

Visual Melting Range Apparatus (MR-VIS+)





VISUAL MELTING RANGE APPARATUS

Visual Melting Range Apparatus is the latest, state-of-the-art microcontroller based instrument for determining Melting Range of white as well as coloured samples in powdered form. Around 5mg of sample is uniformly spread on a glass slide and covered with a coverslip. The slide is then placed on a specially designed uniformly heated round furnace and subjected to the heating rate specified by the user.

A magnified image of the sample can be observed on a LCD monitor screen via a CCD camera. The effect of heat on the sample can be clearly seen. The change in physical appearance of the sample with reference to temperature is recorded and the start of melting & end of melting are determined automatically. This automatic detection of start and end of melting can be easily verified by observing the melting process on the video screen.

A representation of the entire melting process in the form of a graphics printout is available for authentication as illustrated. This instrument also has a manual operation facility to lock the start of melting and end of melting. In Heat and Cool mode the Start Temperature of Melting as well as Solidification Temperature of sample can be locked manually.

The apparatus can also be used to detect melting point by capillary method by simply attaching capillary conversion accessory (optional).

Applications

- Organic / Inorganic Chemicals
- Pharmaceuticals
- Petrochemicals
- Dyes
- Plastics / Polymers
- Fibers / Textiles etc.

PRINTOUT

Various printouts are available as follows :

CUSTOMER NAME :

Calibration REPORT

Instrument : LABINDIA MR-Vis. 15:37:21 11/07/2021
Inst. Sr No. : 2
Validation Date : 11/07/2021
Validation Time : 14:55

Data of Standards used:

Ref. Std. 1		Ref. Std. 2	
Std Name	: Vanillin	Std Name	: Caffeine
Ref Id.No.	: A	Ref Id.No.	: A
Melting Range°C	: 81.0 - 83.0	Melting range°C	: 235.5-237

Validation Analysis

Sample Preparation	: Capillary		
Operation	: Auto		
Set Temp	: 81.0°C	Set Temp	: 235.5°C
No.of Readings	: 3	No. of Readings	: 3
M.P. (1)	: 82.0°C	M.P (1)	: 236.0°C
M.P. (2)	: 81.6°C	M.P (2)	: 236.6°C
M.P. (3)	: 81.8°C	M.P. (3)	: 236.3°C

Avg M.P : **81.8°C** **Avg M.P.** : **236.3°C**

Name : _____ Signature : _____

Date : _____

CUSTOMER NAME :

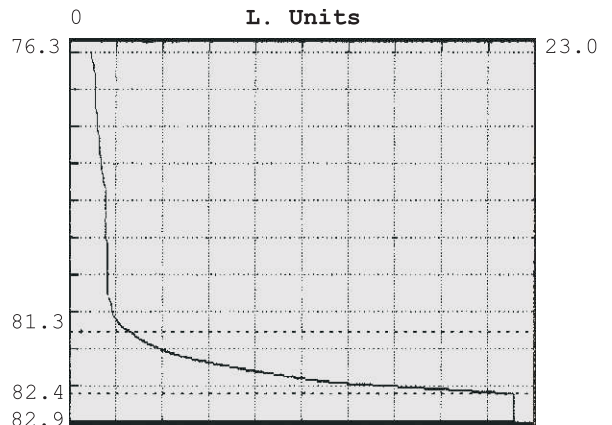
Melting Range Analysis Report

Inst. Sr.No:2
Run No. :8 Run Date & Time:11/07/2021 15:54
ID. No. :D Sample No. :D
Prog No. :2 Sample Prep. :Slide
Sample Name:VANILLIN Mode :Heat
Set Temp. :81.0°C Heat Rate :1.0°C/MIN
Operation :Automatic
Results :
Start Temp :81.3°C End Temp :82.4°C
M.P. :81.5°C

Report printed - 15:57:53 11/07/2021
Analysis done on LABINDIA MR-Vis.

