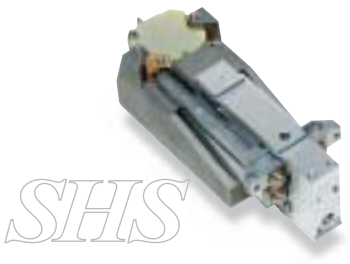
*Moisture Analyzers*

# MS-70/MX-50
# MF-50/ML-50

# Select the best
# for your appli

## A&D's Moisture Analyzers
## MS-70/MX-5




### Fast and uniform heating with halogen lamp and innovative SRA technology

Straight halogen lamp and uniquely designed SRA (Secondary Radiation Assist) filter gives shorter measurement time, thanks to fast and uniform heating

### High repeatability

With SHS (Super Hybrid Sensor) featured as the weight sensor, ultra accurate moisture content determination is possible based on high precision weighing of even a small sample

### High moisture content measurement

MS-70 measures the moisture content at 0.001% resolution suitable for low moisture content samples as well as Karl Fischer method, yet requires no special knowledge or training and produces no harmful waste

### Standard WinCT-Moisture *(for MS& MX)* for real-time graph displaying

WinCT-Moisture is an original software application designed to display a graph of moisture content rate change while measuring with a connected PC

### Sodium Tartrate Dihydrate comes as standard for accuracy checking

Sodium Tartrate Dihydrate is a chemical material that has stable moisture content of 15.66% $^{+0.3}_{-0.1}$, and thus is best to use for accuracy check to maintain the reference value of the analyzer

### Calibration of the heater temperature *(for MS& MX)*

With the temperature calibrator (optional), calibration result can be output in the format that conforms to GLP, GMP, ISO

### Memory function

According to sample up to 20 suitable measurement conditions can be stored and recalled, which saves time and prevents the user from making a mistake when setting (10 for MF & 5 for ML)
For measurement result, up to 100 data can be stored and output at once (50 for MF & 30 for ML)

### Five measurement programs

Five choices of measurement programs, Standard, Automatic, Quick, Timer, and Manual Mode are provided
Standard Mode : Just measurement accuracy, HI, MID or LO needs to be set
Automatic Mode : Ends measurement when moisture content changes at a rate less than the set rate
Quick Mode : Begins heating samples at 200°C for 3 minutes, then is the same as Automatic Mode
Timer Mode : Continues measurement for a set duration of time (1~60mins.: by 1min, 60~480mins.: by 5mins.)
Manual Mode : STOP button should be pressed to end measurement (Max. heating time: 480mins.)

### Selectable Heating Mode

Choose the heating mode from standard, quick, step and ramp heating modes for the most suitable measurement (ML has Standard and Quick heating modes only)

### Clear and easy-to-see, large VFD display

Measurement, setting value, change in moisture content, action status, data number and other important information are clearly displayed

### Easy handling of the unit

Ergonomically designed pan handle eliminates mishaps such as burns when moving a hot sample pan into or out of the unit from either side. Wing handle for easy opening and closing of the heater cover

### Low maintenance cost assured

The halogen lamp is user replaceable without unit downtime with protective chamber for easy cleaning (Lamp life 5000 hours)

# t moisture analyzer
# ca tion-Test with The Best

## 50/MF-50/ML-50

MS

MX

MF

ML

***Progress window for heating check***
Heating process can be checked through translucent window

***Self Check function***
Defect check function is available along with temperature control

***Quick Reference Card***
A convenient operating guide is installed at the bottom of the analyzer

***Standard RS-232C***
Bi-directional communication with a PC or connects directly to a printer

***Conformity to GLP, GMP, GCP and ISO with date/time, ID, calibration data and check record outputs***
Data output for daily record management

