Rotary Viscometers

Rotary viscosimeters “ST-2020”

INTRODUCTION

Rheology is the study of the effects experimented in a substance when a mechanical force is applied on a it (flow and deformation) under different external conditions. It is used to describe the consistency of different products and is normally defined by the components: **viscosity and elasticity.**
Measuring viscosity is determined by the tangible force required to displace the materials particles with a specific deformation-flow i.e. velocity. The relationship between the tangible force and the deformation flow obtains the viscosity result. Ambient conditions such as temperature and pressure also have an effect on viscosity.
The measurement of viscosity is not just limited to the research laboratory, it has progressively entered the field of industrial quality control.

PRINCIPLES OF VISCOSITY

These instruments operate by means of a cylinder or disk (spindle) that is submerged into the material to be analysed and by measuring the resistance of the substance at a selected known speed. This resistance results is the measurement of the viscosity according to the flow characteristics of the reference spindle; the instrument calculates the result and directly displays the viscosity that is reported in **cP** (**CGS**) or **mPa-s** (**SI**).
A wide range of viscosity can be measured using viscometers that are equipped with different types of spindles and speed ranges. The design of the spindles and the principals of measurement principles are regulated by **ISO 2555** and **ISO 1652** standards. All spindles are made of AISI 316 stainless steel. Each spindle can be identified by a letter and a number.

SELECTION TABLE

Standard measuring range of the viscometers, without additional accessories		
Part no	1001616	1001617
Model	ST-2020 L	ST-2020 R
Units	centiPoise (cP)	centiPoise (cP)
Standard spindle	L1 to L4	R2 to R7
Speed range r.p.m.	1 to 60	0,1 to 100
Measuring range	20 to 600.000 cP	20 to 40.000.000 cP
Temperature range °C	0,0 a 100,0	0,0 a 100,0
Power requirement	115/230V to 12VDC 1.2A	115/230V to 12VDC 1.2A
Power	15 W	15 W
Weight	5 Kg	5 Kg

Model ST2020L

FEATURES

L.C.D. display of parameters and results:
- Selected speed .....r.p.m.
- Selected spindle. .....S.P.
- Viscosity result ..... cP (mPa-s) or cSt.
- Base scale percentage .....%.
- Sample temperature: .....°C or ° F.

Auto alarm in the case of any fault being detected.
Off scale detection and indication by an audible and visual signal.
Step controlled speed to prevent spindle vibrations.
Velocity from 0,1 to 100 r.p.m.
Mains power surge protection.
RS 232 unidirectional interface, download to a computer.

TECHNICAL DATA

Precision: ±1% base scale.
Repeatability: 0.2%.
Supplied complete with:
- Anti shock carry case.
- Main unit.
- Support base.
- Spindle protector.
- Spindle support.
- Set of spindles (model dependant)
- Temperature prove

DIGITAL THERMOMETER

Temp range:- from 0.0 °C to + 100.0 °C (+ 32.0 °F to + 212.0 °F).
- Resolution: 0.1 °C (0.1722 °F).
- Precision: ± 0.1 °C.

ACCESSORIES

Standard **spindles** for L model.
L1 Part No. 1000998
L2 Part No. 1000999
L3 Part No. 1001000
L4 Part No. 1001001

Standard **spindles** for R model.
R1 Part No. 1000995 (for low viscosity samples)
R2 Part No. 1001030
R3 Part No. 1001031
R4 Part No. 1001032
R5 Part No. 1001033
R6 Part No. 1001034
R7 Part No. 1001035


Rack of standard spindles L1, L2, L3,L4 : Suitable for models L.


Rack of standard spindles R2, R3, R4, R5, R6 and R7: Suitable for model R.


Spindle R1