RHOPOINT INSTRUMENTS

Novo-Haze TX
Transmission Hazemeter

Operating Instructions

Thank you for purchasing this Rhopoint product.
Please read these instructions carefully before operating this product and retain them for future reference.

English

Novo Haze Tx operating manual Iss J

RHOPOINT INSTRUMENTS

This instruction manual contains important information about the setup and use of the Rhopoint Novo-Haze TX Transmission Hazemeter. It is therefore essential that the contents be read before powering up and using the instrument.

If this instrument is passed to other users you must ensure that the instruction manual is supplied with the instrument. If you have any questions or require additional information about this product please contact the Rhopoint Authorised Distributor for your region.

The technology and components used in the device are based on state-of-the art optic and electronics. As part of Rhopoint Instruments commitment to continually improving the technologies used in their products, they reserve the right to change information included in this document without prior notice.

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Storage and Handling

To ensure safe and reliable operation of this instrument it should be placed on a rigid, flat, level surface.

The instrument should not be used near water.

Prevent exposure of the instrument to direct sunlight for prolonged periods of time and to continuous humidity and condensation.

The unpacked weight of the hazemeter is 17kg; care should be taken when moving the instrument.

Do not place or drop any objects into the port opening. Always lower the baffle when not in use.

Do not place the instrument near electromagnetic fields or in an environment with excessive vibrations.

The instrument's metal body and touchscreen are resistant to a variety of solvents, however the recommended cleaning method is by using a soft damp cloth.

Only use approved accessories and spare parts. All spare parts are available from Rhopoint Instruments Ltd and approved distributors.

Do not attempt to open the instrument. There are no user serviceable parts inside. Please contact Rhopoint Instrument or an approved distributor for your service requirements.

About the Rhopoint Novo-Haze TX Transmission Hazemeter

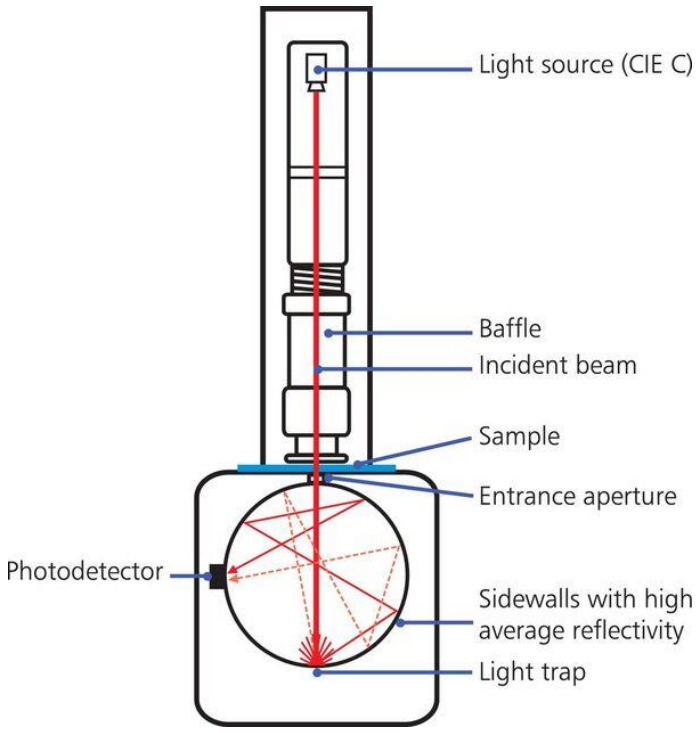
The Novo-Haze TX Transmission Hazemeter provides high accuracy measurements and complies with the standard: ASTM D1003. The unit uses a white light LED filtered for equivalence to CIE C light source plus human photopic response.

The transmission hazemeter quantifies the optical qualities of transparent materials. The two most important aspects are:

1. Transmission – a measurement of the total amount of light that passes through a material that is influenced by absorption and reflective properties. It is used in the plastic film industry to determine the opacity of materials or the hiding power of applied coatings.

2. Transmission Haze – a measurement of the light scattering characteristics of a material. Haze can be due to suspended particles or contaminants within a sample or fine surface texture & contamination. Haze measurement can be used to quantify optical characteristics of glass, plastics and packaging films. In packaging applications, hazy films may reduce a consumer's quality perception as packed products can look cloudy and indistinct. For plastics and glass with haze, the visibility of the test material becomes more apparent and the contrast of viewed objects is reduced.

