

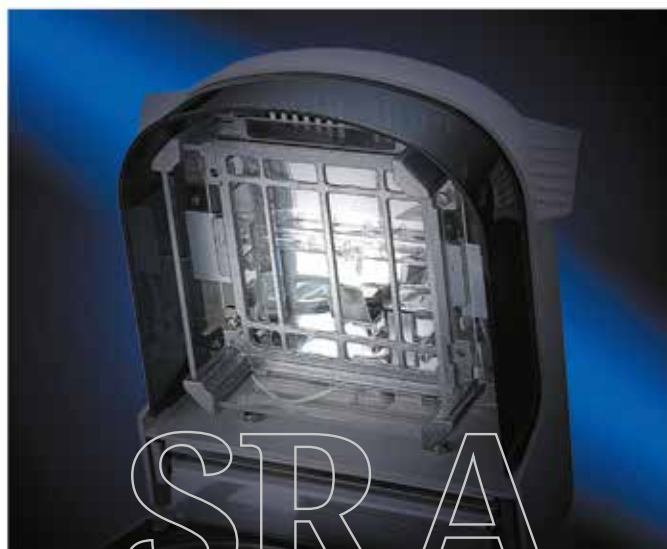
Moisture Analyzers

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



*Test with The BEST –
Quick, Safe and Accurate*

A&D
A&D Company, Ltd.



A&D's Moisture Analyzers

MS-70

MX-50

MF-50

ML-50

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

Low 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

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 $15.66\%_{-0.1}^{+0.3}$, 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)



SHS



Select the best moisture analyzer for your application

–Test with The Best



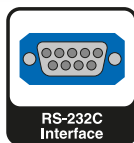
External Calibration



Super Hybrid Sensor



VFD Display



RS-232C Interface



GLP Compliant



Clock & Calendar



Data Memory Function



Software

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

RS-232C Interface

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

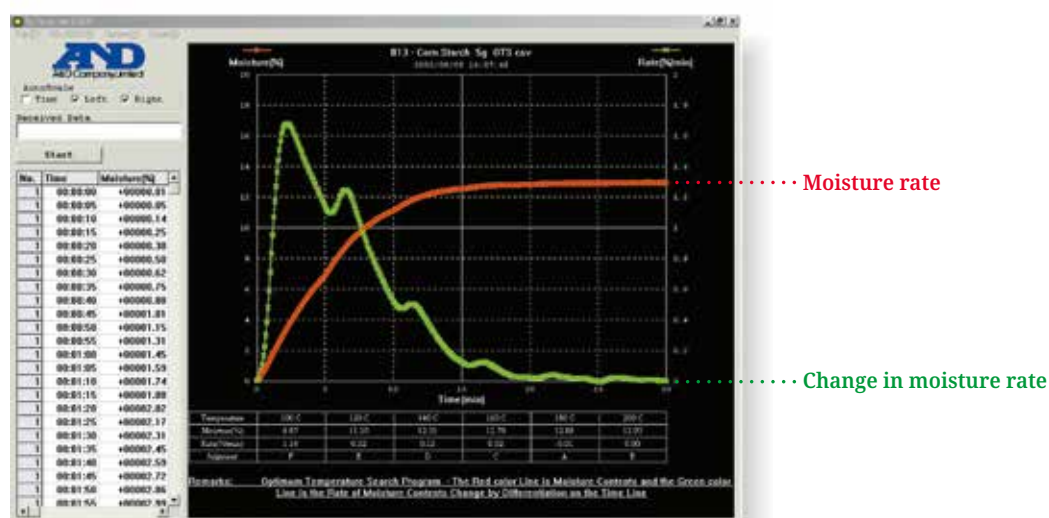
Data output for daily record management



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

Measurement example

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

The screenshot displays the AND software interface. At the top left is the AND logo and the text "AND Software". Below it are buttons for "Analyze", "Train", "Cats", and "Graph". The "Graph" button is selected. Below the buttons is a "Download Data" button. The main window is titled "010 kg Isohexane Flow: 015.cov" and "2003/06/16 16:29:29". It contains a graph with "Molecules(%)" on the y-axis (0 to 25) and "Time(min)" on the x-axis (0 to 25). A red line represents the "Train" data, showing a steady increase from 0% to about 15% at 25 minutes. A green dashed line represents the "Cats" data, showing a sharp peak of about 18% at 5 minutes, followed by a drop and then a rise to about 12% at 25 minutes. Below the graph is a table with two columns: "No." and "Time", and a third column "Molecules[%] [Data 1]". The table lists 20 data points. At the bottom, there is a "Remarks" field and a button "Optimize Temperature Search Program".

