

No.494

INKOMETER C-1



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INTRODUCTION

Since the separating behavior of ink film when it separates between the rolls in a printing machine is considerably affected by the characteristics of the ink, it is regarded as one of important factors for evaluating printing suitability.

Inkometer models function of each roll of printing machine and measures the tack of the ink that appears here. Tack is one of the items of physical properties associated with viscosity of ink, indicates adhesiveness of ink and has deep concern with paper's surface strength and trapping, etc.

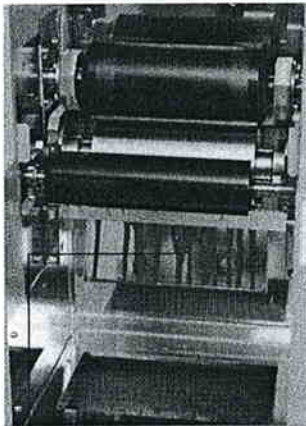
The ink film positioned between the two rotating rolls repeatedly stretches and splits. Inkometer measures the drag of ink stretching extended to the top roll at this time, converts it to tack value and is displayed together with the measuring conditions, etc, on the touch panel type LCD display. Moreover, cleaning of rolls is indispensable in measurement by Inkometer. Until now the operator used to wipe off the ink sticking to the rolls using a solvent and cotton waist, but the Inkometer is equipped with the function to automatically clean the rolls at the end of tack measurement.

Numerically controlling adhesiveness (tack) of ink is an important factor deciding quality of print results. By achieving suitable tack, malfunction of transfer on print object and on machine, plate dirt, paper peel off and malfunction of transfer in color printing, etc. can be avoided. These days tack is being controlled by Inkometer at many ink manufacturing factories and printing factories.

FEATURES

(1) Auto Roll Cleaning Function

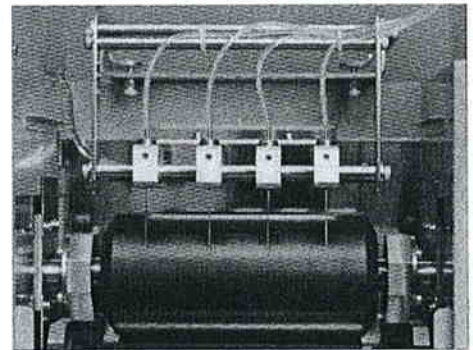
(1) Cleaning of rolls is indispensable for measurement by Inkometer. In conventional machines, the operator used to wipe off the ink sticking to the rolls by means of a solvent and cotton waste. But this machine employs the function to automatically clean the rolls at the end of tack measurement, which allows you to reduce operator's burden.



Scraper Automatic cleaning of rolls

(2) Top Roll RPM Detecting Function [Roll Slipping]

RPM of top roll (driven roll) change in the process of emulsification of ink by supplying dampening water, etc. by using the emulsification device (option). Stability on machine can be evaluated by observing the quantity of dampening water, change of tack value and revolutions of top roll.



Emulsification device

(3) Touch Panel Type LCD Display

Since touch panel type LCD display is used, there is plenty of information to obtain past 5 times' tack value's history and test progress state, etc. in addition to achieving tack value, RPM and temperature. Moreover, after once registering test conditions, etc., they can be input by selection system.

(4) Registration of Measuring Conditions, Sample Name & Operator Name

When measuring inks of various kinds, the measuring conditions also change accordingly. This machine allows you to register max. 50 measuring conditions, max. 80 sample names and max. 20 operator names.

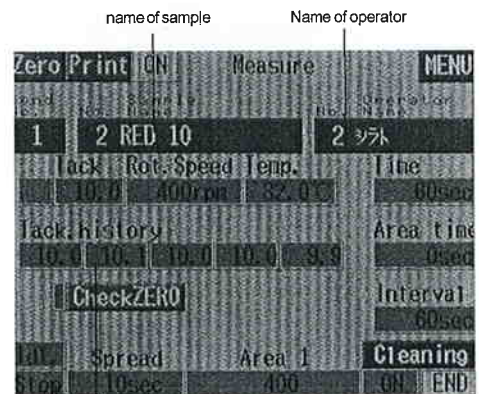
(5) Correction Factor

Max. 12 correction factors can be registered. (Each factor with linear interpolation)

(6) Measuring Modes

There are 3 kinds of measuring mode.

- Mode 0 (standard spec.) : 1 kind of RPM, measured by interval time.
- Mode 1 (standard spec.) : 3 kinds of RPM (400rpm, 800rpm, 1200rpm) Measurement by one interval time.
- Mode 2 (option) : Arbitrary RPM, 6 kinds of interval time can be set.



Window displayed during measurement

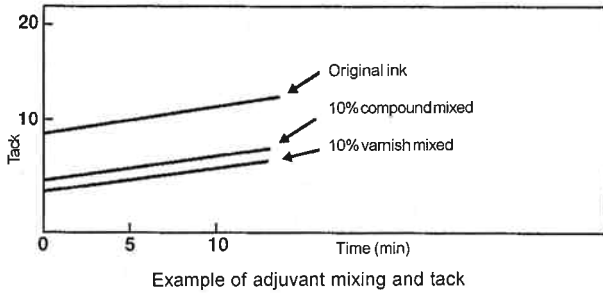
Tack value history

Test conditions

APPLICATION

(1) Ink Tack Measurement

Ink tack has deep relation with paper peel off and trapping when printing. Especially trapping quality has very deep relation with mutual tack of ink, requiring suitable control of tack balance. Inkometer is an indispensable tester for quality control in ink production process. In case of offset ink, its tack value increases with time after manufacture. To achieve appropriate tack, adjustment is made by kneading or adding varnish or reducer compound. In this case, Inkometer is suitable for sampling a little amount of ink during the manufacturing process and bringing the tack closer to appropriate value while measuring by Inkometer.



