

LLOYDS Research Foundation. Inc

Product Index

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LLOYDS Computerized Automatic Digital Dynamic Inkoscope



Model 92 SAV

The world's most advanced Lloyds Inkoscope - 92 SAV that will help you to cut trial and error and guesswork in any ink formulation and opens a new range of possibilities for online study of ink behavior and accurate interpretation of many important test parameters for precise control of ink dynamic tack and for a modern ink maker it is very important to meet the demands of today's and future high-speed automatic printing presses for requirement of perfect ink and therefore increased need for precise ink quality control & check of production batches, investigations, scientific study, and research & development on various important parameters of formulations with related manufacturing processes sequences.

In fact with virtual reality Lloyds Inkoscope 92 SAV will take you a journey inside the world of your ink formulation and truly see, experience and study the actual dynamic tack and chemo-physical behavior of its components in actual test run on the computer monitor and real effect of fountain solution emulsification on ink tack with graphical printed record of all the test parameters to enable you to correctly select, formulate and manufacture perfect ink every time easily and confidently to obtain consistent and superior lithographic print quality on any high speed printing machines.

Advance Technical Features

Lloyds 92 SAV computerized automatic digital dynamic inkoscope incorporates the latest technology with its state-of-the-art design right from precision automatic mechanical system to integrated microprocessor based tack force measuring system and continuous self calibrating accurate speed drive system for high reliability.

Lloyds Inkoscope closely achieves and simulate all the parameters of a running ink which actually takes place on the high speed printing machine, and therefore it enables an ink maker to make indepth analysis and accurate interpretation before manufacturing perfect ink every time with the help of many computerized graphic reality display, functions and test result printouts for formulation chemistry, process methods and commercial information. The inkoscope system has very simple and fast method of operation with following advance technical features.

- Bold 15 digit, digital display for Tack, Speed, Set Speed and Temperature on solid glass screen panel.
- 10 Programmed self calibrating speed with dual digital display for set rpm and test rpm with just push of button from 50 to 3000 rpm programmed test speeds are 50 rpm (for cleaning / ink applying), 150 rpm (for distribution)- 400 - 800 - 1000 - 1200 - 1500 - 2000 - 2500 - 3000 - rpm and also additional full range of infinitely variable speed control.
- Special low speed for cleaning rollers quickly and easily and speed for distribution.
- Peak Tack memory in Gm-mtr up-date tack value every ten seconds interval with audible beep signal for operator and also Free Tack mode selection.
- Fully Automatic control for engaging and dis-engaging of tack and distributor rollers with just push of buttons and rollers lands softly and parallelly on the central brass roller in slow motion with hydraulic system saving the rollers from uneven wearing and maintains perfect geometry of rollers for long life working.
- Flying screen for recording ink flying or misting on S.S mirror finish screen or papers.
- Simple method of tack calibration with calibration certificate.
- High precision digital test temperature display with accuracy of $\pm 0.1^{\circ}\text{C}$ of water temperature circulating inside the central brass roller.
- State-of-the-art design with fully stainless steel matt finish body for ease in cleaning, simple in operation and most minimum of maintenance due to concealed design of all the important moving components from dust and cleaning cloth threads clogging.
- Optional provision for Computer Interfacing Hardware with special Tackware Software for graphical presentation of Ink behavior in actual test run for Tack, Speed, Time and effect of film thickness and in depth study of ink, vehicle / Resins, Solvent and all other components dynamic chemo physical behavior of formulation on computer monitor.
- Optional Special lithographic attachment for online study of Emulsification effect on running tack with fully automatic programmable digital fountain solution dispensing system to study and formulate ink even at high speed for accurate Ink-Water balance and also formulation of perfect fountain solutions for printing processes to achieve superior and consistent quality Lithographic printing production.
- All the components of the instrument are of versatile design, best quality tested material and precision workmanship in making highly reliable and accurate instrument for life time trouble free working and it is guaranteed for one year from the date of purchase for any faulty part or defect in workmanship.
- Technical services and support provided by highly experienced and dedicated team of service engineers on National and International basis with ready stock of parts.

LLOYDS Automatic Lithographic Ink Water Emulsification Unit

Water pick up plays the key role in achieving superior lithographic print quality and press performance. The main aim of this test is to maintain proper ink water balance during entire process of printings. With the help of Lloyds Inkoscope 92-SAV ink maker can easily formulate and determine well in advance the effect of the fountain solution on the inks various components chemo-physical behaviour.

The system incorporates advanced microprocessor based water dispensing system to allow ink maker to perform range of test and accurately evaluate the effect of fountain solution on ink formulation. The emulsification unit dispenses measured amount of damping solution to the roller system of the Inkoscope where it gets emulsified with the ink. The indepth study of damping solution effect on ink tack can be observed on line on computer monitor by evaluating the curves of running tack with time. (See test graph no. 4, 4A & 4B).

The compact and very simple to use Lloyds lithographic unit allows the ink maker to perform endurance test, (See test graph no. 5, 6 & 7) in which the ink can be treated with fix amount of water at preset interval of time, the results obtained by this test allows the user to evaluate and interpretate effect of damping solution and composite behaviors of various components of the ink for perfect ink water balance. Thus allowing the ink maker to perfectly formulate error free ink to achieve superior and consistent quality lithographic printing production.

LLOYDS Tackware Software ® for the Inkoscope

The Lloyds Tackware software is specially designed for the inkoscope to evaluate most practical test parameters of ink testing and enable ink makers to accurately interpretate ink formulation behaviour in the manufacturing of superior quality printing ink everytime easily and confidently to obtain consistent and superior lithographic print quality to international standards.

Advance features of Lloyds Inkoscope Tackware Software

- Software Interface works with Inkoscope through standard (RS-232 interface) serial port of computer and gives a complete database of tack behavior, speed, time, test parameters, batch details, production details, formulation notes, which can be saved in hard disk for future reference and comparison.
- High speed communication (56 Kbps) with Inkoscope, i.e. in 1 second the software continuously process, records and display 1000 readings from the Inkoscope tack sensing micro-processor electronics system.
- No additional hardware required to be installed in the computer.
- Real time presentation of data on screen.
- All test parameter of graph scales i.e. tack, time, speed, zooming can be modified online when Inkoscope is recording data during the test.
- Gives a detail print of tack v/s time graph at any set peaks interval time, average ink tack at that speed, product information, and test parameters, formulation and manufacturing process note files.
- Can superimpose/overlay any numbers of different test graphs for comparative study with different colors for ink under test.
- Data acquisition in graphic as well as numerical mode.
- Grid overlay for distinct view.
- Cursor provision to evaluate exact value of tack and time at any point in the graph.
- Multiple zoom facility to view ink tack behavior closely.

Guarantee

All the components of the instrument are of versatile design, best quality tested material and precision workmanship in making highly reliable and accurate instrument for lifetime trouble free working and it is guaranteed for one year from the date of purchase for any faulty part or defect in workmanship.

Technical Services

Technical services and support provided by highly experienced and dedicated team of service engineers on National and International basis with ready stock of parts.

Accessories available for 92-SAV

- Lloyds Tackoware software
- Lithographic Ink water emulsification kit
- Refrigerated water circulating bath.

Electrical characteristics

- Power supply 230 Volts 50 Hz / 110 Volts 60 Hz.
- Power consumption 2200 Watts inclusive of all accessories.

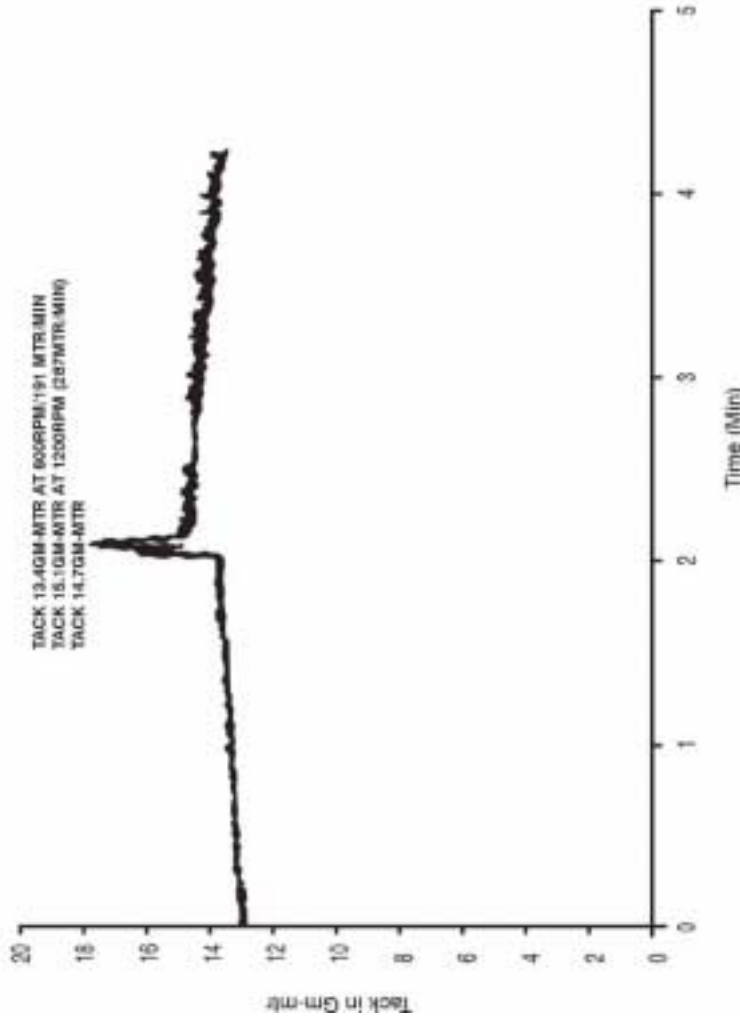
Dimension & Weights specifications

- Physical dimension of unit - 38"W X 16"D X 22"H - Net Weight 165 Kgs
- Shipping dimension - 52"W X 26"D X 26"H - Gross Weight 200 Kgs

Typical Ink test graph on Lloyds 92 SAV Inkoscope

LLOYDS RESEARCH FOUNDATION, INC., BOMBAY.