SRA
Secondary Radiation Assist

Straight Halogen Lamp

SHS
Super Hybrid Sensor

WinCT
MOISTURE

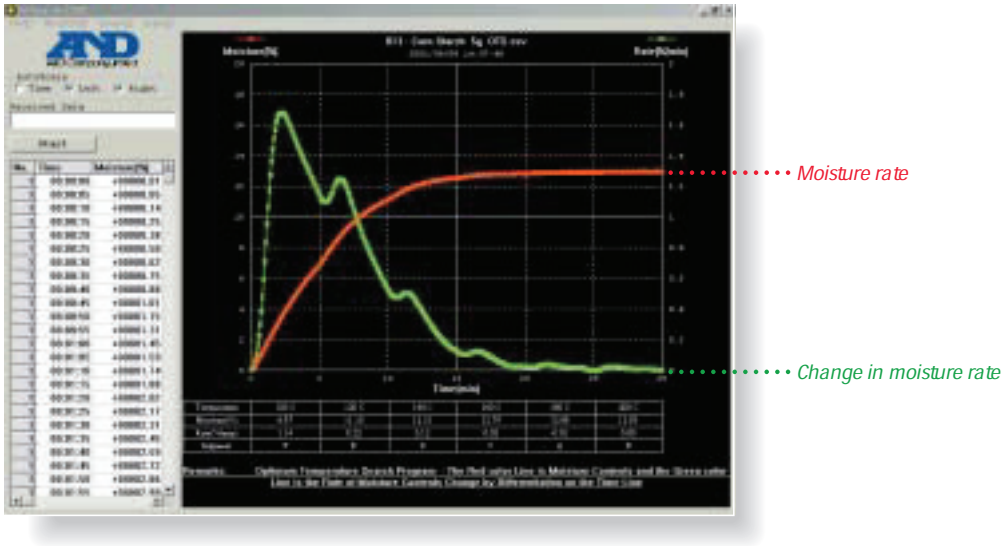
888
VFD Display

RS-232C

GLP

# WinCT-Moisture

With our WinCT-Moisture software, data measured by the Moisture Analyzers can be easily displayed on your computer.
Effective for determining measurement conditions such as heating temperature, and useful in reducing the time needed for measurement and improving accuracy.




## *Displays moisture rate changes over time in a graph (RsFig)*

Displays changes in moisture rate in real time

## *Measures moisture rate in a minimum time with excellent accuracy*

Heats at the highest temperature without changing the physical properties of the sample and provides measurements with good repeatability

## *Automatically determines the most suitable heating conditions in a short time (RsTemp)*

Automatically changes the heat applied by the set increments and interval time within a range of 30°C-200°C. From the moisture rate change over that time can determine the most suitable heating temperature in one time measurement (*Patent pending)

## *Shows sample data summary*

Provides a data summary for the sample with the results of moisture rate change for the representative material's measurement

## *Calculates measurement data statistics*

## *Saves the recorded data as a CSV file*

## *Determines other changes to the sample material in addition to moisture rate*

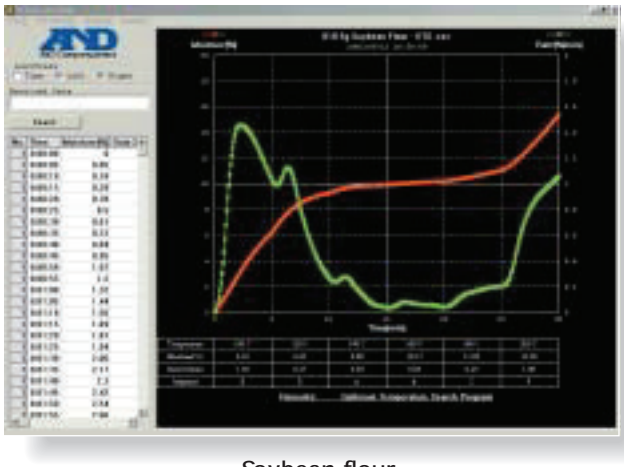
Continuously measures changes to the mass in response to heating temperature and detects other material changes besides the moisture rate

# WinCT-Moisture
## Measurement example

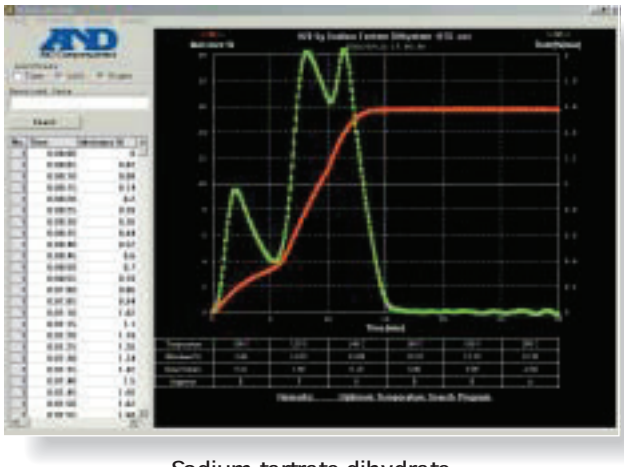
WinCT–Moisture consists of RsTemp software to determine the heating temperature and RsFig software for graphics.

