### Specifications

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

**Model:** VISCO

**Cat No:** 6800

**Measurement Scales**
- **Viscosity**
  - A1: 50 to 200,000 mPa·s, 50 to 200,000 cP
  - A2: 100 to 600,000 mPa·s, 100 to 600,000 cP
  - A3: 500 to 2,000,000 mPa·s, 500 to 2,000,000 cP
- **Torque**
  - 0.0 to 100.0% (recommended torque: 10.0 to 100.0%)
- **Temperature**
  - 10.0 to 40.0°C / 50.0 to 104.0°F

**Resolution**
- **Viscosity** less than 10,000 mPa·s: 0.1 mPa·s
- more than 10,000 mPa·s: 1 mPa·s
- **Torque:** 0.1%
- **Temperature:** 0.1°C

**Measurement accuracy**
- **Viscosity:** ± 1% (Full scale)
- **Temperature:** ± 0.2°C

**Sampling**
- 100 to 400 rpm, Number of speeds: 20

**Sample temperature range**
- Ambient temperature: 10 to 40°C

**Computer Output**
- Output: USB - PC

**Power supply**
- DC6V (AA alkaline batteries × 4)
- AC adaptor: AC100 to 240V, 50/60 Hz

**Dimensions**
- Main unit: 120 x 120 x 200.6 mm
- 1.2 kg (excluding batteries, spindles and temperature sensor)
- Stand+ screw: 0.5 kg

**Weight**
- 1.2 kg (excluding batteries, spindles and temperature sensor)

### Part Name and Part No.

<table>
<thead>
<tr>
<th>Part Name</th>
<th>Part No.</th>
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</thead>
<tbody>
<tr>
<td>Standard Liquid JS200</td>
<td>RE-89016 500ml</td>
</tr>
<tr>
<td>Standard Liquid JS500</td>
<td>RE-89017 500ml</td>
</tr>
<tr>
<td>Standard Liquid JS2000</td>
<td>RE-89019 500ml</td>
</tr>
<tr>
<td>A1 Spindle</td>
<td>RE-77104</td>
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<tr>
<td>A2 Spindle</td>
<td>RE-77105</td>
</tr>
<tr>
<td>A3 Spindle</td>
<td>RE-77106</td>
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<tr>
<td>Temperature sensor</td>
<td>RE-75140</td>
</tr>
<tr>
<td>15ml Beaker</td>
<td>RE-75100</td>
</tr>
<tr>
<td>100ml Beaker</td>
<td>RE-75101</td>
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</tbody>
</table>

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* Specifications and appearances are subject to change without notice.
ATAGO: Creating the Perfect Fusion of Innovation, Technology and Simplicity

ONE TOUCH™, ONE HAND™ and ONE BUTTON™. Presenting the VISCO, a brand-new way of measuring viscosity with 3 simple “ONE’s.”

ONE TOUCH™
VISCO is very easy to set-up. The spindle can be attached with just “one touch”—simply insert the spindle in the instrument. Absolutely no complicated set-up required.

ONE HAND™
Measurement preparation can easily be done with just one hand. Place the beaker underneath the pre-set area and place the instrument on the stand. No troublesome height adjustment necessary.

ONE BUTTON™
Operation requires only one dial button. All operations can be performed with the simple act of “sliding” or “pushing” the dial button. No more accidental operations due to pushing the wrong button.

Uses Only 1/33 of the Standard Sample Amount
Standard measurement instruments for viscosity require a large amount of sample (500ml). VISCO is capable of taking measurements with just 15ml of sample. This is roughly 1/33 of the standard sample amount. Measurement can be done with only a small amount of sample, resulting in less waste of valuable sample and a significant reduction in cost.

Compact and Easily Carried with One Hand
VISCO’s sleek dimensions and weight (main unit: 12×12×20cm, 1.2kg) make it compact and easily carried with one hand. The instrument’s legs can be folded up, making it further compact and allowing for even greater storage capabilities.

Easy to Read, Fully Digital Display
A fully digital display allows for anyone to quickly and easily read results. The simple display is easily and readily understood.

Quick Measurements Anywhere
Not only does VISCO run on AC power, but it can also operate on battery power. This allows for measurements to be taken anywhere, even in places lacking a power source. The instrument can also be placed directly on the beaker, making it possible for quick and simple measurements to be taken. No need to establish a specific location for measurement—with VISCO, you can take measurements anytime, anywhere.
Using the included stand and beaker

Placing the instrument directly on the included beaker

Using a disposable container

Measurement Methods

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

**Beverages (e.g., juice, etc.)**

Viscosity is a critical parameter in beverage manufacturing, from the production phase all the way until the product reaches consumers.

**Milk**

In regards to milk, aside from whole milk (3.25%), there is reduced fat milk (2%), low-fat milk (1%) and nonfat (skim) milk. In general, nonfat milk has the lowest viscosity.

**Tomato Juice/Purée**

Tomato juice or purée must always flow through the production line under a constant, homogenized state. Viscosity management is indispensable to this process.

**Sauce**

There are many kinds of sauce. These include (in ascending order of viscosity): Worcestershire sauce, thicker Worcestershire sauce, and pork cutlet sauce. In Japan, there are approximate levels or grades for viscosity determined by JAS.

**Ketchup**

Ketchup, a pseudoplastic fluid, is characterized by its propensity to remain in its bottle even when turned upside-down. Applying a bit of force (squeezing) to the bottle causes the ketchup to flow out. It is also known for reacting differently at varying temperatures.

**Mayonnaise**

Mayonnaise also remains in its bottle, even when turned sideways or upside-down and maintains high viscosity. The greater the force applied, the easier it will flow out and the viscosity will decrease.

