

# VISCO™

Introducing a New Type of Instrument.  
 Taking You Beyond the Limits.



## Digital Viscometer

VISCO™ Cat.No.6800  
 VISCO™ -895 Cat.No.6820 **NEW**

The body, legs and stage of the VISCO™-895 are made from light-weight aluminum.

Measurement range 1 to 350,000,000mPa·s, 1 to 350,000,000cP

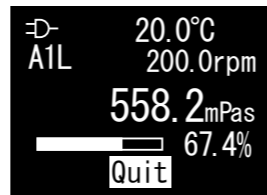


- Compact and easily carried with one hand
- Battery operated—measurements can be taken anywhere.
- Fully digital display allows for anyone to easily read results.
- Capable to measure with only a small amount of sample.
- Simple design and easy, one-button operation allows for anyone to assemble and operate the unit.
- Disposable container other than the included beaker can be used.

Easily operation with one hand



Easy to read, fully digital display

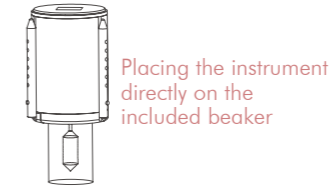


Measurement range (mPa·S)	A1	50 to 200,000mPa·s, 50 to 200,000cP
	A2	100 to 600,000mPa·s, 100 to 600,000cP
	A3	500 to 2,000,000mPa·s, 500 to 2,000,000cP (1mPa·S=1cP)
	Torque	0.0 to 100.0% (recommended torque% 10.0 to 100.0%)
Resolution	Viscosity	lower than 100mPa·s : 0.01mPa·s
		100mPa·s or higher lower than 10,000mPa·s: 0.1mPa·s
	Torque	10,000mPa·s or higher : 1mPa·s
		Lower than 10% : 0.01%
Temperature	10% or higher : 0.1%	
	0.1°C/0.1°F	
Measurement accuracy	Viscosity	±1% of Maximum Viscosity
	Temperature	±0.2°C/±0.4°F
Speed	0.5 to 250 rpm, Number of speeds : 20	
Output	USB - PC	
Power supply	DC6V (AA alkaline batteries 1.5V × 4)	
	AC adaptor : AC100 to 240V, 50/60Hz	
Materials	VISCO™	Housing: SUS, Aluminum · Legs, and stand + screw: SUS
	VISCO™-895	Housing, legs, and stand + screw: Aluminum
Dimensions and weight	VISCO™	12×12×20cm, 1.2kg (main unit only), Stand+screw : 0.5kg
	VISCO™-895	12×12×20cm, 895g (main unit only), Stand+screw : 275g Small volume beaker attachment:0.1kg

\* The above specifications apply only to measurements taken using the standard accessories.

## Three Measurement Methods

VISCO™ has several measurement methods. Select the measurement method most suitable for your application and conditions.



## VISCO™ Packages

VISCO™ Package A Cat.No.6810

- VISCO™ main unit (Including accessories)
- Cup Adapter (with 100pcs cups): RE-78141

VISCO™-895 Package A Cat.No.6830

- VISCO™-895 main unit (Including accessories)
- Cup Adapter (with 100pcs cups): RE-78141

VISCO™ Package B Cat.No.6811

- VISCO™ main unit (Including accessories)
- Ultra Low Adapter (ULA): RE-77120

VISCO™-895 Package B Cat.No.6831

- VISCO™-895 main unit (Including accessories)
- Ultra Low Adapter (ULA): RE-77120

VISCO™ Package C Cat.No.6812

- VISCO™ main unit (Including accessories)
- Cup Adapter (with 100pcs cups): RE-78141
- Ultra Low Adapter (ULA): RE-77120

VISCO™-895 Package C Cat.No.6832

- VISCO™-895 main unit (Including accessories)
- Cup Adapter (with 100pcs cups): RE-78141
- Ultra Low Adapter (ULA): RE-77120

VISCO™ Package D Cat.No.6813

- VISCO™ main unit (Including accessories)
- VISCO™ Temp Controller main unit (Including accessories)

VISCO™-895 Package D Cat.No.6833

- VISCO™-895 main unit (Including accessories)
- VISCO™ Temp Controller main unit (Including accessories)

## NEW Package A

Package A, which includes a specialized adapter for use with disposable containers such as paper cups, is available at ATAGO.

### Optimize cleaning operation time

Taking into consideration the time consuming task of washing the beakers, samples can now be measured in a disposable containers. Ideal for measuring multiple samples.

### Improve operation efficiency

Having spare spindles can improve operation efficiency by not requiring to wash the spindles after each use.