The diagram below shows the measurement principle of Rhopoint's Novo-Haze TX transmission hazemeter. A collimated light beam passes through the specimen and enters an integrating sphere. The sphere's interior surface is coated with a highly reflective white paint to allow diffusion. A detector, positioned at 90 degrees to the light beam in the sphere, measures total transmittance and transmission haze.



Accessories

The instrument is supplied as a standard package complete with all accessories required to power and operate the unit:-

- Rhopoint Novo-Haze TX Transmission Hazemeter
- 24v DC power supply and mains cable
- USB data stick
- 1 x haze checking standard

Optional Accessories

- Foot switch (part number: HAN-B8041-FOOTSWITCH)
- Label printer (part numbers: RL-B-PRINTER115V, RL-B-PRINTER240V or RL-B-PRINTER240V/EU)
- Custom sample holders – available on request
- Replacement haze checking standard (part number: B3100-005)

Functional Overview

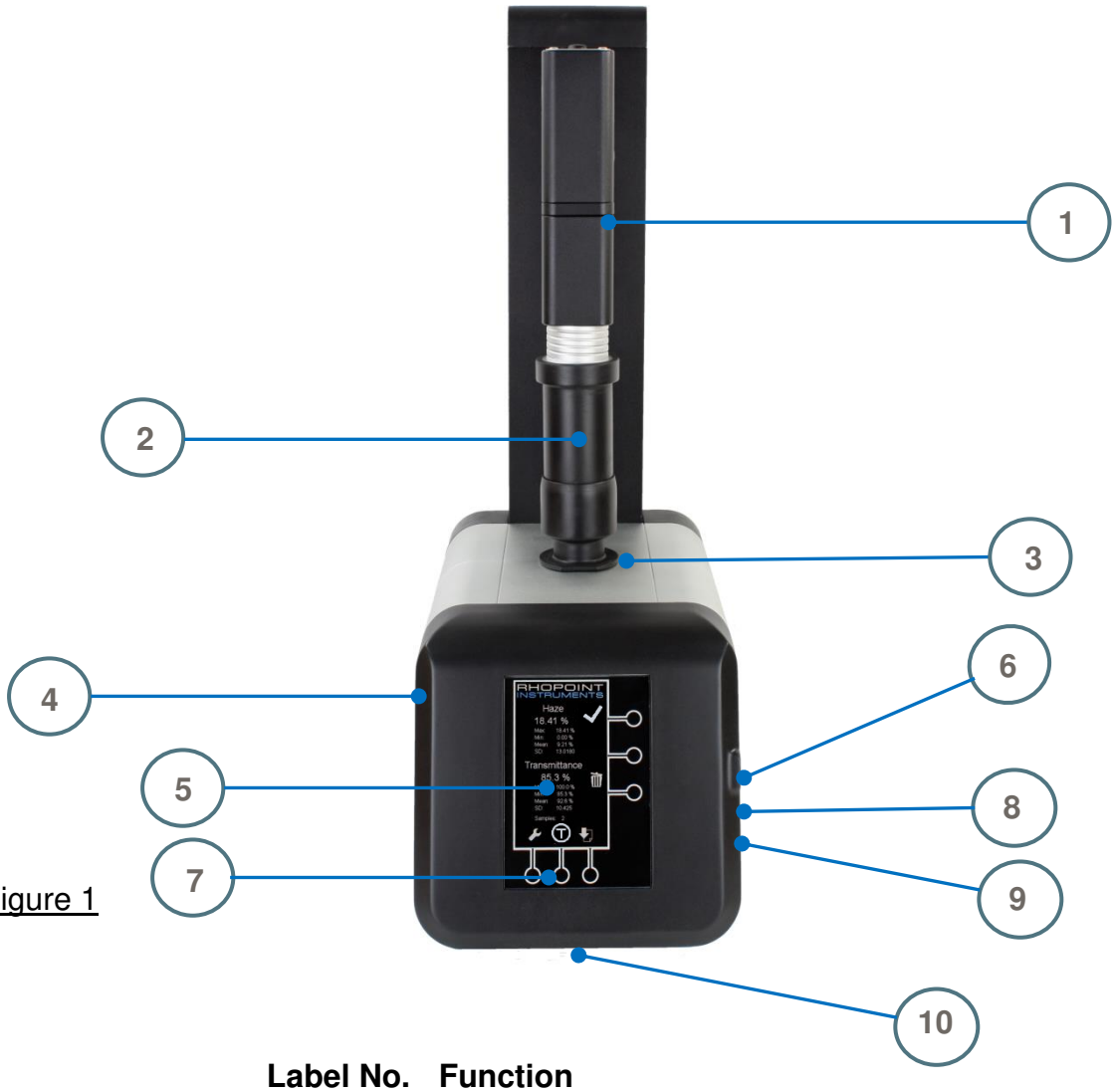


Figure 1

Label No.	Function
1	LED light source
2	Light baffle
3	Sample platform
4	Power in and ON switch
5	Display
6	USB data connector
7	Cap sense buttons
8	Micro USB printer connection
9	Foot switch connector
10	Light trap inspection port

Icons Used

 Tare/Zero the instrument

 Delete last reading

 Take a reading