### 1. Example of measurement using RsTemp software to determine the heating temperature

Automatically changes the heating temperature (by your setting increments and interval time) within a range of 30°C - 200°C. From the rate of change in moisture over time, in one time measurement it can determine the optimum heating temperature for the sample.



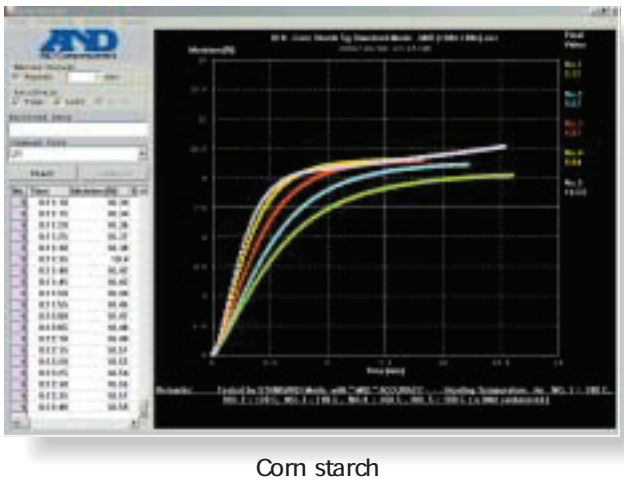
Soybean flour



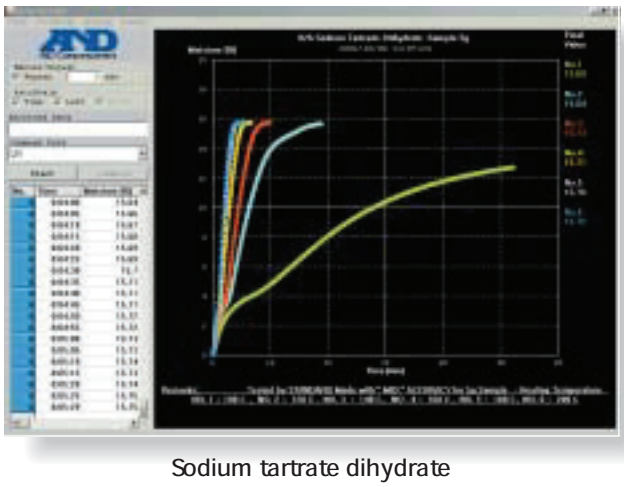
Sodium tartrate dihydrate

### 2. Example of measurement using RsFig graphic software

Can show moisture rate against time when the heating temperature is changed as well as showing the results of repeated measurements at a certain temperature. From the graph, the highest possible heating range for the sample and the quickest measuring time can be determined.



Corn starch



Sodium tartrate dihydrate

### Comparison between MS-70 and the KF (Karl Fischer) method

#### Example of PET plastic pellet measurement

| | Moisture rate | | Average measurement time | Measurement conditions |
|---|---|---|---|---|
| | Average value | Repeatability (standard deviation) | | |
| **MS-70** | 0.298% | 0.0045% | 6.8 mins | Heating temperature 180°C<br>Test sample 10g<br>Measurements 5 times |
| **KF method** | 0.307% | 0.0065% | 19.1 mins | Heating temperature 180°C<br>Test sample 0.3g<br>Measurements 5 times |

KF method: a way of measuring moisture content through chemical determination.

With PET plastic and other materials, the MS-70 can measure a drop of moisture content of less than 1%. Specialist knowledge is not necessary to operate the MS-70, and since measurement occurs quickly no harmful waste is produced.