**Olive Oil**

There are many vegetable-based oils that are Newtonian fluids (a fluid that does not change viscosity even when force is applied). Olive oil is a Newtonian fluid.

**Honey**

Honey is a Newtonian fluid. Its viscosity is not affected by force and speed. Only temperature can cause a change in viscosity.

**Jam**

Imagine spreading jam on a piece of toast. The jam easily glides across the toast. Viscosity is a crucial factor in making jam spreadable. Managing the viscosity can be quite difficult, as jam contains solids.

**Yogurt**

Numerous factors throughout the manufacturing process, such as how much fat is left in the yogurt, pasteurization and pH management affect the final product and texture (viscosity).

**Butter/Margarine**

Butter is a Bingham plastic (a type of non-Newtonian fluid). It can not flow unless some degree of force is applied, but applying force past a certain degree causes it to become more malleable in proportion to the force.

**Japanese Curry (curry roux)**

Thickened curry (roux) is quite mainstream in Japan. Thickened curry is made by applying heat to flour, which changes it into a more paste-like consistency, resulting in an increase in viscosity. Even in the final processing stage of being sealed into a retort pouch, the curry roux must maintain the same viscosity to allow the same amount to extrude every time the same amount of force is applied.

**Gelatin/Agar**

Viscosity measurements can be used to check and manage the gelling process of gelatin or agar. However, if the gelatin or agar completely solidifies during viscosity measurement, a spindle-shaped gap will form, preventing measurements from being taken.

**Household Essentials**

**Toothpaste**

Toothpaste with a paste-like consistency is a Bingham plastic. It will not flow out unless the tube is squeezed. It is important for toothpaste to be at optimal viscosity. After applying the appropriate amount onto a toothbrush, toothpaste at just the right viscosity will break cleanly from the tube and retain its shape without foaming.
Conditioner must have a particularly high viscosity, as it coats every single strand of hair. The components used in shampoo and conditioner may not mix well, but adding viscosity ensures that they are evenly maintained.

**Cosmetics**

Viscosity measurements and research in the mechanical properties of cosmetics is conducted in order to give even slightly viscous cosmetics a smooth, light, easily spreadable quality when applied.

**Industrial/Chemical**

There are many types of adhesives for different purposes and applications. For example, structural adhesives include general adhesive for temporary bonding, gap-filling adhesive and adhesive used for coating purposes. Gap-filling adhesives: properties, such as bond strength, leveling (smoothness) and ease/difficulty of flow are assessed through viscosity measurements.

**Water glass**

Water glass is also commonly known as, “Sodium silicate.” It is often used in soaps and adhesives. It is also used in a wide variety of fields, such as engineering, paper manufacturing and pharmaceuticals. Water glass has an extraordinarily high viscosity.

**Resins/Polyomers**

Various kinds of resins and polymers have appeared in recent years. In addition to ascertaining their properties, viscosity assessment is also an absolute must.

**Photopolymers (used in 3D printing)**

With the spread of 3D printers, photopolymers have suddenly gained traction in the global market. When photopolymers are exposed to light and heat, their viscosity increases and they harden.

**Paint/Pigment/Varnish/Insulators**

Paint (brush application): good brushability and drip-resistant. Tends to have a low viscosity under a high-shear rate and high structural viscous properties under a low-shear rate.

Spray painting (coating): types of spray painting include air spray painting, airless spray painting and electrostatic coating. Most air spray paints have the same structural viscous properties as paint for brush applications. Airless spray painting and electrostatic coating is utilized in applications such as the final coating in automobile painting. As such, great emphasis is placed on the appearance and finish of the paint. Compared to paint for brush applications and air spray paint, most airless spray paints have a low viscosity, with similar properties to Newtonian fluids. The leveling of the paint after it’s applied affects the overall appearance of the finished product.

Electrodeposition (electrophoretic deposition) used for applying coatings to complex shapes/objects. Through electrodeposition, a film of coating is created on the surface of the target object. The object undergoes a baking or drying process, which makes the surface become smooth. This (leveling) is an extremely critical part of the process. It is necessary to use paint with viscosity sensitive to temperature.

**Glycerin**

Glycerin is highly viscous and it’s a great moisturizer. It is often added to cosmetics to increase their moisturizing properties. It is also used in various food products as a thickening agent and as a humectant in pharmaceuticals.

**Hydraulic Fluids**

The viscosity of hydraulic fluid tends to decrease as the temperature rises. If the viscosity decreases too much, it may lead to degradation in the lubricating properties of the fluid and adversely affect pump efficiency. In contrast, viscosity tends to increase as the temperature decreases. This can increase the usual amount of force needed to operate the pump, and may accelerate wear and tear. This is why you must select a hydraulic fluid with the optimal viscosity for your application.

**Lubricant**

The viscosity of lubricant is a vital element, of which the life span is affected by the wear and tear of machinery. Depending on the viscosity, if too much heat is generated, the life span of a lubricant may be reduced. Not only does this increase costs, it also shortens the life span of the machine. This is why managing the viscosity of lubricant is of utmost importance.

**Cutting Fluids**

A lot of heat is generated during machining processes. Cutting fluid has a low viscosity, which makes it well-suited for effectively dissipating heat. Low viscosity is also necessary for facilitating circulation and eliminating impurities. However, to ensure precision and control when spraying or coating, the viscosity must not be too low. Managing the viscosity of cutting oil is essential.

"Slurry" indicates a fluid which contains solid, suspended granules. Due to its properties, if it is not mixed, it may precipitate. Viscosity management is critical for ensuring a smooth transition.

**Viscosity of a paste**

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