## NEW Package B

A package that comes with Ultra Low Adapter (ULA) for measuring low viscosity sample and VISCO (main unit) is available.

Measurement of low viscosity (1 to 2,000 mPa·s) is possible.



## NEW Package C

Package C is a set of Cap Adapter and Ultra Low Adapter(ULA)

### Optimize cleaning operation time

Taking into consideration the time consuming task of washing the beakers, samples can now be measured in a disposable containers. Ideal for measuring multiple samples.

### Improve operation efficiency

Having spare spindles can improve operation efficiency by not requiring to wash the spindles after each use.

### Measurement of low viscosity (1 to 2,000 mPa·s) is possible



## NEW Package D

Because the viscosity is greatly affected by the temperature of the sample, it is very important to control the temperature of the sample when measuring viscosity. In general, a constant temperature water bath takes time to adjust the temperature because it circulates water. In addition, it requires a large space. It also requires preparation and maintenance such as preparing water and drying water properly after use. The VISCO™ Temp Controller is a lightweight and compact constant temperature device that has been developed to save the time and effort brought about by conventional constant temperature water bath.

### No water required

Since the peltier is used to control the temperature, the sample can be constantly warmed without the use of water. The heavy labor is no longer necessary, no longer a need to worry about algae and mold.

### Reduced Time Spent

Because the container where the sample is placed is made of aluminum, the heat from the peltier is transferred to the sample much more efficiently requiring a shorter time.

### Lightweight and Compact

The total weight is about 4 kg and temperature control unit only is merely 2.7 kg. Less than half the weight of a typical constant temperature water bath. The size is just about the size of VISCO™ fitting perfect, without worrying about workspace.

### Simple Operation

It is operated by two buttons. Despite the common notion that "apparatus and devices used for experiments are considered difficult without being a researcher or expert," it is an easy to use product that anyone can use.



## VISCO™ Optional Accessories

Part No.	Part name	Part No.	Part name
<b>&lt; Container &gt;</b>		<b>&lt; Spindle &gt;</b>	
RE-79100	15mL Beaker	RE-77104	A1 Spindle
RE-79101	100mL Beaker	RE-77105	A2 Spindle
RE-78141	Cup Adapter (with 100pcs cups) * 50pcs of paper cups and 50pcs of plastic cups are included.	RE-77106	A3 Spindle
RE-79102	Paper Cup (90mL, 100pcs)	RE-77114	A1 Spindle 5pcs
RE-79103	Plastic Cup (90mL, 100pcs)	RE-77115	A2 Spindle 5pcs
<b>&lt; Ultra Low Adapter (ULA)&gt;</b>		RE-77116	A3 Spindle 5pcs
RE-77120	Ultra Low Adapter (ULA)- Sample Adapter for Low Viscosity Sample	RE-77100	Set of spindles (A1,A2,A3)
	• Sample cylinder	<b>&lt; Viscosity Standard Liquid &gt;</b>	
	• Cylinder holder	RE-89030	Viscosity Standard Liquid 2
	• Extension (threaded tip)	RE-89031	Viscosity Standard Liquid 5
	• UL stand	RE-89036	Viscosity Standard Liquid 200
RE-77107	UL spindle (with hook and hook holder)	RE-89037	Viscosity Standard Liquid 500
RE-77121	Sample cylinder (with cap and o-ring)	RE-89038	Viscosity Standard Liquid 1000
RE-77117	UL spindle 3pcs (with hook and hook holder)	RE-89039	Viscosity Standard Liquid 2000
<b>&lt; Temperature sensor &gt;</b>		* Standard liquid with JCSS calibration certificates are available (JS2.5 to JS160000). Contact ATAGO for further details.	
RE-75540	Temperature sensor		

## VISCO™ B(L) Optional Accessories

Part No.	Part name	Part No.	Part name
<b>&lt; Container &gt;</b>		<b>&lt; Spindle &gt;</b>	
RE-89053	Viscosity Standard Liquid 20 (500mL)	RE-77108	Spindle L1
RE-89054	Viscosity Standard Liquid 50 (500mL)	RE-77109	Spindle L2
RE-89055	Viscosity Standard Liquid 100 (500mL)	RE-77110	Spindle L3
RE-89056	Viscosity Standard Liquid 200 (500mL)	RE-77111	Spindle L4
RE-89057	Viscosity Standard Liquid 500 (500mL)	RE-77131	Spindle LT1 Special spindle*
RE-89058	Viscosity Standard Liquid 1000 (500mL)	RE-77132	Spindle LT2 Special spindle*
RE-89059	Viscosity Standard Liquid 2000 (500mL)	RE-77133	Spindle LT3 Special spindle*
<b>&lt; Water jacket&gt;</b>		RE-77134	Spindle LT4 Special spindle*
RE-76041	Water Jacket (for 500mL Beaker)	* Standard liquid with JCSS calibration certificates are available (JS20 to JS2000). Contact ATAGO for further details.	