15:58:16 11/07/2021

Run No. : 8
Sample Name : Vanillin
Sample No. : D



Temp°C X Axis Scale: 23.0 L.units/div
Y Axis Scale: 0.660°C/div

Start Temp : 81.3°C End temp : 82.4°C

FEATURES

- Advanced microcontroller based user-friendly, state-of-the-art design with alphanumeric splash waterproof polyester soft keys for keyboard. User interactive software in dialogue mode for ease of operation with protection against invalid entries.
- Visual Melting Range Apparatus is used for detecting the melting range / melting point of substances.
- Alphanumeric entries of sample name, sample number, identification number with date and time for authentication. Daily Auto Incremented Run number and factory entered CUSTOMER NAME and Instrument Sr. No. on report printouts makes system foolproof and GLP compliant.
- Non-volatile memory storage of 100 methods with parameters. Last run result can be viewed or printed.
- Built-in 2-point Automatic calibration.
- Calibration data with date & time stamp for authentication.
- User selectable operating modes :
 - a) In AUTO detection mode, start of melting & end of melting are automatically detected by photo sensing the melting process via CCD camera.
 - b) In MANUAL detection mode, start of melting and end of melting can be locked with a key-press by user.
- Built-in Real time clock (RTC) for time display and on report printout.
- Intelligent Lamp Intensity Control with Soft Start.
- Selectable Report Format, complying with GLP requirements:
 - a) Report giving parameter and result.
 - b) Report of calibration data.
 - c) Graphics report of temperature v/s light units with markings of start of melting and end of melting.
 - d) Report of program parameters for 100 programs.
- Error indication helps the user to trace the problem.
- Melting RUN can be started with last run parameters.
- Facility to abort RUN by single key.
- Escape and Back key for better user interaction.
- STOP key for achieving isothermal condition during manual RUN.
- Printer compatibility:
 - a) Dotmatrix (standard)
 - b) DeskJet (optional)
- Optional
 - i) Capillary conversion attachment.
 - ii) Compliance with USP melting range procedure for class Ia.
 - iii) IQ, OQ, PQ, documents available.
- MR-VIS⁺
 - i) Software for Image Capture on PC.
 - ii) OSD Adapter for authentication of PC captured image.

SPECIFICATIONS

Control	Microcontroller-based (Advanced version of microprocessor).
Furnace construction	Round Block.
Temperature sensor	PT100 (RTD)
Temperature Range	Ambient + 5°C to 350 °C
Temperature Readability	0.1°C
Heating Rates	0.2°C/min, ~ 12.0°C/min,
Max. Cooling Time from 350°C to ambient (25 °C)	25 minutes (approx.)
Accuracy of Detection of melting temperature	
a) Ambient + 5°C to 200°C	- ± 0.5°C
b) 200°C to 300°C	- ± 0.8°C
c) Above 300°C	- ± 1.4°C
Sampling	
a) Sample Size - 5 mg (Approx.)	
b) Sample Holder i) Glass slide < = 1mm ± 0.02 mm thick	
ii) Glass capillary tube with one end sealed (optional accessory)	
Visual Image	10X magnified image displayed on the monitor via CCD camera.
Keyboard	Alphanumeric splash water proof polyester soft keys.
Display	
a) 20 x 2 line back lighted liquid crystal display (LCD).	
b) Portable 7" B&W monitor to view magnified image of sample.	
c) Colour CCD with colour monitor (optional).	
Data storage	Non-volatile memory
Program storage	100 methods with parameters
Printer output	Centronix parallel port
Report format	GLP compliant - Selection of formats including result report, graphics, calibration report and method Parameters.
Power	230 VAC ± 10%, 50Hz.
Modes of detection	AUTO & MANUAL
Environmental Operating Conditions	
a) Operation Indoor	
b) Temperature Ambient to 45°C	
c) Humidity 5 to 90% non-condensing.	

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