TEST ON LLOYDS AUTOMATIC DIGITAL DYNAMIC INKSCOPE-92SAV



| So.No. | Time | GM-MTR | Test Speed |
|--------|------------|--------------|------------|
| 01: | 010.0 SEC: | 12.9 GM: | 800RPM |
| 02: | 020.0 SEC: | 13.0 GM | |
| 03: | 030.0 SEC: | 13.1 GM | |
| 04: | 040.0 SEC: | 13.2 GM | |
| 05: | 050.0 SEC: | 13.3 GM | |
| 06: | 060.0 SEC: | 13.4 GM-AVTK | |
| 07: | 070.1 SEC: | 13.5 GM | |
| 08: | 080.1 SEC: | 13.6 GM | |
| 09: | 090.1 SEC: | 13.7 GM | |
| 10: | 100.1 SEC: | 13.8 GM | |
| 11: | 110.1 SEC: | 13.8 GM: | 1200RPM |
| 12: | 120.1 SEC: | 13.9 GM | |
| 13: | 130.1 SEC: | 17.8 GM | |
| 14: | 140.1 SEC: | 15.1 GM | |
| 15: | 150.1 SEC: | 15.1 GM-AVTK | |
| 16: | 175.6 SEC: | 14.9 GM | |
| 17: | 185.6 SEC: | 14.9 GM | |
| 18: | 195.6 SEC: | 14.8 GM | |
| 19: | 205.6 SEC: | 14.7 GM | |
| 20: | 215.6 SEC: | 14.7 GM-AVTK | |
| 21: | 225.6 SEC: | 14.6 GM | |
| 22: | 235.6 SEC: | 14.5 GM | |
| 23: | 245.6 SEC: | 14.5 GM | |

Test Certificate No.: 0001 Date: 03-12-2000 Time: 17:19
 Customer Name/Code: M/S. THOMSON PRESS Product Code: S24511 Color of Ink: YELLOW Batch No.: 1877/07EXs Date of pdn.: 03-12-2000
 Test Run No.: 1 Sample Volume: 1.32 ml Ink Film Thickness(µm): 12.3 Test Speed: 800/1200 RPM Peak Interval: 10 Sec.
 Test Temp: 30°C Ink Flying: nil Viscosity(poisees): 180 Yield Value-dynes/cm2: 3500 Test By: Certified By:

Testing Machine designed and made by LLOYDS RESEARCH FOUNDATION, INC. BOMBAY, INDIA. TEL: 0091-022-6343255/343055; FAX: 0091-022-634266/343157

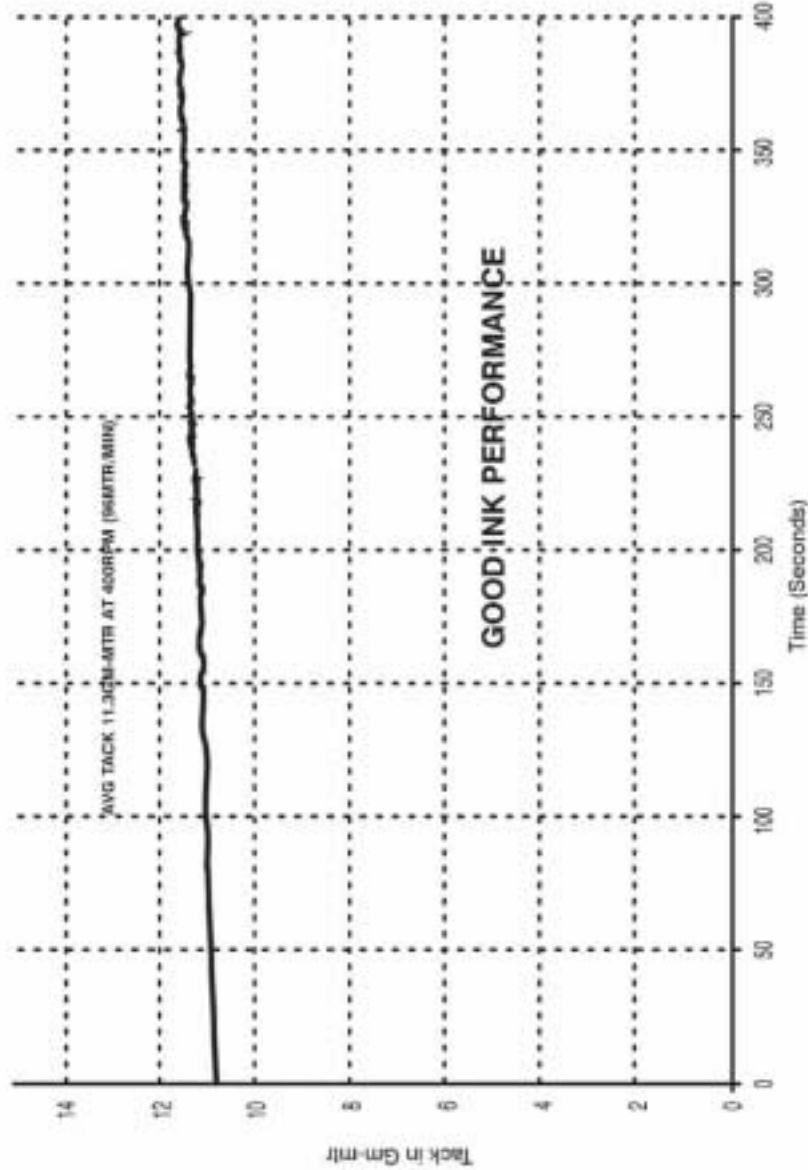
TEST GRAPH 1

LLOYDS RESEARCH FOUNDATION, INC., BOMBAY.

TEST ON **LLOYDS** AUTOMATIC DIGITAL DYNAMIC INKSCOPE-92SAV

PEAK TACK VALUES

| Strike | Time | GM-MTR | Test Speed |
|--------|------------|----------|------------|
| 01: | 000.1 SEC; | 10.9 GM; | 400RPM |
| 02: | 060.1 SEC; | 10.9 GM | |
| 03: | 000.1 SEC; | 11.0 GM | |
| 04: | 120.1 SEC; | 11.1 GM | |
| 05: | 150.1 SEC; | 11.2 GM | |
| 06: | 160.1 SEC; | 11.3 GM | |
| 07: | 210.1 SEC; | 11.4 GM | |
| 08: | 250.4 SEC; | 11.5 GM | |
| 09: | 260.4 SEC; | 11.5 GM | |
| 10: | 316.4 SEC; | 11.6 GM | D=00.70 |
| 11: | 346.4 SEC; | 11.6 GM | |
| 12: | 376.4 SEC; | 11.6 GM | |
| 13: | 406.4 SEC; | 11.9 GM | |
| 14: | 436.4 SEC; | 11.9 GM | |
| 15: | 560.0 SEC; | 12.0 GM; | 400RPM |



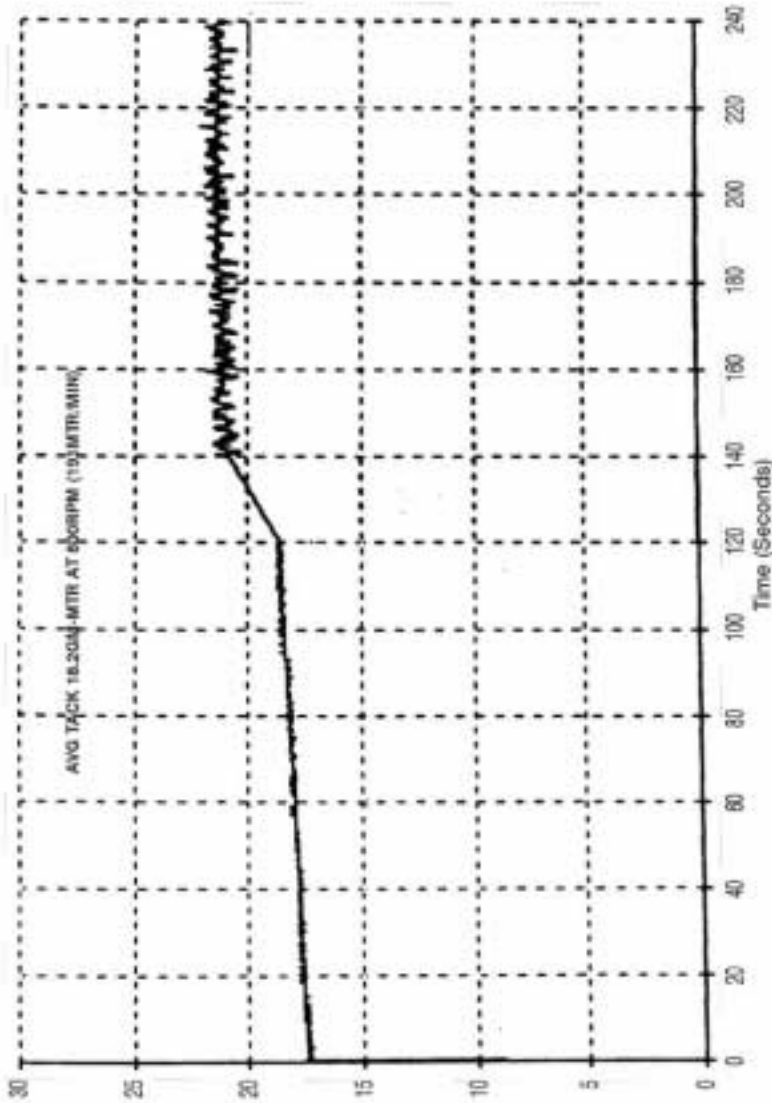
Test Certificate No.: 0002 Date: 06-07-2000 Time: 16:08
 Customer Name/Code: OC Product Code: AP2883 Color of Ink: BLUE Batch No.: Date of pdn.: 06 Jul, 2000
 Test Run No.: 1 Sample Volume: 1.32 ml Ink Film Thickness(µm): 12.3 Test Speed: 400 RPM Peak Interval: 30 Sec.
 Test Temp: 30°C Ink Flying: nil Viscosity(poises): 340 Yield Value-dynes/cm2: 8500 Test By: XXX Certified By:

Testing Machine designed and mfgd by LLOYDS RESEARCH FOUNDATION, INC., Bombay, INDIA. Tel.: 0091-22-6342552/2540000, Fax: 0091-22-6340666/0340187

TEST GRAPH 2

LLOYDS RESEARCH FOUNDATION, INC., BOMBAY.