## Specifications

| | | MS-70 | MX-50 | MF-50 | ML-50 |
|---|---|---|---|---|---|
| Measurement Method | | 400W straight halogen lamp heating system with SRA filter and SHS weighing technology | | | |
| Max Sample Weight Capacity | | 71g | 51g | | |
| Weight Resolution | | 0.0001g | 0.001g | 0.002g | 0.005g |
| Moisture Content Display | | 0.001% /0.01% /0.1% | 0.01% /0.1% | 0.05% /0.1% /1% | 0.1% /1% |
| Moisture Content Accuracy (Standard Deviation) | over 1g | 0.05% | 0.10% | 0.20% | 0.5% |
| | over 5g | 0.01% | 0.02% | 0.05% | 0.1% |
| Heating Technology | | Halogen lamp (Straight type, 400 Watt max, 5000 hours) | | | |
| Drying Temperature (1°C increment) | | 30-200°C | 50-200°C | | |
| Memory of Measurement Programs | | 20 sets | | 10 sets | 5 sets |
| Measurement Programs | | Standard Mode/Automatic Mode/Quick Mode/Timer Mode/Manual Mode | | | |
| Measurement Mode | | Moisture content(Wet or Dry base)/Dry content/Ratio/Weight | | | |
| Heating Mode | | Standard / Quick / Step / Ramp | | | Standard / Quick |
| Display Type | | Large VFD | | | |
| Interface | | RS-232C standard | | | |
| Data Memory Function | | 100 | | 50 | 30 |
| Operating Temperature | | 5-40°C (41-104°F) less than 85% RH | | | |
| GLP/GMP/ISO | | Available | | | |
| Self Check Function | | Standard | | | |
| Communication Software | | WinCT-Moisture standard | | WinCT standard | — |
| Sample Pan Size | | Ø 85mm | | | |
| Power | | AC 100V to 120V (3A) or AC 200V to 240V (1.5A), 50/60 Hz, Approx. 400W | | | |
| Physical Dimention / Weight | | 215(W) x 320(D) x 173(H) / Approx. 6kg | | | |
| Standard Accessories | | Sample Pans (20 for MS/MX/MF 10 for ML), Pan Handles (2 for MS/MX/MF, 1 for ML), Tweezers (for MS/MX/MF), Spoon (for MS/MX/MF), Test Sample (30g of Sodium Tartrate Dihydrate for MS/MX/MF), CD-ROM (WinCT-Moisture for MS/MX, WinCT for MF), Glass Fiber Sheet (for MS/MX/MF), RS-232C Cable (for MS/MX), Display Cover, Dust Cover (for MS/MX/MF), Instruction Manual, Quick Reference Card, Power Cable, Fuse | | | |

*Specifications are subject to change for improvement without notice.*

## Accessories

| | |
|---|---|
| ***AD-8121B*** | Dot Matrix Compact Printer |
| ***AX-MX-31*** | Sample Pan (ø85mm x 100pcs) |
| ***AX-MX-32-1*** | Glass Fiber sheet (ø70mm x 100 sheets) |
| ***AX-MX-32-2*** | Glass Fiber sheet (ø78mm x 100 sheets) |
| ***AX-MX-33*** | Test Sample (Sodium Tartrate Dihydrate, 30g x 12pcs) |
| ***AX-MX-34-120V*** | Halogen Lamp for AC100V to 120V |
| ***AX-MX-34-240V*** | Halogen Lamp for AC200V to 240V |
| ***AX-MX-35*** | Pan Handle (2pcs) |
| ***AX-MX-36*** | Tweezers (2pcs) |
| ***AX-MX-37*** | Spoon (2pcs) |
| ***AX-MX-38*** | Display Cover (5pcs) |
| ***AX-MX-39*** | Dust Cover |
| ***AX-MX-40*** | RS-232C Cable (2m, 25-9pins) |
| ***AX-MX-41*** | Calibration Mass (20g, equivalent to OIML class F1) |
| ***AX-MX-42*** | WinCT-Moisture (CD-ROM, Application Software for Windows) |
| ***AX-MX-43*** | Certified Temperature Calibrator (only for MS/MX) |

AD-8121B
Dot Matrix Compact Printer

...Clearly a Better Value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