novomatics
labtech solutions

self-sufficient wide range turbidity analyzer

accurate measurements of
cloud points and clear points

programmable temperature profiles

powerful application software for
computer aided testing

automatic turbidity analyzer

CHEMOTRONIC Cool

automatic cloud point determination made simple

Introduction

The **CHEMOTRONIC Cool** analyzes turbidity in liquids by transmission of infrared light. As infrared light is monitored continously, dynamic characteristics in liquids can be determined. Slow and fast cooling rates may provide different results, so that the **CHEMOTRONIC Cool** can perform tests at various heating and cooling rates hence enhancing the accuracy of the test results.

Typical applications

- polymer solutions
- vegetable oils
- oleochemicals
- resins and varnishes
- nonionic surfactants
- detergents
- petroleum products
- biodiesel fuels

Features

- precise heating and cooling by microprocessor control
- wide measurement range from -50 up to +230°C
- Windows-based application software included
- optional powerful stirrer for high viscosity formulations
- automatic liquid dispension option
- self-test for a fast failure detection
- environmently friendly cooling fluid

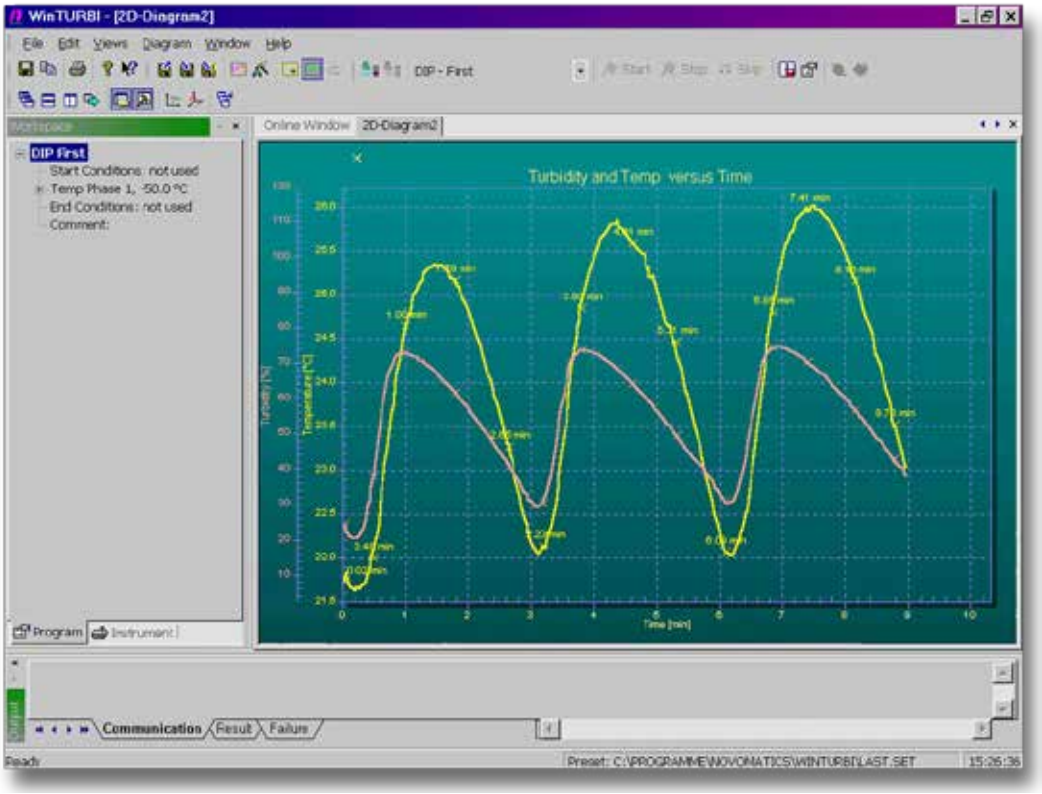
Traditionally turbidity is measured by continous observation of a liquid in a glass test tube by heating it with a gas flame and stirring it with a mercury thermometer. When lettering held behind the test tube becomes illegible due to hazyness of the liquid, this temperature is defined as the cloud point. Considerable errors may occur due to individual judgement, colour changes, changes in heating and cooling time, inhomogenities, etc. The CHEMOTRONIC Cool combines automatic heating, cooling, stirring and turbidity detection in one device. This accuracy is guaranteed by controlled test conditions and a fast response precision platinum temperature sensor to measure the actual temperature in the test tube.

Test procedure

The glass test tube must be filled with only 20 grams of liquid and is then inserted into the hole on top of the instrument. The precision Pt100 thermometer assembly is placed on top of the test tube. Then the test program for the test is selected and the actual test can be started by pushing the start button. The temperature will follow the temperature slopes and end points of the selected test program. The temperature at which the resin precipitates in the solution is called the cloud point. This point is detected accurately and a record of the test is printed out automatically at the end of the test.

Turbidity analysis

A free Windows based application software package is supplied with the instrument as standard. All functions of the CHEMOTRONIC Cool instrument can be controlled with this software from any PC. Automatic data collection and graphical plots facilitate precise analysis of test results. These test results and previously data may be viewed and analyzed in the multi-graphics window. Turbidity can be plotted and printed versus time or temperature providing a permanent record of each test.



Options

At low temperatures, the viscosity of the liquid or solution under test may become too high for the standard magnetic stirring bar. In this case, an optional motor driven spindle can be mounted on top of the device. For concentration dependent turbidity measurements an motor driven liquid dispension unit is offered as an option.

High Visc Option

The HighVisc option has been developed for demanding applications in testing high viscosity media such as high solid binders, resins for adhesives, hotmelts, sealants etc. It improves efficiency and accuracy in production control and quality assurance.

