IGT F1 Printability testers

Testers for flexo and gravure inks

IGT Testing Systems has developed the advanced computerised F1 printability testers for flexo and gravure inks. The F1 makes colour strips with flexo and gravure inks, which can be used for many purposes and has specially been designed to aid computerised colour measuring and colour matching systems. The F1 saves on costs because colour testing on the printing press is no longer necessary.

APPLICATIONS

The F1 printability testers are used in ink laboratories to produce colour strips which are suitable for many purposes, such as:

- Measuring colour using colour measuring systems and colour matching systems
- Density measurements, including establishing tolerances, determination of coverage, wear resistance, abration resistance, flexibility, adhesion, gloss, ink transfer, light fastness, resistance to chemicals, etc.
- Testing printing quality
- Visual appraisal

The F1 tester prints on all kinds of coated and uncoated materials like paper, board, plastic film, cellophane, laminate, metal foil, etc.

IGT F1 tester use in industries:

- **Flexo and gravure ink**
- **Flexo printers**
- **Plastics and packaging**
- **Paper and board**
- **Resins, lacquers and coatings**
- **Corrugated board**
- **Raw materials**

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IGT F1 Printability testers

Modern design, simple to operate

F1 Corrugated

IGT F1

The F1 is the standard version of the F1 series. It gives the possibility to vary the printing speed, anilox- and printing force from 0,3 - 1,5 m/s, from 10 - 500 N. This is important due to the type of ink and the viscosity, especially for the packaging industry with the large amount of different substrates and customer's applications. The print width is 40 mm which is sufficient for appraisal and most measurements.

IGT F1-UV

The F1-UV consists of the F1 tester and an integrated UV-dryer. The tester has been developed to print with UV-inks and to dry the ink directly after printing to have the optimum printing quality. The UV-radiation is adjustable and in combination with the printing speed, the drying properties of the ink can be tested.

F1 CORRUGATED

This tester is a modified F1 to make prints on corrugated board with thickness up to 14 mm so all types of corrugated board can be printed. This is the result of a combination of the diameter of the impression cylinder, the type of printing form and the variable position of the substrate guide.

Applying the ink

FLEXO PRINTING

The F1 tester consists of a combined inking and printing section with an engraved roller (anilox disc), doctor blade, printing form and impression cylinder. The substrate is attached to a substrate carrier and placed on the substrate guide, between the printing form and the impression cylinder. When the F1 is activated, the anilox disc and the substrate come into contact with the printing form and the doctor blade contacts the anilox. With a (disposable) pipette, a few drops of ink are applied into the nip between the doctor blade and the anilox disc. The ink is wiped off and transferred from the anilox disc to the printing form and from the printing form to the substrate. After printing, the doctor blade, anilox disc and impression cylinder are lifted automatically. The substrate is removed for appraisal and the anilox disc, doctor blade and printing form are cleaned. In flexography the print quality dependents upon the printing speed and printing force and therefore they are adjustable. Two revolutions are made automatically to ensure the cells of the anilox disc are well filled with ink. Another possibility to fill the cells of the anilox disc completely is to ink the anilox several times before printing. It is also possible to ink the photopolymer several times. See instruction video on **www.igt.nl**.

IGT F1 Printability testers

Print coated and uncoated materials

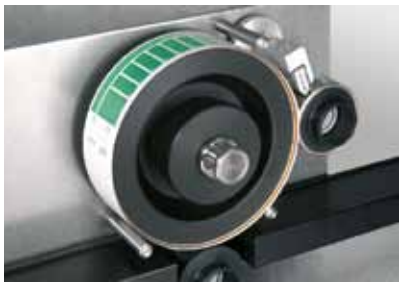
IGT F1-100

Most of the times the 40 mm print width is sufficient, but sometimes a wider print width is desired. This device has its most frequent application in electronics industry. With special inks and/or substrates a wider print can give a better appraisal of the printing quality.

F1 BASIC (HIGH - LOW)

The low cost version is the F1 Basic. In this version the printing speed can be adjusted to 0,3; 0,6 or 0,9 m/s. The anilox/printing force can be set to 20/30, 40/60 or 60/90 N for the type Low and on 100/150, 200/300 or 300/450 N for the type High. The F1 Basic is used when there is no need to change the speed or anilox- and printing force within small limits. This tester is specially used in QC of inks and/or substrates. The type Low is the best choice if only halftone printing forms are used and the type High when only prints in full tone are made.

Mounting substrate for gravure



Gravure printing

GRAVURE PRINTING

For gravure printing, the F1, F1 corrugated or F1-UV is switched into the gravure mode. In this case, the impression roller on the lower shaft is not used. Only an engraved gravure roller, doctor blade and photopolymer cylinder are used. The photopolymer cylinder now has the function of impression cylinder. The substrate to be printed is attached on the photopolymer. When the F1 is activated, the engraved disc and the substrate come into contact with each other and the doctor blade contacts the engraved disc. With a (disposable) pipette, a few drops of ink are applied into the nip between the doctor blade and the engraved disc. The ink is wiped off and transferred from the engraved disc to the substrate. The doctor blade and engraved disc are then lifted automatically. The substrate is removed for appraisal. The engraved disc and doctor blade are cleaned.

In gravure, the print quality depends upon the printing speed, and printing force and therefore they are adjustable. Two revolutions are made to ensure the cells of the engraved disc are well filled with ink. The second print is more suitable for further evaluation. Another possibility to fill the cells of the engraved disc completely is to ink the engraved disc several times before printing. The printing force between the engraved disc and the substrate can be selected between 10 and 500 N. See instruction video on **www.igt.nl**.