# DOM™ / AOM™

Identifies the best time to replace oil

**Allows you to safely cook delicious fried foods**

**Lower costs by using oil right up until it needs to be replaced**

**Lowers oil usage and reduces waste**

**Avoiding burn injuries**

Maintain a safe distance (approx. 30cm) between your hand and the oil. To improve the safety of employees and contribute to the reduction in the risk of burns.

\* May vary depending on how the unit is held.

**Rated IP67 (Water resistant)**

Designed to be used safely around water. Wash away stubborn oil stains with regular dish soap under running water. Instrument will survive accidentally being dropped in water.

**Impact-resistant body**

Confirmed to continue working even if dropped accidentally from waist height so you can relax and let all of your employees use it without worry.

**NFC** NEW

Measurement history (up to 100 items) can be read by touching a contactless IC card reader / writer connected to a smartphone or a personal computer.



6435565, 6395243, 6471300(JPN)  
10-1975308(KOR)  
1574004(CHN)  
Patent Granted in countries around the world.



**Battery compartment**

Open the cover to insert or remove batteries.

**Lanyard hole**

**Stability / Limit indicator (LED)**

A red or green light will appear when the measurement value exceeds the upper limit value, when measurement is complete, or when measurement errors arise. The LED that illuminates once a stable measurement is displayed will automatically turn off after 30 seconds.

**LCD**

Measurement results, temperature, and remaining battery charge are displayed.

**Immersion line**

Do not submerge the instrument above this line (do not submerge the LCD section in oil).

**Sensor cover**

Protects the sensor. Remove the cover only when cleaning the instrument.

**Sensor**

Detects percentage (%) of Total Polar Materials (TPM) in oil.

**World-first digital display for acid value (AV)**

TPM Can display acid value (AV) in addition to total polar materials (TPM).

AV

## Frying Oil Monitor

NEW

DOM-24™

Cat.No.9341

Measurement range	TPM	0.5 to 40.0%
	AV	0.00 to 9.99
	TMP	0 to 225°C/32 to 437°F
Resolution	TPM	0.5%
	AV	0.01
	TMP	1°C/1°F
Accuracy	TPM	±2.0%
	AV	Approx. ±0.2 (varies with use's scale setting.)
	TMP	±1°C/±2°F (accuracy guaranteed from 20 to 200°C/68 to 392°F)
Automatic temperature compensation range	0 to 225°C/32 to 437°F (accuracy guaranteed from 20 to 200°C/68 to 392°F)	
	Power supply	
2×AAA alkaline batteries		
International protection class	IP67	
Dimensions and weight	Φ2.2×49cm, 400g (main unit only)	

**Reference:** TPM=Total Polar Materials, TMP=Temperature, AV=Acid Value

## Oil TESPETM

NEW

AOM-03™

Cat.No.9351



Measurement range	Acid Value 0, 1, 2, 3
Content	60 pieces
Detectable temperature range	Less than 100°C
Dimensions and weight	Test paper: 0.5 x 7 cm Measurement section: 0.5 x 0.5 cm Container: φ3.5 x 10.7 cm 22.8 g (with 60 pieces and silica gel)

\*Put the test paper in a container immediately after use and seal immediately and store in a cool and dark place

\*The expiration date is one year from production

## Measurement Method



Press and hold the START button for approximately 1 second.

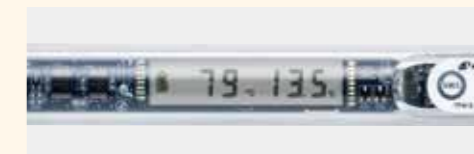


\* TPM is active on startup

Press the SW1 button to choose between measuring in AV or TPM scales.



Press the START button. The instrument will begin taking measurements. Insert the sensor into the oil, and stir the oil.



Measurement results (temperature and TPM) will be displayed once stability is reached (within approx. 30 sec). Press the START button. The instrument will begin taking measurements. Insert the sensor into the oil, and stir the oil.

## Optional Accessories

Part No.	Part name
RE-99300	DOM-24™ Standard liquid
RE-79430	Strap (short)
	● Strap (short) RE-79430



# The Next Generation of Digital Refractometers

"Pocket" Refractometers

# PAL series



- Extremely water resistant (IP65)
- Can be washed under running water
- Will float if accidentally dropped in water



- Ergonomically designed for one-handed operation
- The innovative design makes it easy to pour out and remove a sample, but difficult to spill the sample.