No.	Time	Molecules[%] [Data 1]
1	0:00:00	0
2	0:00:05	0.05
3	0:00:10	0.10
4	0:00:15	0.20
5	0:00:20	0.30
6	0:00:25	0.5
7	0:00:30	0.63
8	0:00:35	0.72
9	0:00:40	0.84
10	0:00:45	0.95
11	0:00:50	1.07
12	0:00:55	1.2
13	0:01:00	1.32
14	0:01:05	1.44
15	0:01:10	1.56
16	0:01:15	1.69
17	0:01:20	1.81
18	0:01:25	1.94
19	0:01:30	2.06
20	0:01:35	2.17
21	0:01:40	2.3
22	0:01:45	2.42
23	0:01:50	2.54
24	0:01:55	2.66

Remarks: Optimize Temperature Search Program

[illegible]

2. Example of measurement using RsFig graphic software

AND
ENGINEERING

Menu: [F1] [F2] [F3] [F4] [F5] [F6] [F7] [F8] [F9] [F10] [F11] [F12] [Esc]
 W: Region: 1 T: Unit: 1
 Units: 1
 W: Flow: 14 Jpsi 27 MPa
 Measurement: Data

Entered Data:
 ON [F1] [F2] [F3] [F4] [F5] [F6] [F7] [F8] [F9] [F10] [F11] [F12] [Esc]

Graph: [F1] [F2] [F3] [F4] [F5] [F6] [F7] [F8] [F9] [F10] [F11] [F12] [Esc]

No.	Time	Strength(MPa)	(D)
0.11.18	18.34		
0.11.15	18.34		
0.11.28	18.36		
0.11.25	18.37		
0.11.28	18.38		
0.11.26	18.4		
0.11.40	18.42		
0.11.46	18.43		
0.11.58	18.44		
0.11.55	18.45		
0.12.08	18.47		
0.12.40	18.48		
0.12.18	18.49		
0.12.15	18.51		
0.12.18	18.52		
0.12.26	18.54		
0.12.35	18.55		
0.12.35	18.57		
0.12.40	18.63		

Graph Title: 018 - Core Strength vs. Time at Mode: M01 (0.001588) cur
 0.001588 cur 13.131-02

Graph Y-axis: Strength(MPa) (0 to 14)
 Graph X-axis: Time[sec] (0 to 14)

Legend:

- No.1 3.12
- No.2 9.57
- No.3 9.67
- No.4 9.64
- No.5 18.03

Remarks: Tested by STANBORG, Made with "M01" ACCURACY, Working Temperature: In: No.1 = 180 C, No.2 = 120 C, No.3 = 140 C, No.4 = 160 C, No.5 = 180 C (4.000, calculated)

[illegible]

Sodium tartrate dihydrate

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

Example of PET plastic pellet measurement

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 readability	0.0001g	0.001g	0.002g	0.005g
Moisture content readability	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%
	over 5g	0.01%	0.02%	0.05%
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			
Standard interface	RS-232C			
Data memory capacity	100 data		50 data	30 data
Operating temperature	5-40°C (41-104°F) less than 85%RH			
GLP/GMP/ISO compliant output	Available			
Self check function	Standard			
Standard communication software	WinCT-Moisture		WinCT	—
Sample pan size	Ø85mm			
Power	AC 100V to 120V (3A) or AC 200V to 240V (1.5A), 50/60 Hz, Approx. 400W			
External dimensions / Net weight	215(W) × 320(D) × 173(H) mm / 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), 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-8127	Compact printer	AX-MX-36	Tweezers (2 pcs)
AX-MX-30	Disposable aluminum pan (100 pcs)	AX-MX-37	Spoon (2 pcs)
AX-MX-31	Sample pan (Ø85mm × 100 pcs)	AX-MX-38	Display cover (5 pcs)
AX-MX-32-1	Glass fiber sheet (Ø70mm × 100 sheets)	AX-MX-39	Dust cover
AX-MX-32-2	Glass fiber sheet (Ø78mm × 100 sheets)	AX-MX-40	RS-232C cable (2m, 25-9pins)
AX-MX-33	Test sample (Sodium tartrate dihydrate, 30g × 12 pcs)	AX-MX-41	Calibration mass (20g, equivalent to OIML class F1)
AX-MX-34-120V	Halogen lamp for AC100V to 120V	AX-MX-42	WinCT-Moisture (CD-ROM, application software for Windows)
AX-MX-34-240V	Halogen lamp for AC200V to 240V	AX-MX-43	Certified temperature calibrator (only for MS/MX)
AX-MX-35	Pan handle (2 pcs)	AX-USB-25P	Serial/USB converter with cable



AD-8127
Compact printer