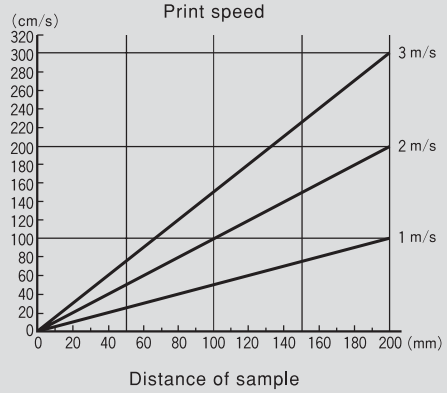
No. 2258- I

❶ Accelerated speed Picking test（40mm width）
❷ Accelerated speed 0—3m（20mm width）
❸ Accelerated speed 3m 40kg（40mm width）
Rubber covered disk
❹ Coustant speed 4m 40kg （Wet Pick）
❺ Coustant speed 5m 40kg （Wet Pick）
❻ Coustant speed 5m 40kg （Wet Pick）
❼ Coustant speed 3m 40kg （2 color）
❽ Set-off test



No. 2258- I

KRK universal printability tester

The recent trend is that printing quality is upgraded and use of offset print is diversified. To respond to the requirements in printability with various kinds of paper and ink, a new evaluation method is keenly required from the industry. With conventional printability testers that are distributed widely, there is a problem that it is impossible to control the humidification degree in offset print testing. However, with this machine, the user can try laboratory offset printing by setting various conditions such as simulation of a humidifier, print pressure, printing speed, ink feeding procedure, printing time delay.

The machine features excellent abilities of quantification and reproducibility that allow the user to know properties of various kinds of paper ranging from middle quality paper and newspaper to wood free coated paper. It is useful for study ink transfer, lint, ink drying, trapping and reverse trapping, mottling, etc. The system is composed of two printing units, one offset attachment (humidifier), and one ink mixer to ink the four discs. Each of the two print units is given the capability to adjust printing pressure and set printing speed almost steplessly. It is also possible to set time delay from the first print unit to the second unit, useful for various tests on wet-on-wet basis.

Using this time delay, it is possible to perform set-off test to investigate the transfer of first unit prints onto the back of white paper rolled on the second unit. The inking system of this machine has a temperature-setting range of 15℃ to 60℃ by circulation of hot water, with the inking rollers divided in four sections to form a uniform film on the printing disc. As for picking test, there are two types available: one is a constant speed test and the other is an accelerated speed-printing test from 0 to 3 meters/second. Accelerated printing can be made linearly independently from printing pressure. In the offset printing process, it is possible that the ink is transferred from the printing disc to the rubber blanket for printing on the paper rolled on the disc. There is also an adjuster to uniformly apply pressure over the printing width, even under the changing printing pressure, increased or decreased.

Experiments available

1. Picking print at accelerated printing
2. Constant speed printing (single color)
3. Constant speed printing (overlapped printing)
4. Offset printing (humidification), single color printing
5. Offset printing (humidification), two color printing
6. Set-off test (in four stages)

Characteristics evaluated

1. Transferring aptitude of ink
2. Absorption and striking-through of ink
3. Drying of ink
4. Picking strength (humidification)
5. Lint
6. Trapping
7. Reverse trapping
8. Mottling
9. Ink amount-print gloss relationship

Print area: 40 mm wide×200 mm long
Printing pressure: 200 to 1600 N (strain gauge measures printing pressure)
Printing speeds: 0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 m/sec.
Printing mode: constant speed printing, accelerated printing 1, 2, 3 m/sec.
Print interval: 0.01 sec. to 999 sec.
Temperature: 15 ℃ to 60℃ regulation range
Set-off system: with timing relay
Power source: three-phase 200/220 VAC 50/60 Hz 20A
Optional: constant temperature water tank
Print speed measurement: to record actual print speed in real time with a special sensor on the driving roller (2nd print unit)
Outer dimensions: 1650×780×1480 mm
Instrument weight: 670 kg
Reference: 1985 TAPPI Coating Conference Proceedings

No. 2258-Ⅱ

Universal printability tester (4 colors)

This system has two sets of 2-color press of standard type, capable of printing on wet-on-wet basis: this machine is designed most suitably to grasp the behavior of color printing in the process of commercial off-set press. For set-off test, it is possible to set three stages of time delay at a time for effective testing.