TEST ON **LLOYDS** AUTOMATIC DIGITAL DYNAMIC INKSCOPE-92SAV



PEAK TACK VALUES

| Sl.No. | Time | GM MTR | Test Speed |
|--------|------------|---------|------------|
| 01: | 010.0 SEC: | 17.6 GM | 800RPM |
| 02: | 020.0 SEC: | 17.8 GM | |
| 03: | 030.0 SEC: | 17.8 GM | |
| 04: | 040.0 SEC: | 17.9 GM | |
| 05: | 050.1 SEC: | 18.0 GM | |
| 06: | 060.1 SEC: | 18.2 GM | |
| 07: | 070.1 SEC: | 18.2 GM | |
| 08: | 080.1 SEC: | 18.3 GM | |
| 09: | 090.1 SEC: | 18.3 GM | |
| 10: | 100.1 SEC: | 18.6 GM | |
| 11: | 110.1 SEC: | 18.7 GM | |
| 12: | 120.1 SEC: | 18.7 GM | D=01.10 |
| 13: | 150.2 SEC: | 21.5 GM | 1200RPM |
| 14: | 160.2 SEC: | 21.8 GM | |
| 15: | 170.2 SEC: | 21.5 GM | |
| 16: | 180.2 SEC: | 21.8 GM | |
| 17: | 190.2 SEC: | 21.7 GM | |
| 18: | 200.2 SEC: | 21.8 GM | |
| 19: | 210.2 SEC: | 21.9 GM | |
| 20: | 220.2 SEC: | 22.1 GM | |
| 21: | 230.2 SEC: | 21.9 GM | |
| 22: | 240.2 SEC: | 21.9 GM | |

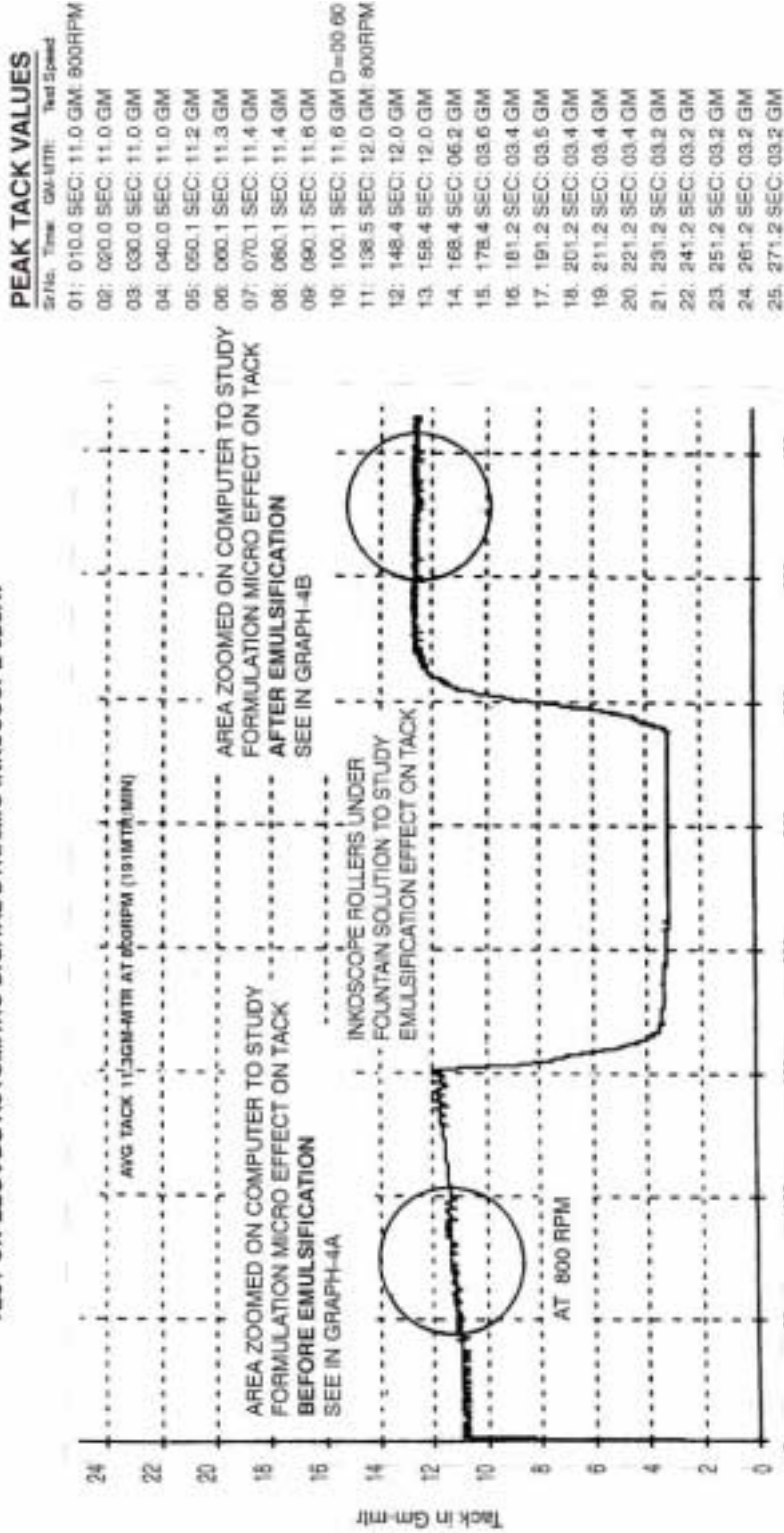
Test Certificate No.: 0002 Date: 06-07-2000 Time: 16:08
 Customer Name/Code: TIMES PRESS Product Code: 1548-15 Color of Ink: RED Batch No.: Date of pdn.: 06 Jul, 2000
 Test Run No.: 1 Sample Volume: 1.32 ml Ink Film Thickness(µm): 12.3 Test Speed: 800/1200 RPM Peak Interval: 10 Sec.
 Test Temp: 30°C Ink Flying: nil Viscosity(poises): 185 Yield Value-dynes/cm2: 11000 Test By: XXX Certified By:

Testing Machine designed and mfgd by LLOYDS RESEARCH FOUNDATION, INC., BOMBAY, INDIA. Tel: 0091-022-6343255/3040666 Fax: 0091-022-6343255/3040487

TEST GRAPH 3

LLOYDS RESEARCH FOUNDATION, INC., BOMBAY.

TEST ON LLOYDS AUTOMATIC DIGITAL DYNAMIC INKSCOPE-92SAV



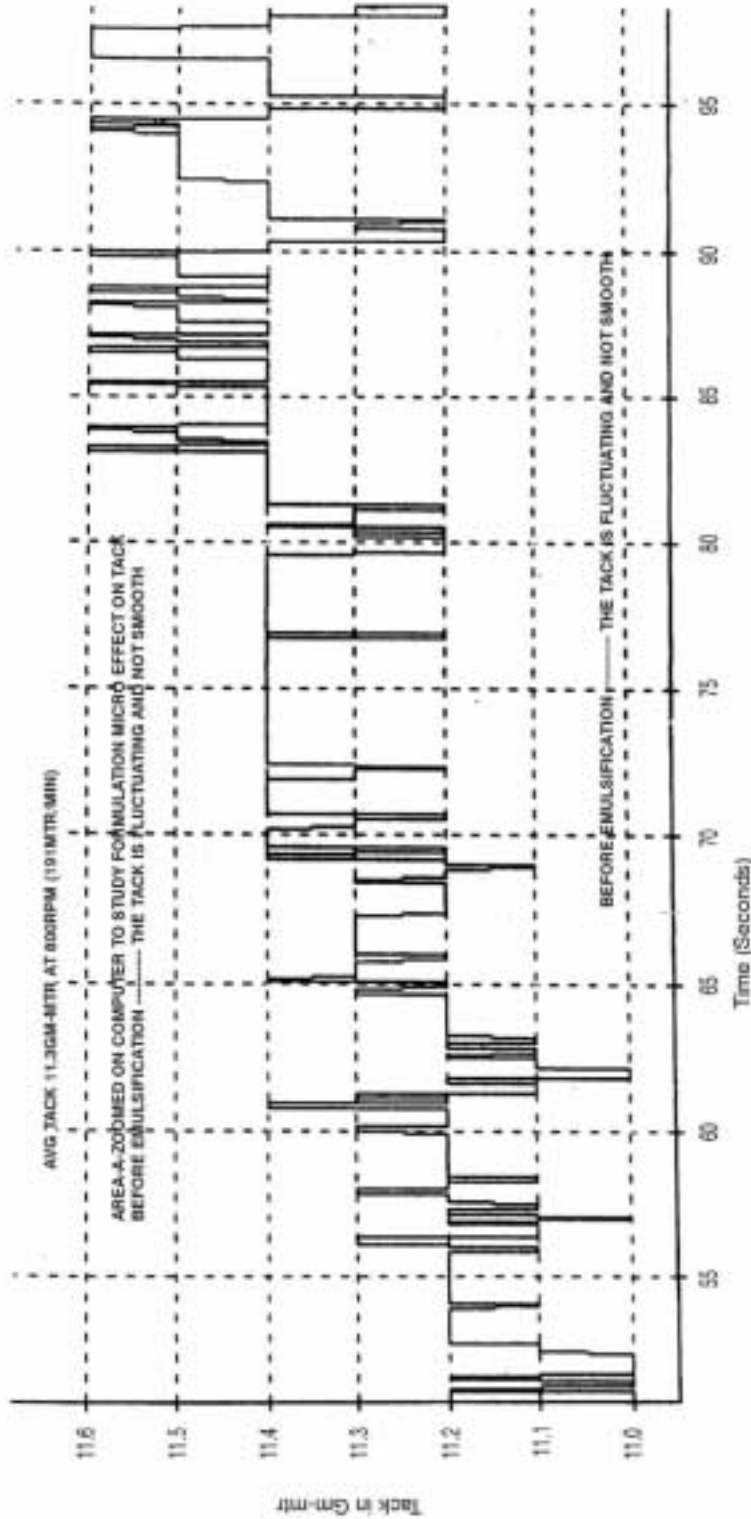
Test Certificate No.: 0004 Date: 06-07-2000 Time: 15.49
 Customer Name/Code: TIMES PRESS Product Code: ws1739 Color of Ink: MEGENTA Batch No.: Date of pdn.: 06 Jul. 2000
 Test Run No.: 1 Sample Volume: 1.32 ml Ink Film Thickness(µm): 12.3 Test Speed: 800RPM Peak Interval: 10 Sec.
 Test Temp: 30°C Ink Flying: nil Viscosity(poises): 185 Yield Value-dynes/cm2: 11000 Test By: XXX Certified By:
 Testing Machine designed and mfged by LLOYDS RESEARCH FOUNDATION, INC., Bombay, INDIA. Tel.: 0091-022-6343255/343666, Fax: 0091-022-6340666/0340187

TEST GRAPH 4

LLOYDS RESEARCH FOUNDATION, INC., BOMBAY.

