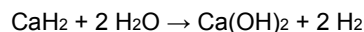




HydroTracer Moisture Analyzer

Tinius Olsen introduces a new kind of moisture analyser that will appeal to all manufacturers who have moisture concerns. This new tester is less expensive, just as swift to generate a result, and as accurate as comparable heat and weigh or microwave technique based testers. The patented method of the HydroTracer determines the absolute water content where the mass of the water is measured within the reactor.

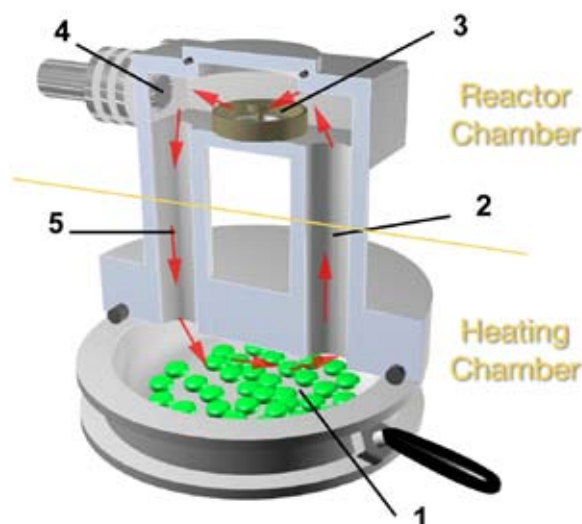
Operation is just as simple. The sample is weighed and filled into the sample tray of the Hydrotracer which is then placed in the tester's heating chamber. The heater warms the sample to a temperature chosen by the operator and water within the sample evaporates. The heating chamber is connected with the cooled upper reactor chamber of the HydroTracer – this is where the calcium hydride reagent is placed. The volatile water rises to the upper reactor chamber and when the humid air flows over the reagent, the gaseous water reacts with calcium hydride according the following equation:



The cooled, dry air returns to the lower heating chamber and the process continues. The circulation of air through the HydroTracer is supported by natural convection which is promoted by the unique design of the HydroTracer; even hygroscopic materials are completely dried with the HydroTracer. The final concentration of hydrogen in the reactor is proportional to the water content of the sample before the measurement. The whole opera-



Fig 1. HydroTracer with all the accessories.



1. Sample in removeable heating tray
2. Hot humid gas rises into the reactor chamber
3. Reagent absorbs water vapour and releases hydrogen gas
4. Sensors measure the concentration of hydrogen gas
5. Cooled, dry gas descends and can absorb more water vapour.

tion process is controlled by pc based software and the results calculated for the operator.

The ambient air also contributes water to the reactor atmosphere, so, to achieve accurate results the ambient air humidity and density needs to be determined and "removed from the equation". Integrated sensors in the reactor do this. The concentration of hydrogen is measured by thermal conductivity sensors.

Chemical Reactions And The Reagent

Calcium hydride reacts with water to form calcium hydroxide (also called hydrated lime, or agricultural hydrate), which is a weak base and quite harmless; it also does not require any special disposal techniques. The small amount of reagent needed for the test means that the amount of hydrogen produced is small and subsequently does not pose any operational concerns.

Fig 2. Diagram showing principle of operation of HydroTracer.

Specifications

Common Applications

Plastics: ABS ; PA 6 ; PA 6.6 ; PA 12 ; PAA ; PAI ; PBT ; PC ; PE ;
PE Talcum ; PEI ; PETa ; PETc ; PMMA ; POM ; PP ; PS ;
PS expanded ; PVC ; TPE

Anorganic Salts

Calcium carbonate

Caprolactam

Sand

Carbon black

Technical Data

Sample weight: 0.01 g to 200 g , depending on sample density
Reproducibility: $\pm 0,05$ mg H₂O (1 mg water content) up to $\pm 0,5$ mg H₂O (20 mg water content)
Display via PC: absolute water content of sample in x.xx mg
relative water content in x.xxxx % and x ppm
additionally ambient air temperature, relative humidity and pressure

Measuring range: 0.2 mg - 30 mg H₂O
Test temperatures: 50°C up to 210 °C in 1°C-steps
Reagent: CaH₂ powder-form approx. 0.1 g each measurement
Ambient air temperature: in °C in 0.1 °C steps
Ambient air pressure: 700-1100 mbar in 0.1 mbar-steps
Relative air humidity: 0 - 100 % in 0.1 % -steps
Power supply: 115 V~, 50/60 Hz, 2,8 A or 230 V~, 50 Hz, 1,6 A
Weight: 4,9 kg
Dimensions: 285 mm x 170 mm x 250 mm (h x w x d)
Interface: bi-directional RS 232 interface
Required PC: Windows® 98, ME, 2000, NT, XP; Pentium® 233 or equivalent; 64 MB RAM minimum,
128 MB recommended; serial interface RS 232



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