Printing area: 40 mm wide×200 mm long
Printing pressure: 200 to 1600 N (strain gauge measures printing pressure)
Printing speed: 0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 m/sec.
Printing modes: constant speed print, accelerated print 1, 2, 3 m/sec.
Printing unit: 4 units
Outer dimensions: 2750×780×1480 mm
Instrument weight: 1070 kg

No. 2258-Ⅱ

No. 2258-Ⅲ

Dryer for universal printability tester

With this machine, the specimen is dried when being put in the drying oven, and it is possible to test drying behaviors of specimens different from when subject to natural drying. This machine is also used for blistering test.

Drying temperature: 100 to 250 ℃
Drying speed: 1 to 6 m/sec.
Drying mode: hot air or IR heaters
Drying time: 0.1 seconds to 999 seconds
Power source: three-phase 200/220 VAC 50/60 Hz 20A
Outer dimensions: 1050×780×1600 mm
Instrument weight: 460 kg

No. 2258-Ⅲ

No. 2259

Ink kneader for universal printability tester

This is an ink kneader with separate portions for the universal printability tester. After ink is supplied, push the button to automatically knead the ink, and move the printing disc to ink the roll. The time length of kneading and inking is set by the timer. The temperature of the ink kneading roll can be controlled by connecting it to the constant temperature water tank.

Ink kneading: with four separate portions
Ink kneading time: 10 to 999 seconds
Inking time: 10 to 999 seconds
Optional: variable kneading roll rotation speed
Constant temperature water tank for heating
Power source: three-phase 200/220 VAC 50/60 Hz 5A
Air source: 0.5 MPa
Outer dimensions: 1060 x 300 x 390 mm
Instrument weight: 95 kg

No. 2259

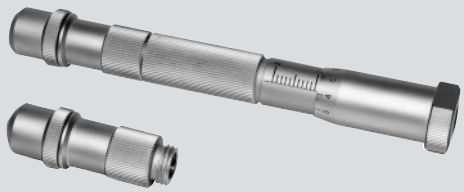
No. 2260

No. 2260

ISO printability tester (IGT testing method)

Printability testers are used not only for papers, but also for sheet like materials such as metallic plates and plastic sheets. This tester is designed to set thickness of ink, printing pressure and printing speed as desired, with three functions of accelerated printing, constant speed printing and interrupted printing. The machine is of two-shaft type for process printing, with a range of 0.1 sec. to 6 sec. between the firs print and second print. This is a process printing tester to offer effective data by simulating the conditions of a practical process printing press. Because of featuring a high precision, in the accelerated printing mode, the printing speed changes linearly.

Printing plate: 10, 20, 35, 50 mm wide
Printing speed: accelerated printing 60 to 700 cm/s.
constant speed printing (continuous) 20 to 500 cm/s.
constant speed printing (intermittent) 20 to 160 cm/s.
Printing interval: 0.1 to 6 seconds
Printing pressure: 0 to 1000 N
Printing area: monocolor: plate width×200 mm
two-color: plate width×270 mm
Power source: three-phase 200/220 VAC 50/60 Hz 15A
Referential standards: JIS P-8129-1998, ISO 3783
Outer dimensions: 470×650×520 mm
Instrument weight: 125 kg



No. 2264

No. 2264

Ink pipette

For the process of print testing, correct ink sampling is an important factor affecting test precision and test reproducibility. This pipette is used to sample a small amount of printing ink to be fed to the ink kneader, and with this pipette, it is possible to perform correct testing. The structure of the pipette allows the ink to be charged from the top end to the cylinder section. Reading the scale of the micrometer, squeeze the ink from the top cap by turning a screw that is linked to the plunger. The pipette can be disassembled to facilitate cleaning.

Capacity: 2 cc
Micrometer scale: to 0.01 cc
Referential standards: JIS P-8129-1998, TAPPI UM 591
Outer dimensions: Dia.14×150 mm
Instrument weight: 260 g

No. 2261

JIS printablity tester (single type and two-color type)

In order to measure paper surface strength, the IGT testing method is widely used in the paper making process and printing process. This tester is very convenient for printability management, because with this tester, the user can learn characteristics in advance, easily. The standardized tester in Japan is widely used because of simple and easy handling. It features capability of keeping constant printing pressure, ink thickness, packing and printing speeds, as well as of changing them as desired. In addition, measurement is enabled even with a small amount of ink and paper.