4A

TEST ON LLOYDS AUTOMATIC DIGITAL DYNAMIC INKSCOPE-925AV



Test Certificate No.: 0004A Date: 06-07-2000 Time: 16:04
 Customer Name/Code: TIMES PRESS Product Code: wa1739 Color of Ink: MEGENTA Batch No.: Date of pdn.: 06 Jul. 2000
 Test Run No.: 1 Sample Volume: 1.32 ml Ink Film Thickness(µm): 12.3 Test Speed: 800RPM Peak Interval: 10 Sec.
 Test Temp: 30°C Ink Flying: nil Viscosity(poisees): 185 Yield Value-dynes/cm2: 11000 Test By: XXX Certified By:

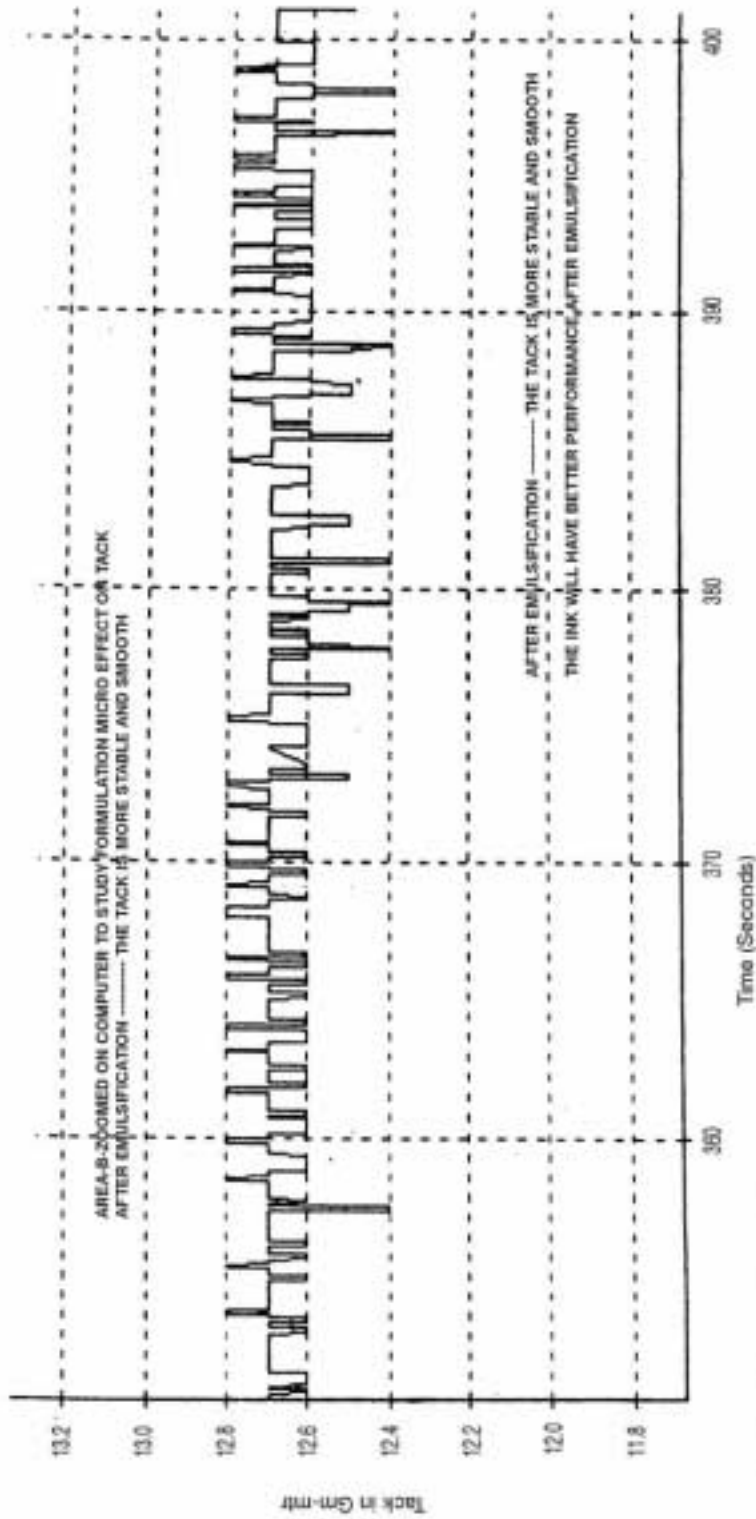
TEST GRAPH 4A

Testing Machine designed and made by LLOYDS RESEARCH FOUNDATION, INC., Bombay, INDIA. Tel: 0091-022-6343255 Fax: 0091-022-6340666

LLOYDS RESEARCH FOUNDATION, INC., BOMBAY.

4B

TEST ON LLOYDS AUTOMATIC DIGITAL DYNAMIC INKSCOPE-925AV



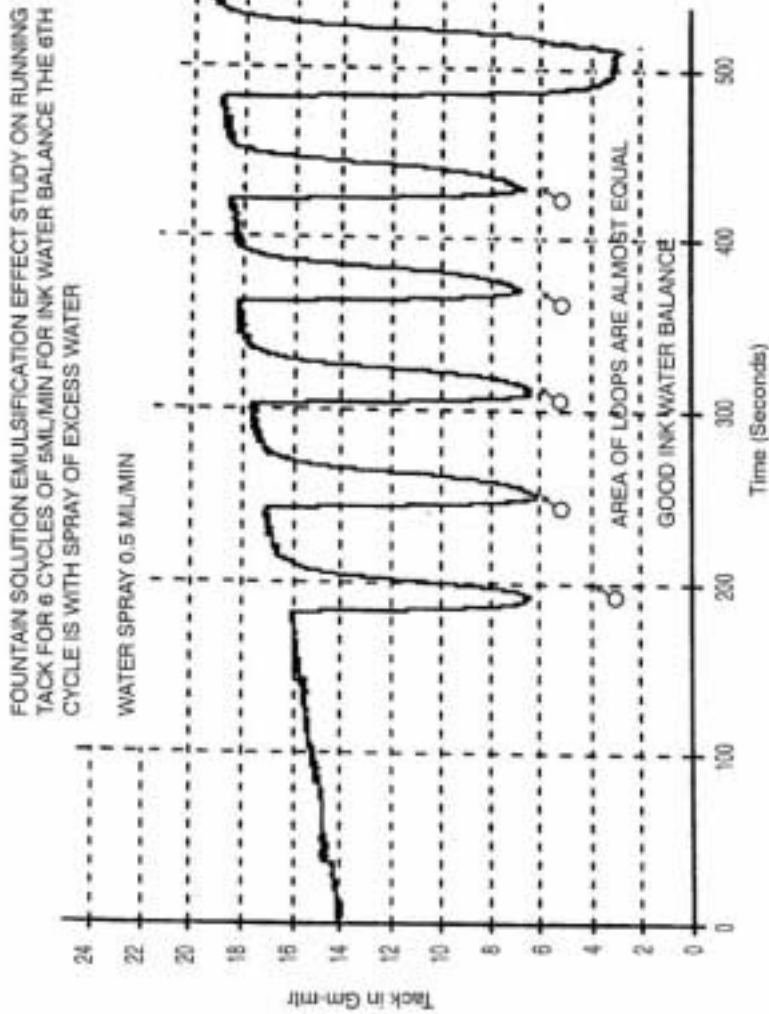
Test Certificate No.: 0004B Date: 04-07-2000 Time: 12:42
 Customer Name/Code: TIMES PRESS Product Code: wa1739 Color of Ink: MEGENTA Batch No.: Date of pdn.: 04 Jul. 2000
 Test Run No.: 1 Sample Volume: 1.32 ml Ink Film Thickness(µm): 12.3 Test Speed: 600RPM Peak Interval: 10 Sec.
 Test Temp: 30°C Ink Flying: nil Viscosity(poises): 185 Yield Value-dynes/cm²: 11000 Test By: XXX Certified By:

Testing Machine designed and mfgd by LLOYDS RESEARCH FOUNDATION, INC., Bombay, INDIA. Tel: 0091-022-6343255/06666, Fax: 0091-022-6343666/06666/07

TEST GRAPH 4B

LLOYDS RESEARCH FOUNDATION, INC., BOMBAY.

TEST ON LLOYDS AUTOMATIC DIGITAL DYNAMIC INKSCOPE-92SAV



PEAK TACK VALUES

| Sr/No | Time | GM-MIL | Test Speed |
|-------|------------|----------|------------|
| 01: | 010.1 SEC: | 14.1 GM: | 800RPM |
| 02: | 020.1 SEC: | 14.3 GM | |
| 03: | 030.1 SEC: | 14.4 GM | |
| 04: | 040.1 SEC: | 14.8 GM | |
| 05: | 050.2 SEC: | 14.8 GM | |
| 06: | 071.6 SEC: | 14.8 GM | |
| 07: | 060.3 SEC: | 14.9 GM | |
| 08: | 060.3 SEC: | 15.1 GM | |
| 09: | 100.3 SEC: | 15.2 GM | |
| 10: | 110.3 SEC: | 15.3 GM | |
| 11: | 120.3 SEC: | 15.5 GM | |
| 12: | 130.3 SEC: | 15.6 GM | |
| 13: | 140.3 SEC: | 15.7 GM | |
| 14: | 150.3 SEC: | 15.9 GM | |
| 15: | 160.3 SEC: | 16.0 GM | |
| 16: | 170.3 SEC: | 16.0 GM | |
| 17: | 180.3 SEC: | 16.1 GM | |
| 18: | 190.3 SEC: | 16.1 GM | |
| 19: | 200.3 SEC: | 16.6 GM | |
| 20: | 210.3 SEC: | 16.1 GM | |
| 21: | 220.3 SEC: | 16.6 GM | |
| 22: | 230.3 SEC: | 17.0 GM | |
| 23: | 240.3 SEC: | 17.1 GM | |
| 24: | 250.3 SEC: | 17.0 GM | |
| 25: | 260.3 SEC: | 09.4 GM | |

Test Certificate No.: 0005 Date: 14-02-2000 Time: 14:24 Batch No.: Date of pdn.: 14 Feb, 2000
 Customer Name/Code: TIMES PRESS Product Code: ps-1853 Color of Ink: CYAN Test Speed: 800RPM Peak Interval: 10 Sec.
 Test Run No.: 1 Sample Volume: 1.32 ml Ink Film Thickness(µm): 12.3 Yield Value-dynes/cm2: 11000 Test By: XXX Certified By:
 Test Temp: 30°C Ink Flying: nil Viscosity(poises): 185

Testing Machine designed and mfged by LLOYDS RESEARCH FOUNDATION, INC., Bombay, INDIA. Tel.: 0091-22-6343255/343555, Fax: 0091-22-6340666/340187

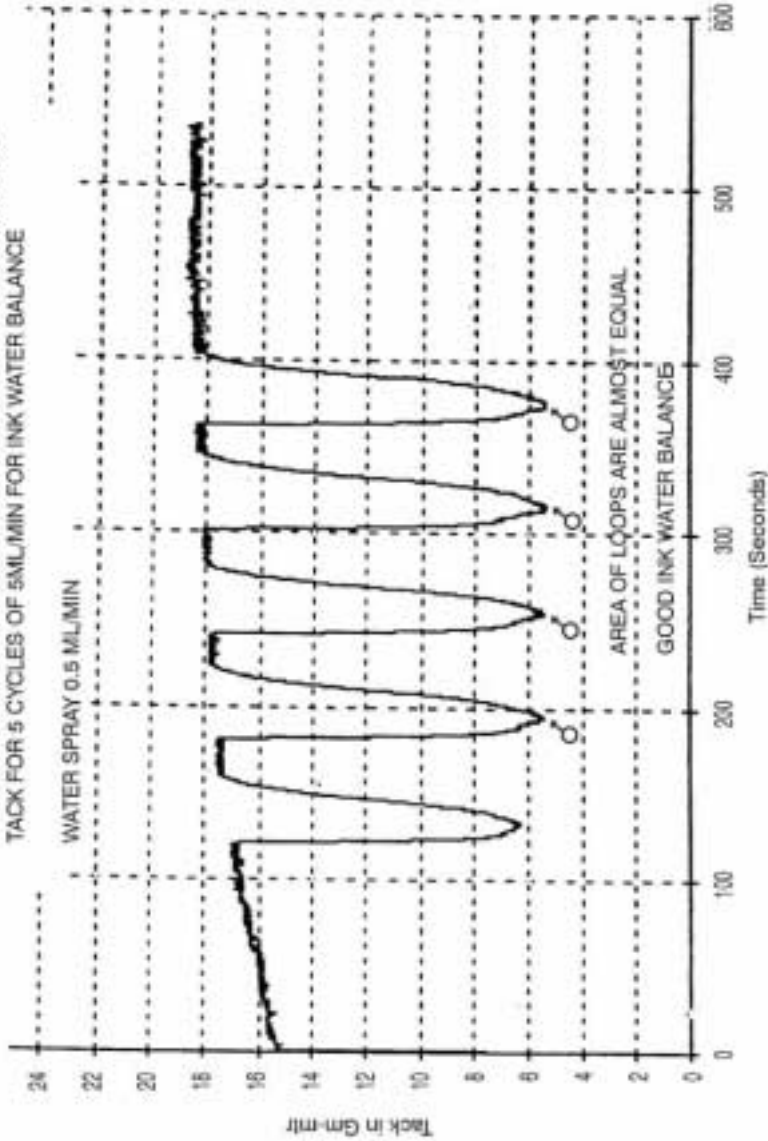
TEST GRAPH 5

LLOYDS RESEARCH FOUNDATION, INC., BOMBAY.

