

USER REQUIREMENT SPECIFICATION

Rotational VISCOMETER

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2. INTRODUCTION

Viscometers are used in numerous industries of product development, quality and process control. They provide information on the flowability of liquids, which is a crucial quality characteristic in industries such as the food and pharmaceutical industry. Rotational viscometer uses a rotating apparatus, known as a spindle, which you submerge within the fluid you are testing. The torque on the rotating shaft of the spindle will then measure the fluid's resistance to flow. The rotational viscometer measures the absolute viscosity of the fluid.

2. Scope

This document describes the User Requirements Specification of Viscometer in order to measure viscosity of solutions at QC Lab of Sina Darou company. It contains detailed Viscometer description.

3.REQUIREMENTS

To Get comparable results with the instrument we need to ensure these variables are all the same:

- Instrument torque model
- Spindle geometry.
- Cup/beaker size.
- Spindle protector used/not used.
- Speed or shear rate.
- Measurement time.
- Temperature.

3.1.specification

- Viscosity test type: Single-point
- Viscosity range [mPa·s]: 1 mPa.s to 1,000,000 mPa.s
- Speed [rpm]: 0.1 to 200 .At least 18 standard speeds plus 6 freely selectable speeds
- Max. spring torque [mNm]: 0.0673
- Accuracy: ± 1.0 % full scale range
- Temperature Accuracy: $\pm 1^{\circ}\text{C}$
- Repeatability: ± 0.2 %
- Display: TFT LCD (NLT 3.5 inch)
- Sample volume: capable of measuring viscosity of low sample size (<20 mL)
- Sensor: Equipped with temperature sensor
- Spindles: Appropriate spindles should be supplied along the set
- Temperature probe: with a temperature probe that can be inserted into the test sample or a water bath.
- Permissible ambient temperature: 5 - 40 $^{\circ}\text{C}$
- Voltage: 100 - 240 V
- Frequency: 50/60 Hz
- Calibration: Factory calibration certificate
- Documentation: IQ/OQ/PQ protocols should be done by supplier on site

- Training: Should be done by supplier on site

*Compliant to all relevant international standards

5. Software:

Software that perform all control and data collection functions of the instrument from the PC while also providing a platform for advanced data collection and analysis.

4. Operating Environment:

0°C to 40°C temperature range (32°F to 104°F)
20% - 80%R.H.: non-condensing atmosphere

6. warranty:

At least 1 year Guaranty and 10 year warranty

7. Documentation

- IQ/OQ/PQ protocols should be done by supplier on site

8. Training

Training course should be performed on site.