<Applicable tests>

1. Picking resistance
2. Print density
3. Print color
4. Initial ink penetration
5. Measurement of drying time
6. Smoothness of paper

Printing plate: 10 mm wide×200 mm long,
20 mm wide×200 mm long
Printing pressure: range of 0 to 760 N
Printing speed: pendulum 0 to 1.25 m/sec.,
spring drive 0 to 3.7 m/sec.
Referential standards: JIS P-8129-1998, TAPPI UM591
Outer dimensions: press 380×240×390 mm
spring device drive 170×100×390 mm
Instrument weight: Press 22 kg,
spring device drive 3.8 kg

No. 2261

No. 2262

Inking Device

This kneader depends upon IGT testing method, with a process of kneading the ink for a certain span of time, and is able to always form the stable ink film of a certain thickness on the printing plate.

Disc: 10, 20 mm wide
Mild steel roll: small and large, 2 rolls each; the smaller roll speed is 50 rpm, and the larger rolls slides later ally.
Kneading roll: polyurethane roll and plaster (rubber) roll
Motor: 100/110 VAC, 0.1 kW, 50/60 Hz
Referential standards: JIS P-8129-1998, TAPPI UM 591
Outer dimensions: 400×490×250 mm
Instrument weight: 27 kg

No. 2262

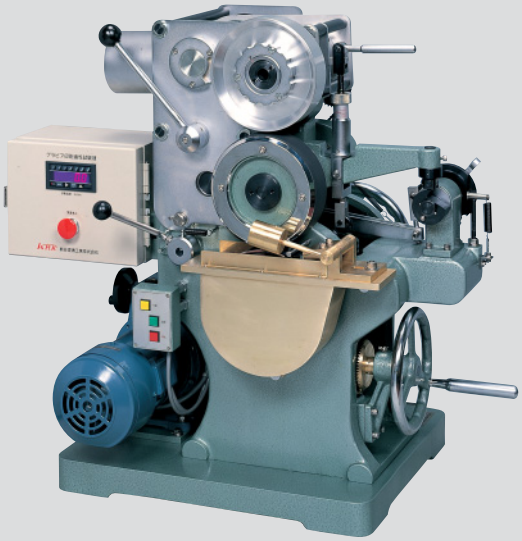
No. 2270

No. 2270

Gravure printability tester (monochrome printing)

Needs for gravure printing have been increasing recently, with rapidly advancement of its technology. This tester has been developed under the guidance of the National Printing Bureau, to have functions similar to those of the practical press. Printing conditions can be set as desired, such as printing pressure, speed, contact angle and contact pressure of the doctor blade. This machine is composed of impression cylinder, plate cylinder, doctor section, ink vat and driving unit. Ink applied on the plate cylinder in the ink vat is scraped off by the doctor. The plate cylinder contacts the impression cylinder on which the specimen is wound, thereby transferring the ink to the specimen under a constant pressure to complete printing.

Printing speed: 0.23 to 2.0 m/sec.
Printing pressure: 10 to 100 kg/cm
Printing area: 35 mm wide, 350 mm long
Plate cylinder: 180 mm in diameter, 50 mm wide
Impression cylinder: 180 mm in diameter, 50 mm wide (effective width 40 mm)
Doctor: for gravure printing, contact angle and pressure adjustable
Printing speed meter: digital display, circumferential speed directly readable
Referential standard: J.TAPPI No.24-2000
Reference: Proceedings of the Japanese Society of Printing Science and Technology, Vol. 10, No.1, Takahashi, Koyama and Masaki "Ink transfer in gravure printing"
Motor: three-phase 200/220 VAC, 0.4 kW
Outer dimensions: 720×530×590 mm
Instrument weight: 190 kg



No. 2271

No. 2271

Attachment for drying test of gravure printing

Along with higher speed of the rotary gravure press, evaluation of drying property of prints has become ever more important. The Printing Bureau type gravure printability tester is widely used. On the basis of this tester, we KRK have developed a set-off test method in gravure printing. The tester developed is composed of a drying roller above the impression cylinder to apply a constant load. The drying roller has the same diameter as the impression cylinder, rotating at the same speed and in the same direction. A white paper sheet or film is wound around the drying roller. After a certain span of time following printing, lower the pressurization lever to make the drying roller contact the print. By observing the state of ink transfer onto the white paper or film, the drying property is evaluated.

Contact pressure: 0 to 5 kg/cm

No. 2272

Gravure printability tester (two-color printing)

This tester is designed, focusing upon problems that will not occur in monochrome printing. This tester is useful for preventing troubles in the practical press, rationalizing printing process and achieving higher quality printing. It is used for testing printing quality including crater, bridge, speckle and trapping in two-color printing. Its configuration is single-shaft two-plate parallel arrangement, with impression cylinder parallel movement. The two printing plates are cantilevered on one printing shaft. The printing paper wound around the impression cylinder is sequentially pressed against the two printing plates, to perform two-color printing.