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IGT F1 Printability testers

Variable printing forms and anilox rollers

PROPERTIES

- Modern design; sturdy construction for intensive use over a long period
- Easy and quick to clean
- Simple to operate; all testing conditions can be set on a touch screen; on the F1 Basic, testing conditions can be set with press buttons
- Extensive processing possibilities for various flexo and gravure inks and substrates, engraved rollers and printing forms
- Simple and quick to change rollers, printing form and doctor blade
- Automatically makes two prints one after the other
- Excellent reproducibility
- High degree of simulation of actual practice
- Electronic control of printing force and speed
- Low initial cost and low operating costs

ACCESSORIES

Discs for flexo and gravure

For flexo printing, many types of aniloxes are available. A choice can be made between copper engraved, chromium plated and laser engraved ceramic aniloxes. There are aniloxes with a solid engraving and others with different engravings. Special engraved aniloxes can be made on request.

For gravure printing a wide range of copper engraved, chromium plated discs are available.

Holder for printing discs

The F1 testers can be equipped with an accessory to safely store anilox and gravure printing discs. It is is mounted at the back of the unit.

Reference papers

Prints to check colour and other ink properties can be made on in-company standard substrates or production papers. For comparison of test results between organizations or tests according ISO 2846 it is advised to use an international reference paper. This paper, e.g. type C2846 for colour measurement and CT2846 for transparency determination, has been developed in cooperation between IGT and ISO TC130 and is fully compatible with the former APCO material.

Printing form for flexo

The F1 tester has several printing forms; solid and halftone photopolymer. The photopolymer is available the standard thickness: 1,7 mm for general use and 6,25 mm for corrugated board. Customer supplied printing forms can also be used.

Substrate carrier for flexo

The substrate carrier The substrate carrier is used to mont the substrate in case it is not stiff enough to be self supporting.

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IGT F1 Printability testers

Used for many testing methods

	F1 Basic Low	F1 Basic type High	F1	F1 Corrugated	F1-100	F1-UV
Technical data						
Printing width	40 mm	40 mm	40 mm	40 mm	100 mm	40 mm
Printing length (2 prints)	2 x 190 mm	2 x 190 mm	2 x 190 mm	2 x 190 mm	2 x 190 mm	2 x 190 mm
Printing speed	0,3; 0,6; 0,9 m/s	0,3; 0,6; 0,9 m/s	0,2 - 1,5 m/s	0,2 - 1,5 m/s	0,2 - 1,5 m/s	0,2 - 1,5 m/s
Anilox force	20; 40; 60 N	100; 200; 300 N	10 - 500 N	10 - 500 N	10 - 500 N	10 - 500 N
Printing force	30; 60; 90 N	150; 300; 450 N	10 - 500 N	10 - 500 N	10 - 500 N	10 - 500 N
Maximum thickness of substrate	4 mm	4 mm	4 mm	14 mm	4 mm	4 mm
Gravure mode	No	No	Yes	Yes	Yes	Yes
Test methods						
Test methods inks	Colour, density, ink transfer, dry properties as coverage, transparency, wear resistance, abrasion resistance, flexibility, adhesion, gloss, hight fastness, chemical resistance and so on					
Test methods substrates	Striking through, halftone printing, back trap mottle, print mottle, print smoothness					
Compliance	ISO 2834, ISO 2846, ISO 12647 and ASTM 7680					
Substrates	Paper, board, metal, plastic					

Flexo print of four bands to check the colour in four ink layers

Gravure print to check the colour in ten coverages and/or to check the roughness of the substrate

Flexo print on reference paper with black band for coverage, transparancy, colour, density, etc.

Standard flexo print to test many properties

Flexo print on paper board to check colour, coverage and other dry properties

Standard flexo print of 100 mm width

IGT F1 Printability testers

Excellent reproducibility

TECHNICAL DATA

Inking and printing sections

- Electronic control of printing force and speed
- Printing speed:
  0,2 - 1,5 m/s (except F1 Basic)
  0,3; 0,6; 0,9 m/s (F1 Basic)
- Anilox/printing force:
  - 10 - 500 N (except F1 Basic)
  - 20/30; 40/60; 60/90 N (F1 Basic LOW)
  - 100/150; 200/300; 300/450 N (F1 Basic HIGH)
- Maximum substrate thickness:
  - 4 mm
  - 14 mm for F1 Corrugated
- Printing width on substrate:
  - 40 mm
  - 100 mm for F1-100
- Print length ca. 500 mm
- Anilox- or engraved disc is inkedautomatically up to 20 times
- Photopolymer printing form can be inked up to 20 times
- Flexo and gravure modes (F1 Basic flexo mode only)

Doctor blade

- Doctor blade angle: 60°, trailing
- Doctor blade pressure: 6 - 7 N
  (12 – 14 N for F1-100)

Discs

- Flexo aniloxes
  - copper engraved, chromium plated, solid and 4 engravings
  - Ceramic, laser engraved, solid
  - Range of volumes
- Gravure engraved
  - In copper engraved, chromium plated
  - Many different volumes
  - Many different layouts

General

- Modern styling
- Simple operation; touch screen
- Reliable
- Low initial cost
- Possible to use many substrates and inks

Weight : 35 kg (60 kg for F1 UV)
Height : 350 mm
Width : 600 mm
Depth : 350 mm

Electrical connection:
90 – 245 V / 50 – 60 Hz

Agent

IGT Testing Systems
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