002.412 402.354.005.412 402.354.010.412
10	Cartridge for damping fluid	160.200
11	Hoses and coupling	160.300
12	Sector with clamps *****	361.000.000
	<u>For AIC2-5T2000 and GST2:</u>	
13	Doctor blades for damping unit	180.431.710.001
14	Printing disc, covered with coated rubber of 65 Shore A, 50 mm, \varnothing 66.5 mm.	402.087
15	Packing, paper, 55 mm	404.001.005
16	Huber pick test ink, low tack or Huber pick test ink, medium tack or Huber pick test ink, high tack or Huber pick test ink, very high tack	404.800.001 404.800.002 404.800.003 404.800.004
17	Strips of art paper, code Ka, 55 mm *****	404.009.025
18	Strips of paper to be tested, preferable 55 x 340 mm, 3 strips per sample per test	
19	Damping fluid (water or water with additives)	
20	Densitometer (if required)	
21	Cotton pads	
22	Lint free rags	
23	Ethanol	
24	Cleaning naphtha	

Damping- and printing force	625 N
Damping- and printing speed	Constant, speed at choice
Time between damping and printing	At choice
Ink film thickness (volume)	3.2 μm (0.138 cm^3)

- The numbers 1 thru 17 are available at IGT Testing Systems.
- The numbers 5, 6, 7 and 13 thru 17 can be obtained as Wet Pick and Wet Repellence Set for AIC2-5T2000, article number 435.000.710.066.
- The numbers 8 thru 11 and 13 thru 17 can be obtained as Wet Pick and Wet Repellence Set for Global Standard Tester 2, article number 435.000.412.066.

► Note the damping disc and ink to be used!
► *This leaflet contains article numbers per January 1st, 2006* ◀.

- 3.4 If desired, adjust an interval time.
- 3.5 Place the adapting device with the thick shaft into the top accessory hole of the tester in such a way that the flat side in this shaft is pointing to the left.
- 3.6 Fasten the device with the screw at the left hand side of the tester.
- 3.7 Mount a doctor blade in the doctor blade holder. See W100.
- 3.8 Remove the screw from the adapting device.
- 3.9 Slide the blade holder device with the blade downward and the weight pointing to the right on the adapting device, turn it anticlockwise until stop and replace the screw in the adapting device to prevent sliding off the blade holder device from the shaft.
4. For GST only:
 - 4.1 If not present on the Global Standard Tester, mount the sector with clamps. See W100.