- Automatic Temperature Compensation (ATC)



- Temperature display



- Measurement temperature up to 100°C



- Revolutionary new External Light interference (ELI) feature (Patented)
- When intense light penetrates the prism of a digital refractometer, the light waves interfere with the sensor, which may lead to inaccurate measurements. To ensure accurate measurement results, the PAL is programmed with the ELI function which displays the [nnn] warning message when intense direct light is detected. Forming a habit of shading the sample stage with your hand and re-pressing the START key (when the warning message from the ELI function is displayed) will ensure accurate measurement results each time.



- Mode S: Mode S improves repeatability of samples that cause inconsistent readings.



Low to medium

**PAL-1**  
Cat.No.3810

High concentration

**PAL-2**  
Cat.No.3820

Wide range

**PAL-3**  
Cat.No.3830

Powered by Mode S

**PAL-S**  
Cat.No.3860

Honey moisture %

**PAL-22S**  
Cat.No.4422

Hydrogen peroxide (w/w)

**PAL-39S**  
Cat.No.4439

Standard accessory  
MAGIC™

## Optional

Part No.	Part Name.
RE-110010	Sucrose Solutions (for Brix confirmation)10% (±0.03%)
RE-110020	Sucrose Solutions (for Brix confirmation)20% (±0.03%)
RE-110030	Sucrose Solutions (for Brix confirmation)30% (±0.03%)
RE-110040	Sucrose Solutions (for Brix confirmation)40% (±0.04%)
RE-110050	Sucrose Solutions (for Brix confirmation)50% (±0.05%)
RE-110060	Sucrose Solutions (for Brix confirmation)60% (±0.05%)
RE-39409	PAL-CASE
RE-39410	PAL-STRAP
RE-39446	MAGIC™
RE-39412	Small Volume Sample Adapter for PAL
RE-39413	PAL Silicone Cover



◀ **Sucrose Solutions**  
Custom concentrations are available upon request. Accuracy and prices will vary by concentration. Contact ATAGO for more details.

\* Warranty period for these solutions is 6 weeks.



◀ **MAGIC™**  
This adaptor is used for a hot sample to cool it down quickly or to minimize evaporation.



◀ **Small Volume Sample Adapter for PAL**  
Allows for measurements with a small volume of sample. Place directly on the sample stage.



▲ PAL Silicone Cover

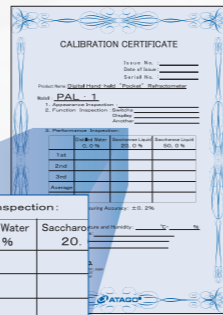
▲ PAL-CASE

▲ PAL-STRAP

## Certification

In accordance with ISO Quality Management Systems, ATAGO can calibrate and certify your Digital Hand-Held "Pocket" Refractometer. The following documents will be issued (for a service free):

- Calibration Certificate
- Traceability System Diagram
- Traceability Certificate



3. Performance Inspection:	
Distilled Water	0.0%
Saccharose	20.0%
1st	
2nd	
3rd	

## PAL commitment

### A new ergonomic design for comfort and ease of use!

In pursuit of an "easy to use", "easy to operate" and ergonomic architecture of new instruments, ATAGO has achieved a "palm-fitting" masterpiece as well as unit that is high in hygienic properties. By reducing the number of unnecessary assembly parts, we have reduced the risks of a germ reproductive environment. Through our efforts to produce a hygienic instrument to be used in any industry, these units are designed to be completely washable. The new PAL series has been approved by the HACCP, and are equipped with the new ELI feature, which ensures accurate measurements - even outdoors. Requests from our customers worldwide are reflected in the development of the new PAL units.

### Sample Stage

The SUS sample stage allows for the sample temperature to conform quickly and evenly to the prism temperature for accurate measurements.

### START Key

Conveniently located for single hand operation.



Calibration Report



Convenient storage case

Actual Size



### Prism

Made of highly durable optical glass to prevent scratching.

### Liquid Crystal Display (LCD)

Digital measurement values are large and easy to read. Displays battery indicator and temperature.

### ZERO Key

For Zero Setting, place water on the prism and press.

### Strap Holder

Suitable for wrist straps or lanyards.