TEST ON LLOYDS AUTOMATIC DIGITAL DYNAMIC INKSCOPE-92SAV

FOUNTAIN SOLUTION EMULSIFICATION EFFECT STUDY ON RUNNING TACK FOR 5 CYCLES OF 5ML/MIN FOR INK WATER BALANCE

WATER SPRAY 0.5 ML/MIN



PEAK TACK VALUES

| Sr/No. | Time | GM-MLR | Test Speed |
|--------|------------|-----------------|------------|
| 01: | 010.1 SEC: | 15.6 GM: | 800RPM |
| 02: | 020.1 SEC: | 15.7 GM | |
| 03: | 030.1 SEC: | 15.9 GM | |
| 04: | 040.1 SEC: | 16.0 GM | |
| 05: | 050.1 SEC: | 16.0 GM | |
| 06: | 060.1 SEC: | 16.2 GM | |
| 07: | 070.1 SEC: | 16.4 GM | |
| 08: | 080.1 SEC: | 16.5 GM | |
| 09: | 090.1 SEC: | 16.7 GM | |
| 10: | 100.2 SEC: | 16.9 GM D=01.30 | |
| 11: | 110.3 SEC: | 16.9 GM: 800RPM | |
| 12: | 120.2 SEC: | 17.0 GM | |
| 13: | 130.2 SEC: | 17.0 GM | |
| 14: | 140.2 SEC: | 07.7 GM | |
| 15: | 150.2 SEC: | 14.0 GM D=02.90 | |
| 16: | 160.2 SEC: | 17.3 GM: 800RPM | |
| 17: | 170.2 SEC: | 17.5 GM | |
| 18: | 180.4 SEC: | 17.5 GM | |
| 19: | 190.2 SEC: | 17.5 GM | |
| 20: | 200.2 SEC: | 06.4 GM D=10.80 | |
| 21: | 210.3 SEC: | 12.0 GM: 800RPM | |
| 22: | 220.3 SEC: | 17.1 GM | |
| 23: | 230.3 SEC: | 17.8 GM | |
| 24: | 240.3 SEC: | 17.8 GM | |
| 25: | 250.3 SEC: | 17.8 GM | |

Test Certificate No.: 0006 Date: 04-07-2000 Time: 12:20
 Customer Name/Code: NOVA PRESS Product Code: MD1 Color of Ink: BLUE Batch No.: Date of pdn.: 04 Jul. 2000
 Test Run No.: 1 Sample Volume: 1.32 ml Ink Film Thickness(µm): 12.3 Test Speed: 800RPM Peak Interval: 10 Sec.
 Test Temp: 30°C Ink Flying: nil Viscosity(poises): 185 Yield Value-dynes/cm2: 11000 Test By: XXX Certified By:

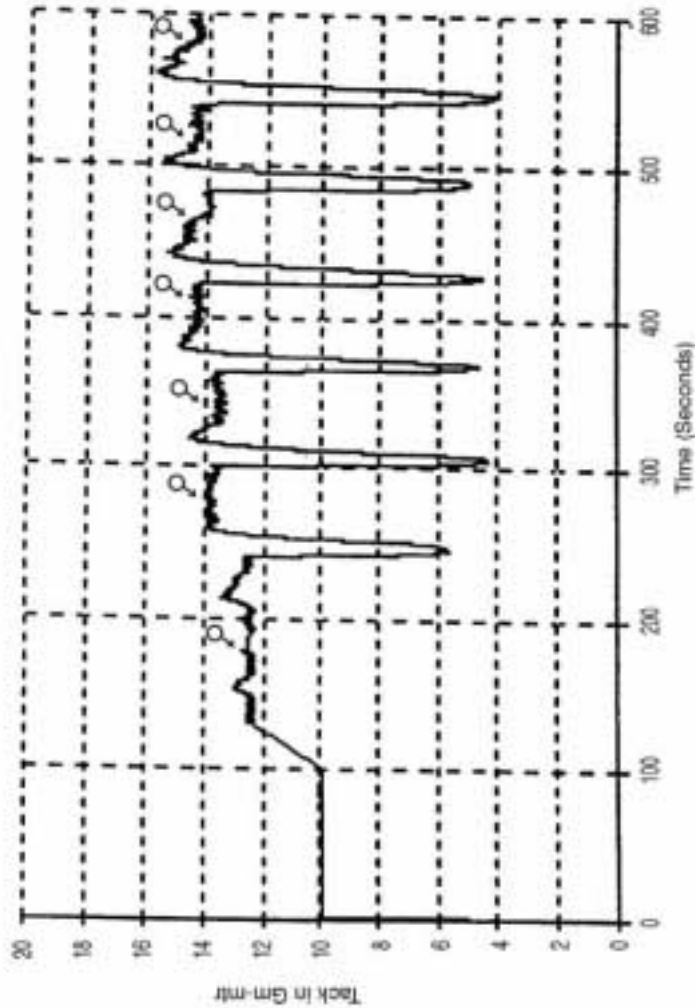
Testing Machine designed and mfged by LLOYDS RESEARCH FOUNDATION, INC., Bombay, INDIA. Tel.: 0091-022-6343255/343666, Fax: 0091-022-6340666/0340107

TEST GRAPH 6

LLOYDS RESEARCH FOUNDATION, INC., BOMBAY.

TEST ON **LLOYDS** AUTOMATIC DIGITAL DYNAMIC INKSCOPE-92SAV

5ML/MIN FOUNTAIN SOLUTION EMULSIFICATION EFFECT ON
RUNNING TACK FOR 6 CYCLES FOR INK WATER BALANCE



PEAK TACK VALUES

| Sl.No. | Time | GM-mlr | Test Speed |
|--------|------------|----------|------------|
| 01: | 010.3 SEC: | 10.0 GM: | 800RPM |
| 02: | 020.3 SEC: | 10.1 GM | |
| 03: | 030.2 SEC: | 10.0 GM | |
| 04: | 040.3 SEC: | 10.0 GM | |
| 05: | 050.3 SEC: | 10.0 GM | |
| 06: | 060.3 SEC: | 10.1 GM | |
| 07: | 070.3 SEC: | 10.1 GM | |
| 08: | 080.3 SEC: | 10.1 GM | |
| 09: | 090.3 SEC: | 10.1 GM | |
| 10: | 100.3 SEC: | 10.1 GM | |
| 11: | 140.8 SEC: | 12.5 GM: | 1200RPM |
| 12: | 150.7 SEC: | 12.5 GM | |
| 13: | 160.7 SEC: | 13.0 GM | |
| 14: | 170.7 SEC: | 12.8 GM | |
| 15: | 180.7 SEC: | 12.7 GM | |

GRAPH OF DEFECTIVE INK TESTED

Test Certificate No.: 0007 Date: 16-12-2000 Time: 13:10
 Customer Name/Code: NOVA PRESS Product Code: PREMIUM Color of Ink: YELLOW Batch No.: Jam Teck Labs Date of pdn.: 16 Dec. 2000
 Test Run No.: 1 Sample Volume: 1.52 ml Ink Film Thickness(µm): 12.3 Test Speed: 800RPM Peak Interval: 10 Sec.
 Test Temp: 30°C Ink Flying: nil Viscosity(poises): 90 Yield Value-dynes/cm2: 5500 Test By: XXX Certified By:

Testing Machine designed and mfgd by LLOYDS RESEARCH FOUNDATION, INC., Bombay, INDIA. Tel: 001-022-634025/634066. Fax: 001-022-634065/6340187.

TEST GRAPH 7

LLOYDS Tackware Computer Screens (general)

General | Chemistry | Parameters | Settings | Graph | X= -10.0000 Y= 0.0000

| | | | |
|-----------------------|-------------------------|---------------------|----------------------|
| Customer Name / Code: | <input type="text"/> | Delivery Date: | <input type="text"/> |
| Customer Address: | <input type="text"/> | Delivery Schedule: | <input type="text"/> |
| Customer Phone(s): | <input type="text"/> | Date of Production: | <input type="text"/> |
| Order No.: | <input type="text"/> | Batch Number: | <input type="text"/> |
| Order Date: | <input type="text"/> | Custom1: | <input type="text"/> |
| Product Code: | <input type="text"/> | Custom2: | <input type="text"/> |
| Color of Ink: | <input type="text"/> | Custom3: | <input type="text"/> |
| Order Quantity: | <input type="text"/> Kg | Custom4: | <input type="text"/> |

Save... New... Print... Print preview... Open... Comparison Help

LLOYDS Tackware Computer Screens (Chemistry)

General | Chemistry | Parameters | Settings | Graph | X= -10.0000 Y= 0.0000

Notes on Sample's Chemistry:

Save As Text... Load From Text... Erase All Copy to Clipboard Past From Clipboard

Save... New... Print... Print preview... Open... Comparison Help

LLOYDS Tackware Computer screens (Parameters)

The screenshot shows the 'Parameters' tab of the Lloyds Inkoscope-92 SAV software. The window title is 'Lloyds Inkoscope- 92 SAV - [Sample Reading]'. The menu bar includes File, Edit, View, Readings, Options, Window, and Help. The toolbar contains icons for file operations and viewing. The main area is divided into several sections for data entry:

- General Information:** Test Certificate No., Test Run No., and Date.
- Test Conditions:** Test Speeds, Temperature, Humidity (gm/m3), Viscosity in Poises, and Yield Value (dynes/cm²).
- Sample Properties:** Sample Volume (ml), Ink Film Thickness (µm), Distribute speed (RPM), Distribute time (min), and Ink Flying.
- Operator Information:** Test Carried Out By and Test Certified By.
- File Management:** Save File Path and Save File Name.