 Export data to USB or printer

 Adjust time and date

Power

The Rhopoint Hazemeter is powered by a low voltage DC (24v) power supply connected to the instrument's power input connector (4).

Standby Mode

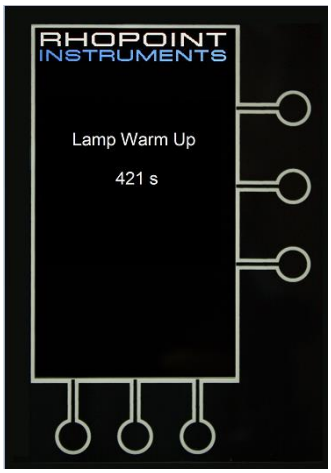
The instrument will go into standby mode after 5 minutes of inactivity. To return to the main operating screen, press any button.

Switching the Unit On

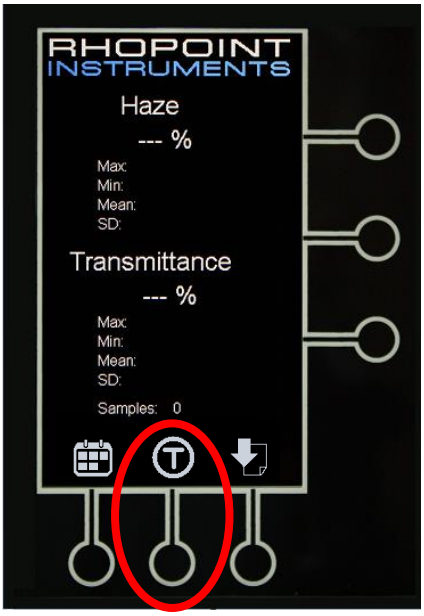
With the power supply connected, the instrument is switched on using the on switch located next to the power input (4).

When turned on the display will show the last calibration date, the instrument's serial number and firmware version details.

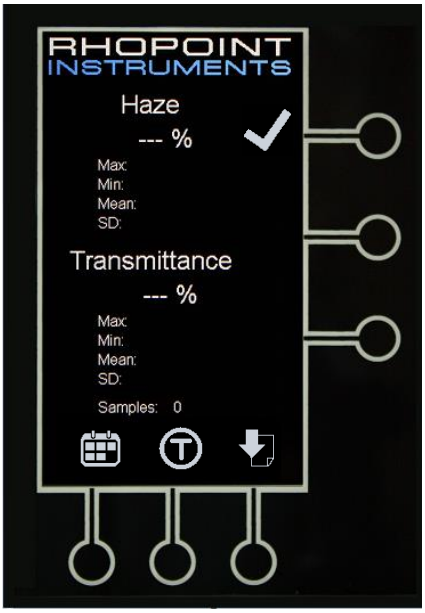
Upon pressing any of the cap sense buttons the lamp warm up screen will be displayed. The warm up period is set to 10 minutes but can be skipped by pressing any of the touch buttons. The warm up period is important when taking transmission readings; this step can be skipped for haze only measurements.



Once lamp warm up is complete the main measuring screen will be displayed. The tare icon will flash indicating an essential operation. Lower the light baffle then press and hold the tare button until a repetitive beep is heard. The unit will operate and set the zero reference.