## Measurement Method



1 Apply 2-3 drops on the prism surface.



2 Press the START key.



3 Measurement value and prism temperature are displayed in 3 seconds!

## Application examples



## Specifications

	PAL-1 Cat.No.3810	PAL-2 Cat.No.3820	PAL-3 Cat.No.3830	PAL-S Cat.No.3860	PAL-22S Cat.No.4422	PAL-39S Cat.No.4439
Measurement range	Brix 0.0 to 53.0%	Brix 45.0 to 93.0%	Brix 0.0 to 93.0%	Brix 0.0 to 93.0%	Honey moisture 12.0 to 30.0 %	Hydrogen peroxide 0.0 to 50.0%
Measurement Accuracy	Brix ±0.2%	Brix ±0.1%	Brix ±0.1%	Brix ±0.2%	Honey moisture ±0.2 %	Hydrogen peroxide ±0.6%
Resolution	Brix 0.1%			Honey moisture 0.1 %		Hydrogen peroxide 0.2%
Measurement temperature	10 to 100°C (ATC) (Hot samples over 100° C can be measured under specified conditions. Please contact ATAGO for further details.)					
Ambient temperature	10 to 40°C					
Power supply	2 × AAA Batteries					
International protection class	IP65 Water resistant					
Dimensions and weight	5.5 × 3.1 × 10.9cm, 100g					

## Unbreakable glass electrode

In conventional pH meters the glass electrode has a protrusion-like shape and is easily broken requiring delicate handling. The PAL-pH succeeded in developing a durable glass electrode that can withstand large loads. In various fields as well as food production sites, the risk of contamination and injuries can be reduced and it can be used daily without hesitation. Also, the electrode does not require a storage solution.

## Easy to clean with full flat sample stage, and hygienic

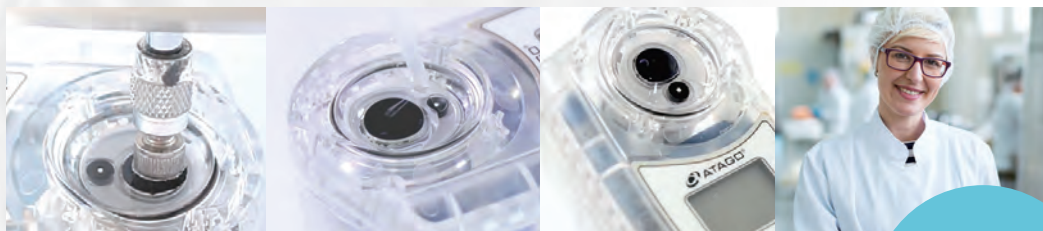
It is a pH meter with IP65 that can be "washed" under running tap water. Most of the conventional pH meters require careful attention when washing due to the complex shape of the measurement section or sensor unit, but PAL-pH is easy to wash because the measurement unit is completely flat and samples can be easily wiped off. PAL-pH is easy to maintain and clean, so contamination can be avoided. Using PAL-pH is a relief from daily stress.

## Measure merely with 3 drops

The PAL-pH can measure pH with only 0.6 mL of sample and the measurement time is as fast as 3 seconds. This is an advance that dip-style pH meters did not offer. There is no need to prepare a beaker to hold the sample, and the trouble of preparation and cleaning can be omitted. Of course, there is no need to purchase a large volume of calibration standard.

## Unconsumable KCl

Electrode's internal liquid, KCl is inseparable from the pH meter. Ordinary pH meters are designed so that KCl will flow out little by little, and it will need to be replaced and filled regularly as it flows out. We took it upon ourselves to get rid of these stresses our users endured. We made every effort to figure out how to make KCl last longer. With PAL-pH, you do not have to worry about KCl depletion. The pride and effort of ATAGO developers, who wanted to create an easy-to-use device, created PAL-pH.



PAL-pH

Droplet type

Cat. No.	PAL-pH 4311
Range	0.00 to 14.00
Resolution	0.01
Accuracy	±0.10
Calibration	Calibration at 3 points at 4.01, 6.86, 9.18.

Ambient Temperature	10 to 40°C
Sample Volume	0.6mL
Power Supply	2×AAA Batteries
International Protection Class	IP65 Water resistant
Dimensions & Weight	5.5×3.1×10.9cm 100g(main unit only)



Equipped with NFC that allows data transfer just by holding it over

**ATAGO CO., LTD.**

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TEL: 81-3-3431-1943 FAX: 81-3-3431-1945



4/27 まで送料無料



# PAL-pH

Cat.No.4311

Equipped with a hard-to-break electrode,  
safe and secure, drop-type pH meter that can measure  
with a small amount of sample

JP 1538952  
CN ZL 2015 3 0301440.6

TW D174679  
US US D788,923 S

KR 30-0846054  
EUIPO 002750265-0001