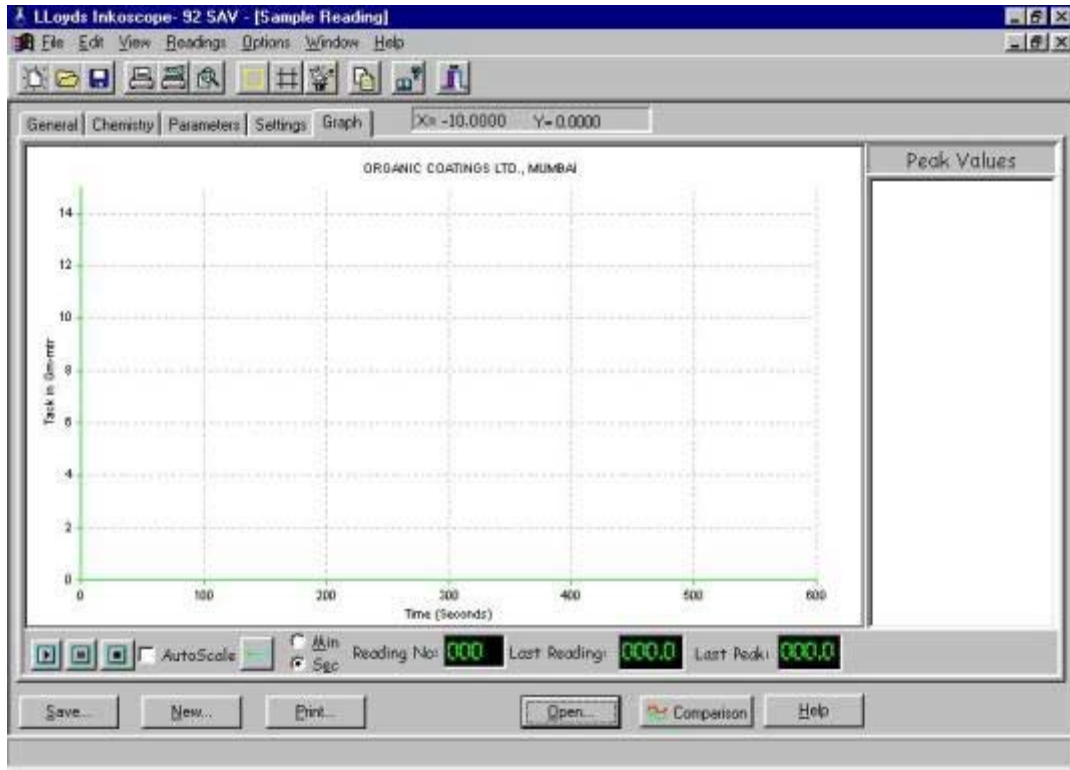
At the bottom, there are buttons for Save, New, Print, Print preview, Open, Comparison, and Help. The status bar shows X=-10.0000 and Y=0.0000.

LLOYDS Tackware Computer screens (Settings)

The screenshot shows the 'Settings' tab of the Lloyds Inkoscope-92 SAV software. The window title is 'Lloyds Inkoscope- 92 SAV - [Sample Reading]'. The menu bar includes File, Edit, View, Readings, Options, Window, and Help. The toolbar contains icons for file operations and viewing. The main area is divided into several sections for configuration:

- Autogating:** A checkbox for 'Do Autogating'.
- Time and Tack Limits:** X-Axis Minimum TIME (Sec), X-Axis Maximum TIME (Sec), Y-Axis Minimum TACK (GM-MTR), and Y-Axis Maximum TACK (GM-MTR).
- Pause Settings:** 'Stop if there is no reading for' (seconds), 'Calculate PEAK TACK VALUE every' (Seconds), and 'Graph Pen color for this ink under test is: Change Colour'.
- Sequence Control:** 'Pause Sequence At Different Speed' (checkboxes) and 'Enable above pause sequence' (checkbox).
- Default Settings:** A 'Make This Settings Default' button.

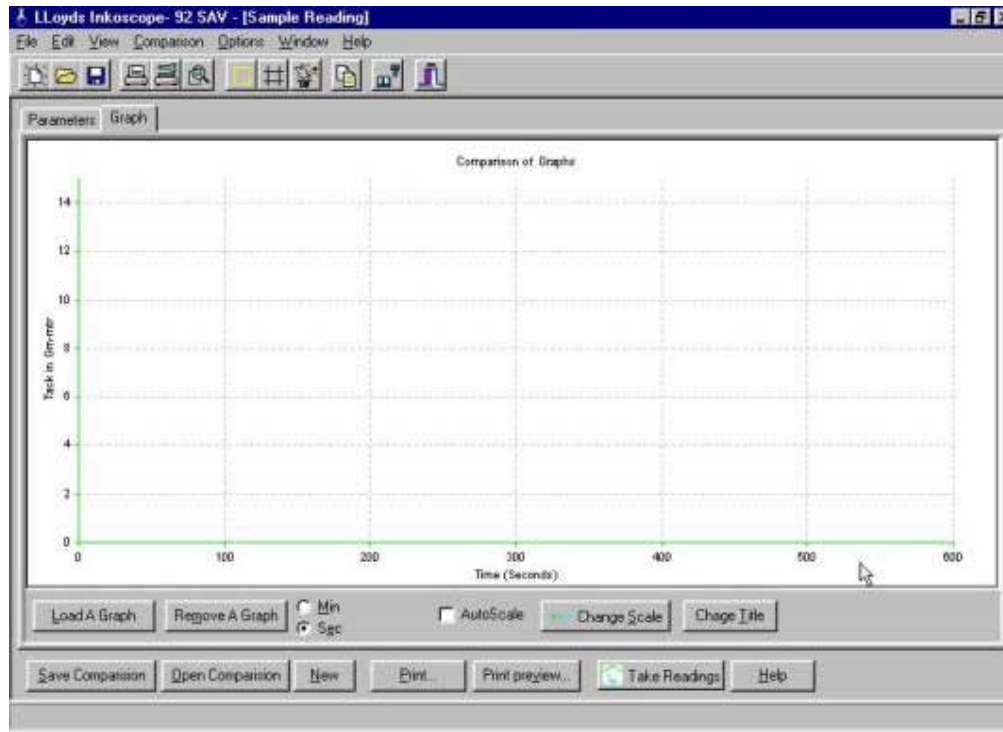
At the bottom, there are buttons for Save, New, Print, Print preview, Open, Comparison, and Help. The status bar shows X=-10.0000 and Y=0.0000.



LLOYDS Tackware Computer screens (Parameters)

The screenshot shows the 'Parameters' tab of the Lloyds Inkoscope-92 SAV software. The interface is divided into several sections for data entry. On the left, there are fields for 'Test Certificate No.', 'Test Bun No.', and 'Date'. Below these are fields for 'Sample Volume' (with a unit of 'ml'), 'Ink Film Thickness' (with a unit of 'µm'), 'Distribute speed' (with a unit of 'RPM'), 'Distribute time' (with a unit of 'min'), and 'Ink Flying'. On the right side, there are fields for 'Test Speeds', 'Temperature', 'Humidity (gm/m3)', 'Viscosity in Poises', and 'Yield Value (dynes/cm²)'. Below these are fields for 'Test Carried Out By', 'Test Certified By', 'Save File Path', and 'Save File Name'. At the bottom of the window, there are buttons for 'Save Comparison', 'Open Comparison', 'New', 'Print...', 'Print preview...', 'Take Readings', and 'Help'. The title bar indicates the software is running on a Windows operating system.

LLOYDS Tackware Computer Screens (Graph)



LLOYDS Digital Chrono Thermo Viscometer

For developing and manufacturing high quality Printing ink and Varnish.



Model 92N

Instrument used to measure accurate Viscosity and Yield Value of ink, Varnishes & other viscous materials in the development of ink formulation and in manufacturing of high quality printing ink by Falling Bar Principle. (LARRY Method)

Standards: ASTM D4040

Range: 40 - 2500 poises

LLOYDS Falling Bar Digital Chrono Thermo Viscometer Model 92N

For Testing Printing Ink, Varnish & other Viscous Material

Featuring advanced microprocessor based electronic with infrared control. Lloyds Viscometer provides the highest accuracy and efficiency for research and development, quality control and process evaluation. A most important instrument used in the manufacturing of high quality printing inks and varnishes to control viscosity and yield values at various stages of production, and accurate quality control of production batches without any chances of rejection or reworking.

Viscosity and yield value of a given printing ink are important properties and must be controlled in a fair limits, if consistent and reproducible printing results are to be achieved.

Advance Features

- Confirms to ASTM D4040
- Microprocessor based electronics for high reliability and accuracy
- Simple and fast method of test and easy to operate
- Only 2 cc of test sample required
- Steel Viscobar and glass Viscobar (for low viscosity i.e. liquid ink, etc)
- Failsafe auto manual electronic design with auto zero for minimum testing time
- Nil or Minimum maintenance needed
- Best for regular production and for developing accurate formulations and R & D work

LLOYDS Viscosoft Software

Lloyds Viscometer is further backed by specially designed **Lloyds Viscosoft software** that will directly calculate **without the need of manually plotting Larry Viscosity Graph** the accurate viscosity, yield value and shortness ratio or S.R.index of an ink with test certificate for achieving perfect formulation. A very important tool for quality control and R & D laboratory

Advance Features of the LLOYDS Viscosoft Software

- Accurate, Instant and repeatable test results of viscosity, yield value and shortness ratio of an ink with test certificate without manually plotting the Larry Graph
- Can recalculate Viscosity, yield value and shortness ratio at any other given temperature without the need to perform the test at that temperature
- Advance inbuilt features to measure viscosity under temperature variations with correction factor
- Online comparisons of test results or with set standards
- Calibration through software require only dimension of orifice and visco-bar. No special standard tested fluid or representative ink required to calibrate the viscometer. Simple Calibration technique in software to maintain instrument consistency and takes care of viscometer wear and tear

Database for formulation and manufacturing process details for further references

You may download free demo version of the Lloyds Viscosoft Software from our website <http://www.lloydsresearch.com/>

Accessories

- Glass visco-bar for low viscosity measurement with calibrated weights for low viscosity i.e. liquid ink, resins etc.
- Viscosoft software for calculating viscosity, yield value and shortness ratio without plotting the graph manually
- Refrigerated water bath for maintaining accurate test temperature of viscometer

Electrical characteristics

- 230/110 Volts 50/60 Hz
- Less than 10 Watts power consumption

Dimension & Weight Details

- Unit physical dimension -12"W X 6"D X 15"H - Net Weight 23 Kgs
- Shipping Dimension - 21"W X 12"D X 19"H - Gross Weight 40 Kgs

Lloyds Viscosoft Software

General Information of Test

The screenshot shows the 'Main Screen' window with a menu bar (File, Setting, Help) and three tabs: General, Reading, and Notes. The 'General' tab is active and contains the following fields:

| | | | |
|--------------|----------|------------------|---|
| Batch No. | 01 | Humidity | 48 |
| Date of Test | 11/25/01 | Save File Name | 01_01 |
| Test Run No. | 01 | Test Temperature | 30 °C |
| Color | Yellow | Type of Rod | <input checked="" type="radio"/> Steel Rod <input type="radio"/> Glass Rod |
| Tested by | SF | | |
| Certified by | SM | | |

At the bottom of the window are buttons for New, Load, Save, Print, Close, and Help.