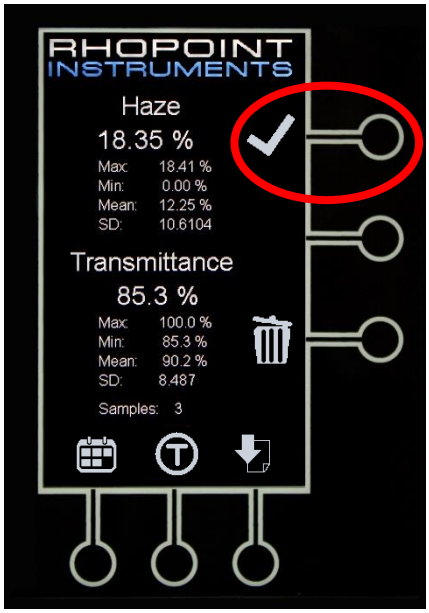
The measuring icon (tick) will now be displayed on the screen (see below). The instrument is now ready to take readings.



Making a Measurement

Lift the light baffle up and place the sample to be measured over the port opening.
Lower the light baffle onto the sample.

To take a reading, press the tick button. The instrument will operate and the results will be displayed on the screen. If a record of each reading is required, press the export button to send the result to a data stick or printer. See the export section of this manual for more details. Continue taking readings by pressing the tick button. Statistics are updated with each measurement. To reset the statistics delete the readings from the instrument memory (see below).



Continuous reading mode

The instrument can be set to continuously take readings every 10 seconds.
Press and hold the tick button until a second beep is heard. The instrument will take readings until the tick button is pressed again or until the 99 sample internal memory is full.

Using the foot switch (option)

Plug the foot switch into the socket shown below. Performing a single press on the foot switch will take a single reading. Press and hold the foot switch down to continuously take readings. Releasing the foot switch will stop the reading cycle.

Deleting Readings

Pressing the delete button will delete the last sample.
Press and hold the delete button to delete all readings and reset statistics.

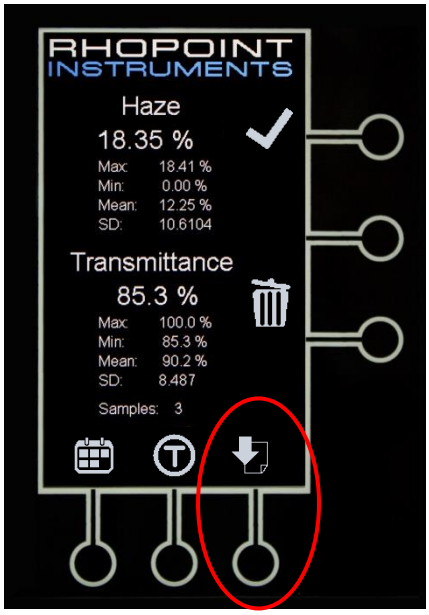
Data Transfer

The Novo-Haze TX instrument has two data transfer options:

1. Export to USB data stick (*standard with all instruments)*

The data stick included with the instrument allows the transfer of measurement data in .csv format for analysis using Microsoft Excel.

Insert a data stick and press ‘export’ to transfer a single reading to a .csv file. Continue pressing ‘export’ after every reading taken. The instrument will beep once to indicate a button press and then again to indicate the data has been sent.



Example of export file

RESULTS.CSV

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Date	Time	Serial No	Samples	Haze	Haze Max	Haze Min	Haze Mean	Haze SD	Transmittance	Transmittance Max	Transmittance Min	Transmittance Mean	Transmittance SD
2	Mar 15 2016	09:51:07	RTH0216001A	1	15.82	15.82	15.82	15.82	0	87.5	87.5	87.5	87.5	0
3	Mar 15 2016	09:51:07	RTH0216001A	2	15.82	15.82	15.82	15.82	0.0029	87.5	87.5	87.5	87.5	0
4	Mar 15 2016	09:51:07	RTH0216001A	3	15.81	15.82	15.81	15.82	0.004	87.5	87.5	87.5	87.5	0.006
5														
6														
7														

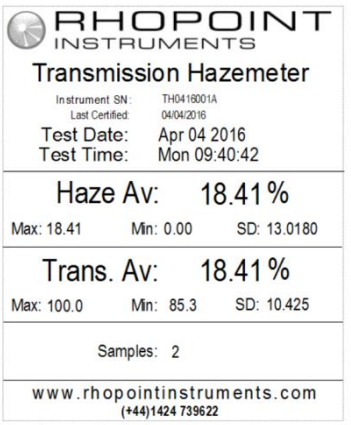
2. Export to results printer *(optional extra)*

Using the Rhopoint data cable and pre-programmed label printer, the results from the hazemeter instrument can be sent directly to a label printer. The label printer is plugged into the <u>micro USB</u> port on the hazemeter using the provide adaptor.

