



Laboratory Hazemeter/Colorimeter **COLORTURB- MZN2012**

Handy design verified by a daily laboratory practice, extremely easy operation, modern optoelectronic components, microprocessor control – all of this makes the hazemeter useful for everyday use in any place, where the clarity/haze and color of liquid is to be handled regularly. Extremely long lifetime (up to 10 years, 200 000 measurements)

- **Routine laboratory check of products and intermediates**



food industry
water supply - drinking water treatment
- wastewater processing
pharmaceutical and cosmetic industry
paints and inks production
petrochemical industry
photography and films processing
textile industry
energetics
electrotechnical industry

Immerse liquid technique, automatic rotating of a sample and statistical processing of measured signals easily allows measurement of samples not only in standard cuvettes, but directly in closed bottles of various diameter as well.

- **Direct quality check of products sealed in bottles**
- **Shelf live prediction and control**



- *beverage industry* - brewery
- viniculture
- juice and fresh drinks production

The gathering information power may be amplified many times after connecting to PC. The special controlling SW together with various accessories and adapters move function of this hazemeter far beyond the common ones and allows performing wide range of tasks.

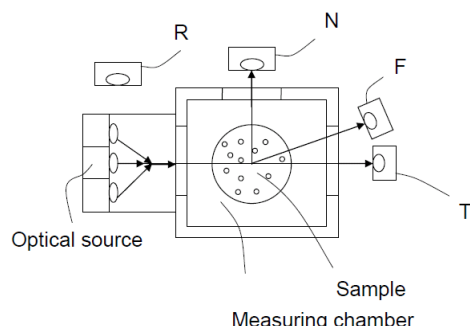
Wireless adapter (Bluetooth serial adapter from Socket) enables the customer to control several hazemeters from one PC.

- **Measurement of small volume samples in chemical tubes**
- **Kinetic measurement of haze development**
- **Turbidimetric titrations**
- **Wireless bluetooth connection**

Principle of operation:



The hazemeter/color MZN based on the light scattering technique is used to detect the haze particles present in monitored liquid. The light coming from the source is focused by the system of apertures and lenses into a narrow beam entering a sample. A part of the beam is scattered around by haze



particles being in a liquid. There are two optical detectors set in the hazemeter MZN, that measure simultaneously the light scattered in two angles – 90° and 15° (so called N - nephelometric and F- forward). The third optical detector evaluates the light intensity changes of the beam transmitted through a sample (0° T-transmission). The both scattering signals N, F are rationed to the transmission one (in the ratio mode). This provides long time calibration stability and compensates the light attenuation caused by possible coloration of a sample (colour compensation).

The fourth detector R – Reference monitors optical source stability. Ratio Transmission to reference is proportional to light attenuation in the sample (Color).

Calibration relationships for haze based on formazin haze standard are stored in the memory of the hazemeter. Measured values for all the channels (H90 and H12 and Absorbance) are then displayed in chosen haze units on the LCD display.

Dual-angle hazemeter offers qualitatively entirely new possibilities compared to common single-angle nephelometers or turbidimeters. Intensity of light scattered at specific angle depends not only on the concentration of haze particles but also on their size, therefore it is possible to gather information regarding the particle size distribution.

Dual-angle haze and light attenuation (Color) are measured independently on three optical wavelengths (Red, Green, Blue).

Characteristics

- easy operation, just one touch button operation
- immediate readiness to measure
- measurement in cuvettes, chemical tubes and bottles
- automatic bottle rotating
- short measuring time
- digital signal processing
- long-term stability
- easy recalibration
- fully automatic range switching
- simple and practical design
- stainless steel upper casing
- clearly visible LCD display
- PC connectivity
- sample thermostating possibility

separate accessories:

- adapter for chemical tubes
- adapter for chemical tubes with magnetic stirrer
- flow-through measurement cells
- thermo-electrical thermostat, thermometer
- dosing pumps
- PC software
 - kinetics of haze development
 - turbidimetric titrations
 - user-defined calibrations
 - other special features on request

Technical parameters

optical set-up	dual-angle hazemeter with transmission compensation
measuring angles	90°, 15°, transmission (0°)
measuring range for	0 - 250 EBC (1000 EBC on demand)
H90	0 - 80 EBC
H12	0 - 5 Abs
Abs	
units	EBC, NTU, ppm, (other on request)
ranging	fully automatic
resolution	1% on LCD display 0.1 % in digital output
accuracy	2% of measured value 0,01 up to 100EBC 5% of measured value up to 250 EBC
reproducibility	1 % of measured value
immersion liquid	distilled water
measuring time	7 – 12 s
light source	LED RGB
- colour spectrum	Red (650nm), Green (530nm), Blue (450nm)
- lifetime	100 000 measurements
sample volume	from 150 ml in cuvette from 5 ml in chemical tube bottles 0,3 – 2,0litre (diameter 100mm)
digital output	RS 232, Bluetooth
display	16 characters two lines illuminated LCD display
voltage, power input	230 V/50 Hz, 50 VA
dimensions, weight	450x350x190 mm, 9 kg
chamber diameter	100 mm