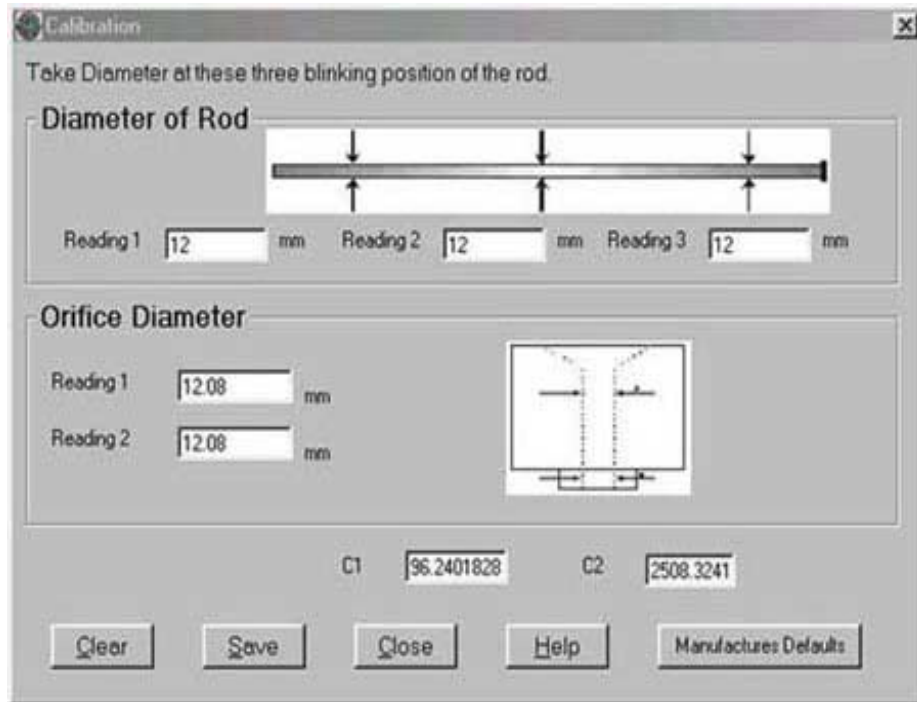
Selection of Weights for the Test

The screenshot shows the 'Test Sequence' window with a grid of weight selection options:

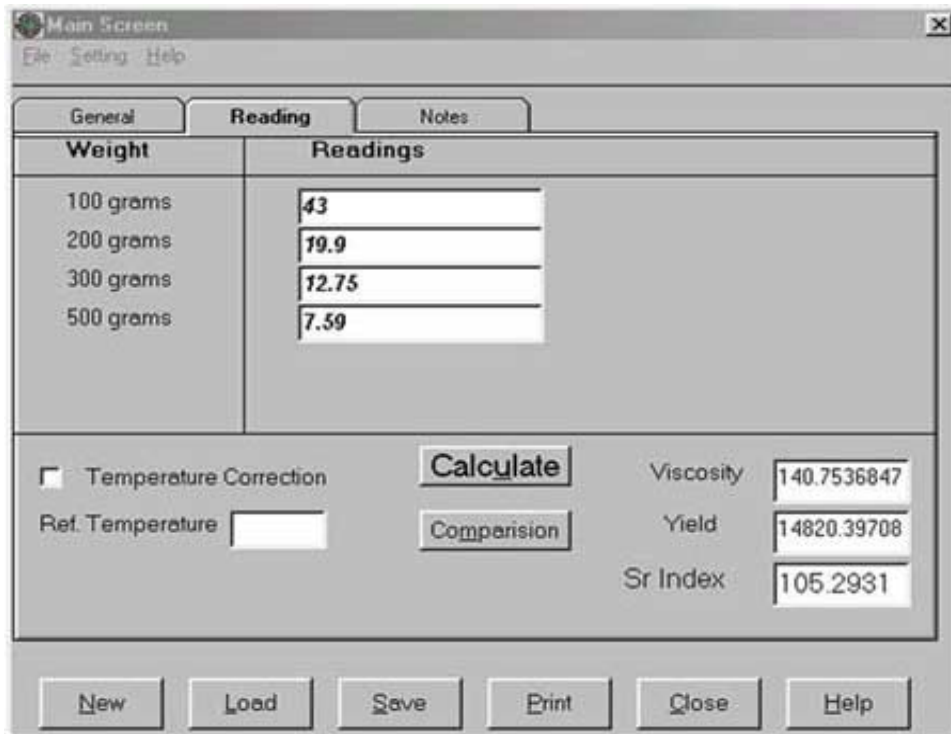
| | | | |
|---|---|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> 0 grams | <input type="checkbox"/> 250 grams | <input type="checkbox"/> 700 grams | <input type="checkbox"/> 1400 grams |
| <input type="checkbox"/> 25 grams | <input checked="" type="checkbox"/> 300 grams | <input type="checkbox"/> 800 grams | <input type="checkbox"/> 1500 grams |
| <input type="checkbox"/> 50 grams | <input type="checkbox"/> 350 grams | <input type="checkbox"/> 900 grams | <input type="checkbox"/> 1600 grams |
| <input type="checkbox"/> 75 grams | <input type="checkbox"/> 400 grams | <input type="checkbox"/> 1000 grams | <input type="checkbox"/> 1700 grams |
| <input checked="" type="checkbox"/> 100 grams | <input type="checkbox"/> 450 grams | <input type="checkbox"/> 1100 grams | <input type="checkbox"/> 1800 grams |
| <input type="checkbox"/> 150 grams | <input checked="" type="checkbox"/> 500 grams | <input type="checkbox"/> 1200 grams | <input type="checkbox"/> 1900 grams |
| <input checked="" type="checkbox"/> 200 grams | <input type="checkbox"/> 600 grams | <input type="checkbox"/> 1300 grams | <input type="checkbox"/> 2000 grams |

At the bottom are buttons for Save, Clear, Close, Help, and Make Standards.

Initial Calibration of Viscometer in Software by feeding diameter of Visco bar and Visco orifice on Actual measurement with the use of accurate micrometer and Vernier Caliper



Tabulate actual test reading obtain from the Viscometer and press 'Calculate', Lloyds Viscosoft software will directly Calculate and display accurate results for Viscosity in poises, Yield value in dynes/cm² and Shortness ratio of ink under.



TEST CERTIFICATE



LLOYDS RESEARCH FOUNDATION, INC.
2/502, Sea Crest, 7 Bungalows,
Versova, Mumbai, India.
Tel: 0091-022-634 3255 / 634 0666
Fax: 0091-022-634 0666 / 634 0187
E-mail: sales@lloydsresearch.com
Website: www.lloydsresearch.com

Accurate Viscosity & Yield value results without plotting graphs, by Lloyds Viscosoft® software

Product Detail

| | | | |
|-------------------------------|--------|-------------------------|----------|
| <i>Batch NO.</i> | 01 | <i>Date of Testing</i> | 10/25/01 |
| <i>Product Code.</i> | | <i>Certificate NO.</i> | |
| <i>Test Run NO.</i> | 01 | <i>Tack (Inkoscope)</i> | |
| <i>Color</i> | YELLOW | <i>Flow</i> | |
| <i>Quantity of Production</i> | | <i>Tested by</i> | SF |
| | | <i>Certified by</i> | SM |

Test Detail

| <i>Test Detail Weight (Gms)</i> | <i>Actual Readings (Sec)</i> | <i>Bar Used:</i> | <i>Steel</i> |
|---------------------------------|------------------------------|----------------------------------|--------------------|
| 100 grams | 43 | <i>Test Temperature:</i> | 30 degree Celsius. |
| 200 grams | 19.9 | <i>Humidity:</i> | 48 |
| 300 grams | 12.75 | <i>Viscosity in poises:</i> | 140.753684743581 |
| 500 grams | 7.59 | <i>Yield Value in Dynes/cm2:</i> | 14820.3970818682 |
| | | <i>Sr Index</i> | 105.29313750377 |
| | | <i>Remarks:</i> | |

Observations / Notes on formulation

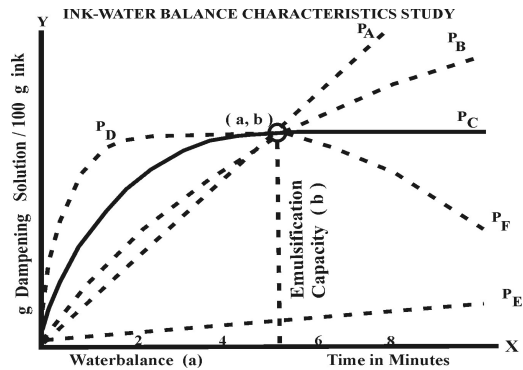
Viscosoft Software Developed By Lloyds Research Foundation, Inc. Bombay (India)
Tel: +91-22-634 3255 / 634 0666 Fax: +91-22-634 0666 / 634 0187
Website: www.lloydsresearch.com E-mail: sales@lloydsresearch.com

LLOYDS Automatic Digital Ink Water Emulsification Tester

For testing & developing high quality Printing ink, Varnish and Pigments



ASTM – D4942



Lithographic performance with rate of Emulsification V/s time curve

- **Automatic Programmable Ink Water Emulsification Tester** Has been specifically designed for in depth study and for determining the accurate percentage of water absorbency by a specimen sample of Varnish (vehicle), Pigment or an offset printing ink to ascertain and achieve perfect Ink water balance of ink formulation to obtain superior and consistent Lithographic print quality during printing process.
- **Advance technology for excellent accuracy and repeatability.** The energy consumed in process of emulsification for every sample is ABSOLUTELY IDENTICAL with combined relative motion of rotating mixer blades, the counter rotating mixing bowl and set numbers of revolutions.
- **State of the art design.** The emulsification tester has a programmable predetermine non contact type electronic digital revolution set and trip counter with power fail memory and for the end of the test alarm for very long life working and needs no attention when emulsification process is on freeing the technician to perform other work as well.
- **Very easy to operate.** The specially shaped s.s.mixer blades can be detached with push of a lever, from the main gearbox system into s.s. Sample beaker placed in the rotating turn table and the digital panel head unit can be tilted up to remove sample beaker along with mixer blades after the test.
- **Ever lasting asset for your laboratory.** It has a compact and strong body design in steel with mirror finish aluminum covers for easy cleaning. All the components of the instruments are of versatile design, best quality, tested material and precision workmanship to produce one of the best quality and highly reliable and accurate Instruments for lifetime working.

Technical data - Model 92-IWE

- Best for formulation testing and for regular production quality control checks and R & D laboratory use.
- Water / fountain solution absorbance by the ink by Volumetric method.
- Water / fountain solution absorbance by the ink by Gravimetry method.
- Lithographic performance with rate of emulsification curve V/s time graph.
- Simple and easy to operate.
- Almost Nil or low maintenance.

Electronics

- Microprocessor based digital electronic design.
- User-friendly design.