Printing speed: 0.2 to 2.0 m/sec.
Printing pressure: 10 to 100 kg/cm
Printing area: 35 mm wide, 350 mm long
Plate cylinder: 180 mm in diameter, 50 mm wide
Impression cylinder: 180 mm in diameter×50 mm wide (effective width 40 mm)
Doctor: contact angle and pressure adjustable (with worm gear)
Printing speed meter: digital display, circumferential speed directly readable
Impression cylinder movement: driven by air cylinder
Timer: 60 seconds
Motor: three-phase 200/220 VAC, 0.75 kW
Air source: 0.5 MPa
Outer dimensions: 1050×630×860 mm
Instrument weight: 280 kg

No. 2272

No. 2275

Flexographic printability tester

This tester has been developed on the basis of the gravure printability tester, for readily evaluating the flexographic printability of paperboard, liner and plastics. Need for flexographic printing has been ever more increasing, along with needs for more rational and cost effective packaging today. Unlike the heliogravure, the flexographic printing is a type of letterpress printing with the rubber cylinder in contact with the impression cylinder at a low pressure. This tester is composed of plate cylinder, impression cylinder, anilox roll, ink roll and ink vat. The ink sent from the ink roll in the ink vat is adjusted in supply amount by setting the interval between ink roll and anilox roll, so that an adequate amount of ink is applied to the plate and transferred onto the printing sheet. This tester is provided with a mechanism for correcting the difference in circumferential speed due to a small difference in diameter of pate cylinder and impression cylinder and anilox roll, thereby preventing roll slip.

Plate cylinder: 180 mm in diameter, 350 mm long, 30 mm wide
Half-tone block: screen ruling 30,40,50,60
Impression cylinder: 180 mm in diameter, rubber hardness 80˚
Ink roll: 180 mm in diameter
Anilox roll: 180 mm in diameter
Minimum adjustment increment of interval between ink roll and anilox roll: 0.01 mm
Printing speed: 0.23 to 2.0 m/sec.
Printing pressure: 2 to 100 kg/cm
Printing speed display: digital, circumferential speed directly readable
Speed ratio: 1 (plate cylinder): 1 (impression cylinder): 1 (anilox roll): 1.25 (ink roll)
Motor: three-phase 200/220 VAC, 0.4 kW, 50/60 Hz
Outer dimensions: 890×700×850 mm
Instrument weight: 290 kg

No. 2275

No. 2277

No. 2277

Compound printability tester

Because of diversified life cultures, requirements for printing have also diversified, with trends toward higher quality, higher speed and labor saving. To meet the needs for higher printing technology, development of multiple purpose testers is desired. This is a universal printability tester capable of managing gravure (direct and offset) printing, flexographic and form printing, and it can perform hot-melt coating as well. This compact machine, developed on the basis of the gravure printability tester, can perform various types of printing by combining various components, ensuring high reproducibility and ease of operation.

Types of printing: 1. direct gravure printing
2. offset gravure printing
3. flexographic printing
4. form printing

Printing method: sheet-fed press
Printing speed: about 10 to 100 m/min. (within 60 m/min. except for direct gravure printing)
Printing speed meter: digital display, circumferential speed directly readable
Printing pressure: impression cylinder to plate roll or rubber roll 1 to 5 kg/cm and 5 to 50 kg/cm anilox roll or gravure roll to plate roll 4 to 24 kg/cm
Roll interval: between fountain rolls or gravure rolls 0 to 1 mm nip pressure available
Printing size: 35 mm wide, 280 mm long
Roll composition:

(1) impression cylinder: rubber (to be selected depending upon solvent used) hardness 80 to 85˚
(2) plate roll (for form printing): iron core diameter 176 mm, 2 mm thick, rubber sheet applied
(3) rubber roll (offset gravure): hardness 75˚± 2˚ rubber (to be selected depending upon solvent used)
(4) gravure roll: HelioKlichograph
(5) anilox roll: various endless specifications available (example) grate type 130 cells/inch (65 cells/inch) 0.075mm (0.150 mm) deep
(6) fountain roll: hardness 50˚ to 60˚ rubber (to be selected depending upon solvent used)

Ink vat: direct gravure, offset gravure, form printing
Doctor: contact pressure and angle adjustable
Motor: three-phase 200/220 VAC, 0.4 kW
Outer dimensions: 1100×660×1380 mm
Instrument weight: 360 kg