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Full Automation Comes Standard with the Grace Instrument M2020 Dilute Solution Viscometer (DSV)

M2020 FULLY AUTOMATED DILUTE SOLUTION VISCOMETER (DSV)

- Fully automated testing process from sample preparation to data analysis.
- Three convenient options—basic, semi-automation, or complete automation.
- Measures absolute, inherent, intrinsic, relative, or specific viscosity and molecular weight of dissolved polymers.
- Easy operation with **free** *Grace Instrument M2020 DSV Software*, compatible with all Windows PCs.
- Intuitive, user-friendly software with user defined initial and sequence settings—no programming required.
- Interactive touchscreen LCD screen.
- Automatic, computer-controlled data recording.
- Easy setup, cleanup, and maintenance.
- Compact and easily movable benchtop unit.
- Operator safety—closed solvent system prevents splashback or contamination.
- Powerful testing tool with several scientific and/or industrial applications.
- Complementary 1-year warranty. Extended warranty also available.

PRODUCT DESCRIPTION

High-Precision, High-Accuracy Viscosity Testing Solution at a Competitive Price

The *Grace Instrument M2020 Dilute Solution Viscometer (DSV)* is the ideal solution for viscosity testing of dissolved polymers. This powerful device features high precision, accuracy, and reliable and reproducible results. Designed to produce extremely fast test results in batch, the *M2020* comes standard with full automation at a competitive price.

Basic, Semi-Automation, or Complete Automation Package Options

The *Grace Instrument M2020* comes in three convenient options:

- *Basic Package* – Includes DSV machine with integrated syringe pump, degasser, and PC with advanced software.
- *Semi-Automation Package* – Includes DSV machine with integrated syringe pump, autosampler, degasser, and PC with advanced software.
- *Complete Automation Package* – Includes DSV machine with integrated syringe pump, autosampler, scale, degasser, heating stirrer, and PC with advanced software.

Three Convenient Options

Basic Package

Semi-Automation Package

Complete Automation Package

Looking for more? Many other sizes, configurations, finishes, and custom specifications are available! Contact Grace Instrument today for details:

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Grace Instrument is an ISO 9001:2015 certified company.

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Safe Design Features Easy Maintenance and Cleanup

The *Grace Instrument M2020 Dilute Solution Viscometer (DSV)* is easy to set up, clean, and maintain. Its innovative design features a completely closed solvent system, preventing any splashback from toxic fluids or contamination with the environment. Solvent and polymers are tested at the same time to ensure the best results.

Powerful Viscosity Measurement Capabilities

When used to measure relative viscosity, this device can compare a polymer's current viscosity to a reference solvent, or compare against the viscosity of a different polymer. The *M2020* first weighs, then dissolves, the polymer in solvent. Polymer then flows through two capillary tubes, and DP transducers measure the pressure difference between their ends, calculating relative viscosity from the differential pressure ratio. A higher viscosity value corresponds to a polymer with a higher molecular weight, allowing the user to determine if a polymer's molecular weight has changed due to degradation, manufacturing error, sterilization, and/or other factors.

Advanced Grace Instrument Software Complementary with Each Device

Advanced DSV analysis software is included **free** with each unit. This interactive, graphics-based software is easy-to-use, intuitive, and compatible with all versions of Windows. Installation is easy. The software is simply installed onto any desktop or laptop and connected to the unit. The unit can then be controlled automatically from the comfort of your own PC.

The *Grace Instrument M2020 DSV* software allows the user to automatically measure absolute, inherent, intrinsic, relative, or specific viscosity in a single test session, all while simultaneously recording data. A data graph can be auto-generated and exported to spreadsheet format for analysis. Sample preparation and handling can also be automated.

Tests Wide Range of Different Polymers

Several types of polymers can be tested at high temperatures, including, but not limited to, the following: hyaluronic acid (HA), polyamides (nylon), polyethylene terephthalate (PET), polyolefins (*including polyethylene (PE) and polypropylene (PP), which are usually harder to test with other viscometers*), polyvinyl chloride (PVC), and synthetic rubber (EPDM).

Compact and Easily Movable

This compact unit can be placed on a benchtop and easily moved from lab to lab, maximizing laboratory space.

Powerful Testing Tool with Several Applications

The *M2020* is a powerful testing tool, precisely and accurately measuring viscosity for medical, chemical, QC, and many other scientific and/or industrial applications. For example, it can be used for production lot release testing; aging, degradation, material comparison, shelf-life, and sterilization studies; and more.

The Grace Instrument Quality Promise

Custom pressure, temperature, and automation solutions are also available. Contact *Grace Instrument* to learn more. Our sales team is readily available to answer any questions you may have and guide you through the process to find the ideal custom DSV solution for all your testing needs.

A complementary 1-year warranty is included with each device. Extended warranties are also available.

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SPECIFICATIONS

Condition	New
Options	• Basic Package • Semi-Automation Package • Complete Automation Package
Measuring Principle	Dual Capillary Bridge
Measuring Range	0-20 cP (mPa-s) or 1-10 Relative Viscosity
Differential Pressure Accuracy	± 0.25% FS
Typical Flow Rate	1-3 ml/min
Typical Analysis Time	2-4 min
Typical Sample Volume	10-40 ml for Two Injections
Capillary Dimensions	0.02" ID x 21" L
Shear Rate	1000/sec
Temperature Range	15-150°C (59-302 °F)
Voltage	110-120V AC
Frequency	50-60 Hz
Current	5 A
Dimensions	20" W x 18" D x 13.5" H
Weight	40 lbs.
Warranty	1-Year Warranty (Extended warranties also available.)