When testing is complete press the data export button.

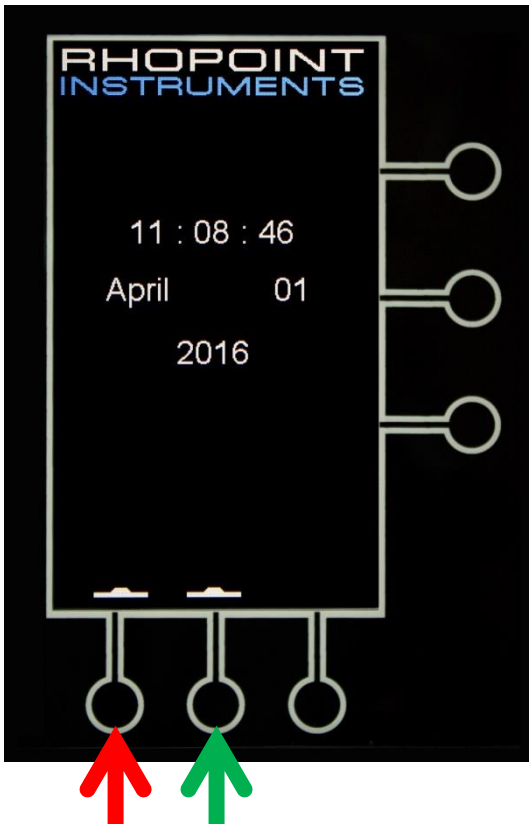
The instrument will beep once to indicate a button press and then again to indicate the data has been sent.

<u>Example of results label</u>



Adjusting the Time and Date

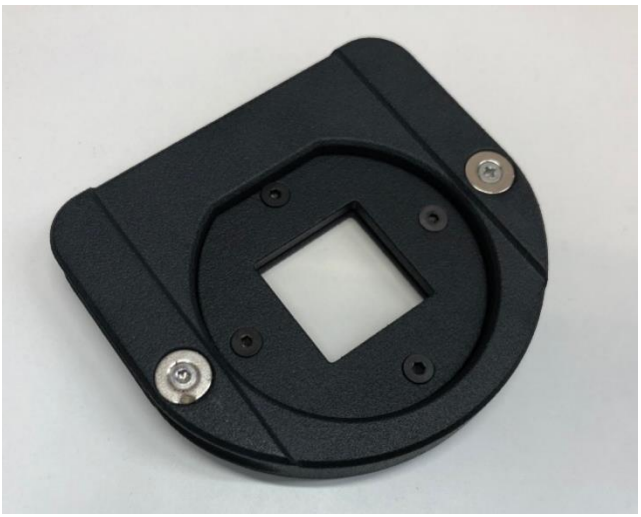
From the main screen press the calendar icon button. The following screen will be displayed.



Press the button marked with a green arrow to start adjusting the time and date.
This will enable up and down arrows on the right hand side of the screen.
Pressing the up and down arrows will change the highlighted field.
Pressing the button with the green arrow will move to the next field.
Pressing the button with the red arrow will save the changes and exit the menu.

Calibration Check

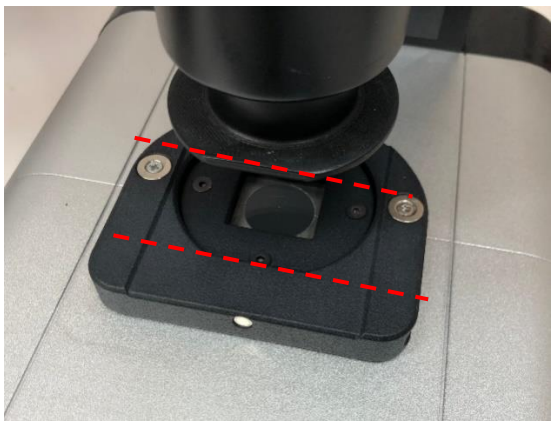
The Rhopoint Novo-Haze TX is supplied with a haze checking standards.