Electrical

- 230 Volts 50 Hz / 110 volts 60 Hz
- 180 Watts power consumption

Dimension & Weight Details

- Physical Unit dimension - 7 ¼"W X 17"D X 15"H - Net Weight 19 Kgs
- Shipping dimension - 15"W X 26"D X 25"H - Gross Weight 40 Kgs

LLOYDS Rub Proofness Tester



BS 3110 : 1959

Instrument to measure accurately the rub resistance and color transfer of printed or coated sample on Paper, board, plastic and leather materials

Application

Printing ink, paper, board, Plastic and leather

- **Lloyds Rub Proofness Tester** is specially designed to measure accurately the rubfastness of prints on paper or board, color transfer from printed or coated materials during rubbing and the abrasion resistance of some plastic materials and leather. It lends itself as an ideal test-bed for investigating under carefully controlled conditions new procedures, which involve a rubbing action to establish rubproofness of material under test.
- The resistance to abrasion is an important aspect of many printed articles, particularly on paper or board. Demands for improved abrasion resistance continue while the speed of packaging rise, giving greater possibility of severe scuffing from other printing surfaces or from contact with the production machinery itself. The Lloyds Rub Proofness Tester is designed to cover the severest conditions likely to be encountered.
- Unique design of the Lloyds tester will give an exact comparison of results as to how much a particular print will rub off in practice, and scuff resistance compared with another printed ink sample under the same conditions of the test. The degree of rub and scuff resistance sought for a given ink depends on the end use of the printed sample and how much the printed job is going to be subjected to any form of abrasion.

Instances when abrasion occurs

- Cartons being placed in and moved off the shelf
- Books being rub/scuffed against each other
- Tins and cartons knocking into each other or into guide rails or rollers during packaging
- Handling of magazine and papers
- Rubbing of printed items on to a persons clothes

Advance Design Features

- Best for product testing for quality control and R & D laboratory use

- New State-of-the-art design with 2" & 4" diameter specimen test beds rotating at the same angular speed, the relative velocity between all points on each disc is uniform and passes through all direction in the plane of contact with calibrated pressure weight for ½, 1 & 2 Lbs / Sq.inch and high speed blower for removing dismantled print or paper particles during the rubbing action for accurate evaluation of the test result
- Fast, repeatable and accurate results
- Very Simple and easy to operate
- Almost Nil or low and easy maintenance
- Robust and Stainless Steel construction
- Life time Asset to your quality control laboratory

Electrical

- 230 Volts 50 /110 Volts 60 Hz
- 120 Watts power consumption

Weight & Dimensions specifications

- Unit physical dimension - 9"W X 15 ½"D X 13"H - Net Weight 24 Kgs
- Shipping Dimension - 17"W X 24" D X 19" H - Gross Weight 40 Kgs

LLOYDS Automatic Digital Pigment Muller



Model 92 N
ASTM D 378 / ISO 787 - 13

Instrument For Testing Pigments.

Lloyds digital Pigment Muller used worldwide for accurate and fast evaluation of color strength, color matching, dispersion, particle hardness and particle size, color comparison, tint and tone.

Application

Pigments, Paint, inks, plastic Masterbatching, Coating, Cosmetic and Electronic chemical industries

For Accurate and Fast Evaluation of

- Colour Strength
- Tint Tone and Tinting Strength
- Colour matching
- Particle size Evaluation
- Particle hardness / Texture
- Dispersibility
- Test results directly comparable with production mill working and pre-estimation of production mill grinding time and electric power consumption

Advance Features

- State-of-the-art-design load Cartridge system for grinding load
- Accurate, reproducible and fast test results as energy consumed in every test is absolutely identical since load is applied directly on top mulling plate
- Easy load setting with graduated grinding load and indicator for 50, 100, 150 lbs or 5 to 80 kg.
- Non-contact type programmable micro-processor based revolution digital counter with infra-red sensors for long-life and fail safe working.
- Simple and easy to operate with very easy operating levers for loading and unloading.
- Unique special safety design protects glass plates from breaking even if the top plate falls on it and no other make Mullers in the world can stand this test for safety of glass Mulling plates

- No olden type weight transferring levers and no bulky hanging weight lifting for every operation
- Compact and fully stainless steel body with state-of-the-art-design
- Life time asset to your quality control laboratory with almost nil maintenance

Worldwide Customers

| International Standards | |
|--------------------------------|---|
| ASTM D 378-60 | Mass and Tint strength of color pigments |
| ASTM D 332-64 | Tint Strength of White Pigments |
| DIN 53204 | Testing of pigments: Determination of relative tinting strength of color pigments (Visual Matching Method) |
| DIN 53234 | Testing of coloring materials: Determination of relative tinting strength in white lightened media (Photometric Method) |
| ISO 787-13:1973 | Part 16: Comparison of relative tinting strength and color on reduction in linseed stand oil using the Automatic Muller |
| ISO 787-16:1986 | Part 16: Determination of tinting strength and color on reduction of colored pigments (Visual Comparison Method) |
| ISO 787-24:1985 | Part 24: Determination of relative tinting strength of colored pigments and relative scattering power of white pigments (Photo Metric Method) |

Technical Data

Model 92-NM

- Best for testing regular production and R & D laboratory use
- Nil or low maintenance

Accessories available for 92-NM

- Glass diskettes for different color mulling

Model 92-NM-W

- Water-cooled glass plate head assembly for countering heat generated due to grinding action for temperature sensitive pigments testing for accurate test result.
- Best for Research & Development laboratory and for heat sensitive critical pigments

Accessories available for 92-NM-W

- Refrigerated water Circulating bath for maintaining the test temperature
- Glass diskettes for different color mulling
- Electrical
- 230 Volts 50Hz / 110v 60 Hz
- Dimension & Weight Details:
- Physical unit dimension - 15"W X 23"D X 23"H - Net Weight 78 Kgs
- Shipping Dimension - 20"W X 31"D X 28"H - Gross Weight 95 Kgs

LLOYDS Vibrationless Digital Vibroshaker



Model 92N-SV

Instrument used for accurate and fast test evaluations for color strength, color matching, dispersion, particle hardness and particle size, color comparison, tint and tone in the development, and helping to find precise flaws and its correction in the manufacturing process for producing superior and consistent quality pigments, dyes, paints, and textile emulsions upto submicron grinding level for its maximum ability for high area coverage per unit with all the realistic parameter for quality assessment.

Advance Features

- Vibration less Vibroshaker Technology for the first time in the world.
- Very fast, accurate and reproducible test results upto submicron grinding level
- Unique high tech state of the art dynamic Mechanical Gear Box Design for simultaneous reciprocation and radial tilting in equal and opposite direction on both sides to nullify vibrating forces on machine body, therefore all the energy wasted in vibration of the machine body (in conventional machines) is totally transferred to actual samples in test run with perfect colliding harmony of grinding media for accurate, faster, effective and reproduceable test result for Color Strength, Color Matching, Tint Tone, Tint Strength, Particle Size & Texture, Particle Hardness and Dispersability
- As the energy consumed in grinding in all the eight canisters are absolutely equal due to its unique gear box design for non vibrating of the machine body therefore the test results obtained from all the canisters will be equal if the weight and size of the grinding media is maintained equally
- No springs mounted base and no foundation required
- Heavy duty and continuous rating
- Negligible and easy maintenance as gearbox dynamic working mechanism is fully immersed in oil
- Test run on **Lloyds Digital programmable Vibro Shaker** can directly be related to actual grinding or dispersion process in the production mill or dispersor working, thereby pre-hand estimating of the most economical electrical power consumption and time that will be require by the mill motor to grind or disperse a particular pigment or paint to perfect quality standard
- Superior product reliability with optimum efficiency and having robust and compact chassis construction. A lifetime asset for your quality control laboratory

Technical data

Model s - 92N-SV

- Best for product testing for regular quality control and for Resource and Development work
- Accurate, fast and repeatable test result
- 16mm reciprocation in X-axis, and 30° tilting in Y-axis and 700 spm (shakes / min)
- Failsafe electronic design for high productivity with inbuilt digital programmable set and trip timer to conduct the test up to 99.9 minutes or 1.665 hrs
- Results comparable with production mill working time and estimation of power required

Accessories available for 92-NM

- Standard machine is supplied with 8 nos of 125 ml stainless steel canisters and its canisters holders
- Variety of interchangeable canisters and canisters holders for following volume is also available as extra accessories
- 250 ml, 500 ml and 1000 ml in set of 8 pcs

Electrical

- 230 Volts 50/110 volts 60 Hz
- 450 Watts power consumption

Dimension & Weight Details

- Unit physical dimension 17.5"W X 58"L X 20"H - Net Weight 135 Kgs
- Shipping Dimension 26"W X 68"L X 30"H - Gross Weight 180 Kgs

LLOYDS Constant temperature Digital Thermo Circulating Refrigerated Water Bath



Model S – 200

For accurate temperature control and temperature stability with accuracy of $\pm 0.1^{\circ}\text{C}$ and temperature range from 4°C to 95°C , with in-built refrigeration and circulating system.

- **Lloyds constant Temperature Digital Thermocirculating Refrigerated Bath** has been specifically designed for the convenient use with jacketed instruments such as Inkometer, Laray Viscometer, Tackoscope, Tackometer and other instruments for evaluating accurate test results which are critically dependent on temperature variations particularly in Viscosity measurement on Laray Chrono Thermo Viscometer and Inkoscope for printing ink testing.
- **It uses advanced Micro Processor Technology**, for increased temperature control stability even under condition where the heat requirement vary during long term operations and strict adherence to set point with controlling accuracy of $\pm 0.1^{\circ}\text{C}$ and temperature range of 4°C to 95°C . The temperature below ambient is controlled with specially designed in built Refrigeration system of the bath.
- **All immersed part of the Bath are Stainless Steel.** There are no dissimilar metals to cause corrosion. The only maintenance required is cleaning when necessary. The efficient submersible centrifugal pump with multi-bladed rotor, features a continues duty rated motor with self-cooling fan.

Technical specifications

| | | | |
|----------------------------|---------------------------|-------------------------|--------------------|
| Temperature Range | 4°C TO 95°C | Pump Capacity | 10 L / M |
| Temperature Control | $\pm 0.1^{\circ}\text{C}$ | Having work area | 254 x 230 x 146 mm |
| Volume | 11 ltrs | Power Supply | 230 Volts, 50 Hz |

Technical data

Model s - 200

- Best for accurate control of temperature in jacketed laboratory instruments
- Continuous rating
- Simple and easy to operate
- Almost Nil or low maintenance

Electronics

- Microprocessor based digital electronic design
- User-friendly design

Electrical

- 230 Volts 50 Hz / 110 volts 60 Hz
- 900 Watts power consumption

Dimension & Weight Details

- Waterbath unit dimension - 12"W X 17"D X 25"H - Net Weight 58 Kgs
- Shipping Dimension - 18"W X 25"D X 32"H - Gross Weight 78 Kgs

Designed, Manufactured & Marketed by -
LLOYDS RESEARCH FOUNDATION, INC.

Regd.off : 2/502, Sea Crest, Seven Bunglows, Versova, Bombay - 400 061, INDIA
Tel: 0091-22-634 3255 / 634 0666 Fax: 0091-22-634 0666 / 634 0187

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