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Test No. 1
DATE 08/08/28 13:14
Condition No. 5
Sample :A-1
Operator:TOGUCHI
Correction coefficient
1 = 0.89 2 = 1.02
3 = 1.03 4 = 0.98
Interval / Speed
(sec) (rpm)
-----
60 400
Time Tack Speed
(m:s) (rpm)
1:00 6.7 400
    
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Test No. 5
DATE 08/08/28 13:51
Condition No. 4
Sample :A-201B
Operator:シラト
Correction coefficient
1.00
Interval / Speed
(sec) (rpm)
A1: 60 400
A2: 60 800
A3: 60 1200
----- Area. 1 -----
Time Tack Speed
(m:s) (rpm)
1:00 7.8 400
----- Area. 2 -----
Time Tack Speed
(m:s) (rpm)
1:00 9.9 800
----- Area. 3 -----
Time Tack Speed
(m:s) (rpm)
1:00 11.5 1200
    
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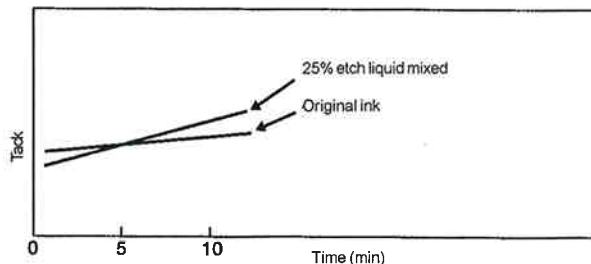
Example of print of mini printer

(2) Knowing Relation with RPM

Inkometer metal roll RPM is decided with relation to printing speed. Generally, the speed with regard to sheet print conditions is said to be 1400rpm. In case of an ink of small ink tack for high speed printing ink of rotary printing, etc., it is desirable to conduct measurement at 800rpm or 1200rpm or more.

(3) Ink's Stability on Machine

In case of inks containing a volatile solvent such as heatset ink, the solvent evaporates during operation and the tack goes on increasing with time. In such case, continuous operation is conducted for a few minutes to a few tens of minutes, tack is measured at fixed intervals and ink's stability on machine is judged from the change of tack with regard to time. Moreover, in case when etch liquid (dampening water) is supplied or other solvent is added, water or other solvent is supplied on the roll using special device (option), change of tack and change of top roll RPM is observed and stability on machine is judged.



Example of etch liquid mixing and tack

(4) Misting Test

Scattering of small particles of ink in mist form from the rolls during high speed printing is known as misting. Its reasons are use of low tack ink, too much amount of ink and printing at high speed of rotation, etc., printing room atmosphere having low humidity (easy to generate static electricity), etc.

When measuring tack, fold 1/3 of a sheet of white paper, set it under the metal roll and vibration roll and operate the machine for 1 minute. After that pull out the sheet of paper, open the folded part and compare the folded clean part and the exposed part that became dirty.

SPECIFICATIONS

1. Drive motor	AC servo motor 400W
2. Roll diameter	Metal roll 76.2mm Top roll 79.3mm Vibration roll 50.8mm
3. Metal roll rpm	400, 800, 1200rpm and 100 ~ 3000rpm manually
4. Tack measuring range	0.0 ~ 40.0
5. Measuring temperature range	RT + 5 ~ 50°C
6. Temperature control system	Circulation system using thermostatic water bath, PID control
7. Detection system	Load cell
8. Control panel	Touch panel type LCD display
9. Display indications	Tack value, past 5 times tack history, rpm, interval time, temperature, sample name, operator name, etc.
10. Safety measures	Acryl cover [†] Emergency stop switch *1 Emergency stop *1 (1) When finger, etc. is caught in between the vibration roll and metal roll. (2) When overload occurs (load cell protection) Overheat protection (temperature control stop at 60°C)
11. Cleaning of rolls	Automatic cleaning
12. Cleaning solvent	Kerosene oil or light oil *2
13. Solvent tank capacity	Approx. 2600cc
14. Solvent consumption	4.5cc/cleaning *3
15. Communication	RS-232C 1 port
16. Data output	Mini printer personal computer
17. Standard accessories	Sputit (3pcs.), sputit stand (1 pc.), oiler (1pc.), funnel (1 pc.), hexagonal wrench(5pcs.), air bubble level gauge (1pc.), instruction manual (1pc.)
18. Option	Mini printer (with RS-232C cable) Emulsification device (with roller pump) Special program *4 (1) Mode 2 (2) Roll slipping Personal computer (as specified by user) Software for personal computer output (by consultation with user)
19. Dimensions and weight	Approx. W720 x D520 x H770mm, approx. 140kg
20. Electric power source	AC 100V 1-P 1.5kVA 50/60Hz
21. Air source	0.5 ~ 0.6MPa
22. Reference standard	JIS K5701

*1 When emergency stop operates, motor stops and top roll and vibration roll separate from metal roll.

*2 Please consult when using an unspecified solvent.

*3 Calculated with kerosene oil as solvent and specific gravity 0.81.
Solvent consumption differs according to tack and kind of ink

*4 For content of program refer to [Features] in this catalog.