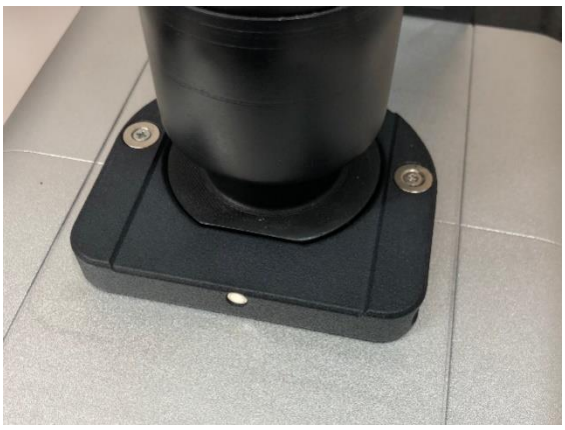


Before first use ensure the lamp warm up period has completed and tare the instrument. Ensure the light baffle is down before pressing and holding the T button to tare.

Unpack the checking standard.

Line up the flat edge of the holder to the flat edge of the standard and lower the baffle.





Take a reading on the checking standard by pressing the tick icon and compare the result with its assigned value. The value must match the assigned value within the tolerances printed on the label.

After using the checking standard place it back in the bag and box immediately. If necessary clean the standard with dry compressed air only.

Do not touch or wipe the clear window as this can change the assigned value.

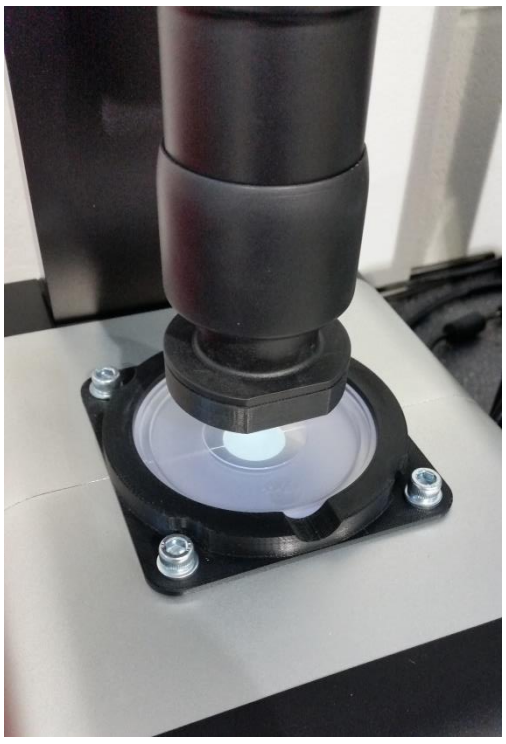
Instrument Measurement Verification

The Novo-Haze TX is calibrated at the factory using traceable calibration artefacts. If the measured value of the checking standard does not match the assigned values (within the tolerances), please follow the following steps:

1. Ensure the checking standard is in date.
2. Ensure the standard being used is not damaged. Any dust, scratches or other marks will alter the reading taken by the instrument.
3. Ensure the light baffle is down when taking a reading.
4. Ensure the instrument is tared correctly. This can be checked by taking a reading without any sample after performing a tare - the haze value should be 0% and the transmittance 100%.

Sample Holders

Custom sample holders and adaptors, to ensure correct product placement, are available on request. Please contact Rhopoint Instruments with your requirements.



Instrument Specifications

Light Source
White light LED filtered for equivalence to CIE C Luminosity function λ plus human photopic response

Measurement Area
Ø 14mm

Measurement Range
0 – 100%

Geometry
0° / diffuse

Measurement Standards
Conforms to ASTM D1003 (CIE C)
Verified to ISO 14782, ISO 13468-1, JIS K 7361

Memory
>10,000 via USB stick
Internal memory: 99 (for statistical analysis only)

Maximum sample thickness
3mm standard light baffle)
10mm (using large diameter light baffle)

Optional Accessories
Large diameter light baffle (Part no A3000-002)