Features

- exact cloudpoint determination of high viscosity resin systems
- accurate phase transition tests of ethylvinylacetate (EVA) with tackifiers
- wide temperature measurement range from -60 up to +250 °C
- motor driven dual helix spindle for homogenic distribution in the test tube
- easy to use testing and maintenance free
- wireless energy and temperature signal transfer

Dual helix spindle

Special dual helix spindle with motor drive provides optimal homogenity of high viscosity samples. A PT1000 platinium resistance probe is also immersed into the sample for accurate temperature measurement. Wireless signal transmission by optical transfer is used to transfer the measured signal from the PT1000 sensor to the instrument.

Test procedure

The test tube is filled with 20 grams of particles of solid media and heated up to the melting point. Then the spindle is inserted into the test tube which is then placed into the instrument. The motor drive assembly is connected to the hex coupling on top of the shaft and placed on top of the instrument. The test tube is mounted by the knurled knop. The connectors of the electrical ables are mounted to the sockets on the rear panel. After that the test program is selected and the actual test can be started. At the end of the test a record is printed ount on the data printer automatically.

Principles of operation

The integrated electronic of dual helix spindle is supplied with electrical energy from outside by means of an electromagnetic field. This makes the use of batteries obsolete. The electronics converts the temperature signal to a digital signal by own references. When converted the signal is sent out immediately to the spindle driving unit for further use within the CHEMOTRONIC Cool.

The stirring force is limted by electronics. This protects the glass test tube in case of prompt spindle blockage.

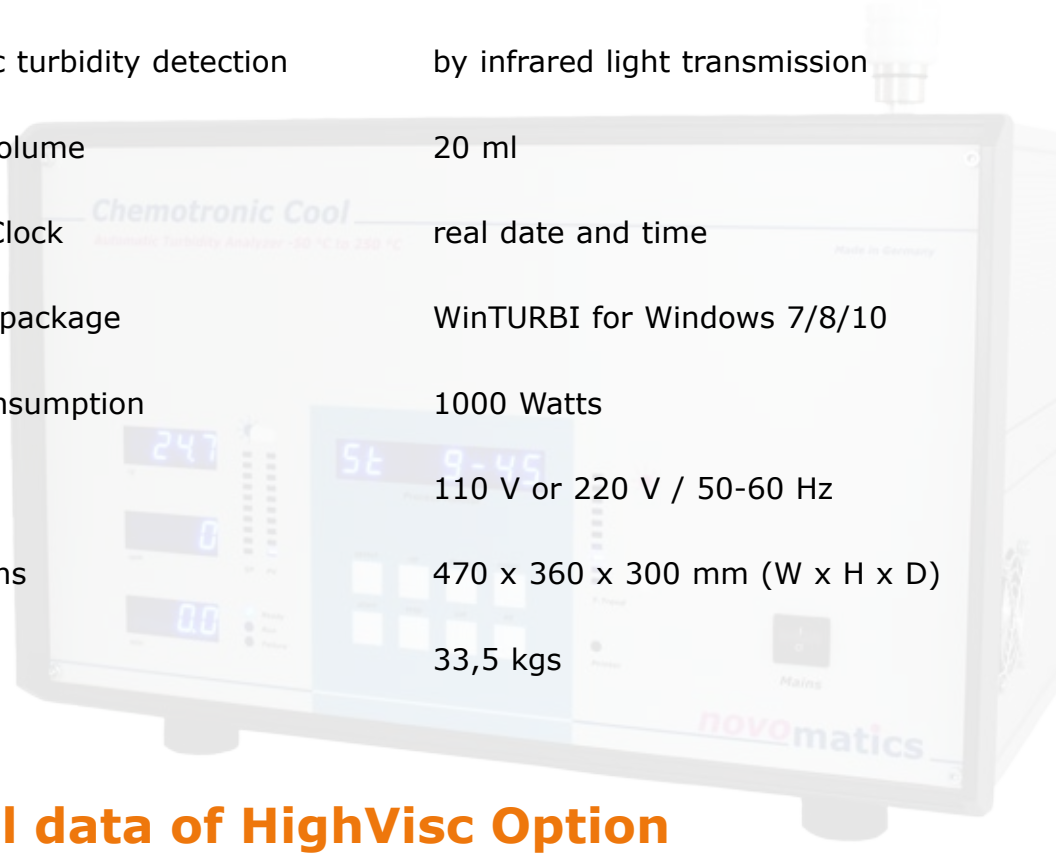
The dual helix spindle interrupts periodicalle the IR beam. An automatic synchronization alogrithm for spindle posititon and IR beam grants exact turbidtiy measurement.

Torque Measuring Unit Option

- Measuring range: 0 ... 300 mNm
- the measured torque value corresponds to the viscosity of the sample
- automatic recording and saving as extra, independent measuring torque parameter in WinTurbi software
- automatic spindle stop when an user defined torque value is achieved

Technical data of CHEMOTRONIC COOL

Cloud point detection range	-50....+230 °C
Temperature accuracy	± 0.1°C
Stirring speed range	50-1000 rpm
Heating/cooling rate	0.5 - 10°C/ min
Automatic turbidity detection	by infrared light transmission
Sample volume	20 ml
Internal Clock	real date and time
Software package	WinTURBI for Windows 7/8/10
Power consumption	1000 Watts
Mains	110 V or 220 V / 50-60 Hz
Dimensions	470 x 360 x 300 mm (W x H x D)
Weight	33,5 kgs



Technical data of HighVisc Option

Temperature measurement range	-60....+250°C
Temperature accuracy	± 0.1°C
Stirring speed range	15 ... 180 rpm
Maximum viscosity	30.000 cP
Automatic position synchronization	integrated in CHEMOTRONIC Cool
Number of dual helix spindles	2

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