

brabender
Messtechnik



Mobile Moisture Meter for Plastics

AQUATRAC-3E

Brabender Messtechnik®
GmbH & Co. KG

AQUATRAC-3E

AQUATRAC-3E

Moisture Meter for Plastics

The water content of High-Tech plastic material has a great influence on the quality of the finished product. The test should be made swiftly on an instrument having a simple test procedure.

AQUATRAC-3E is the result of continual further development of the popular AQUATRAC product, which has been on the market for 20 years now. Developed primarily for the plastics-processing industry, the device measures the moisture content of granular solids. **AQUATRAC-3E** is robust, compact and easily transportable thanks to its new mobility! This means there are many different ways to use **AQUATRAC-3E** directly at the production site, for example:

- To check incoming granulates
- To monitor and optimise the drying of granulates
- To measure granulates right at the machine
- To take measurements from a finished component, e.g. after conditioning
- To take laboratory measurements
- And many more!

As the principle of operation is an absolute chemical method, no calibration is required for each different substance tested.

AQUATRAC-3E can be used independently of a computer or other peripheral.



Ranges

With the **AQUATRAC-3E** different ranges are obtained by different sample weights. **AQUATRAC-3E** is able to detect even the most minute traces of moisture (less than 0,01% H₂O) in large, representative testing samples (up to 100 g). In the case of lower-weight samples, the measuring range can be increased to detect very high degrees of moisture.

Since **AQUATRAC-3E** is now able to achieve ultra-precise readings using a single measuring cup, it is no longer necessary to switch from one measuring cup to another.

Measuring procedure

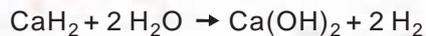
The measuring volume consists mainly of the sample container, which contains the sample and the reagent.

Weighing the sample there is no need to meet the exact value. The actual weight is fed into the instrument. This simplifies the handling. The sample is placed into the sample container which is then evacuated by the built - in vacuum pump, which takes approx. 30 sec. The pressure obtained is lower than 10mbar. The sample container is then heated up to the selected temperature (between 60°C to 200°C).

Operating the **AQUATRAC-3E** involves only a few simple steps, which are executed via the device's touch screen. If the user prefers, he can also have the touch screen guide him step by step through the measurement process.

Measuring principle

Water and calcium hydride react according to the following equation, producing hydrogen:



This reaction takes place in the sealed reaction vessel of **AQUATRAC-3E**. It is evacuated by using a built-in vacuum pump, before the measurement. The container is then heated up to the measuring temperature. The evaporating water reacts with the reagent calcium hydride to generate a gas. The gas produced is hydrogen; the gas pressure is proportional to the water content in the sample and is monitored by means of a piezoelectric transducer. **AQUATRAC-3E** calculates the ratio of pressure to sample weight and displays the result in terms of H₂O content, either as a percentage or in parts per million (ppm). Volatiles other than water do not react with the reagent and will condense, hence not influencing the reading. The reagent is placed in a mesh based insert above the sample. The partial pressure in the gas system is zero; therefore the water content is selected completely. This, in combination with the heat applied and the vacuum, means results are obtained in a short time. Furthermore the test is not affected by the presence of oxygen and no carrier gas is needed.

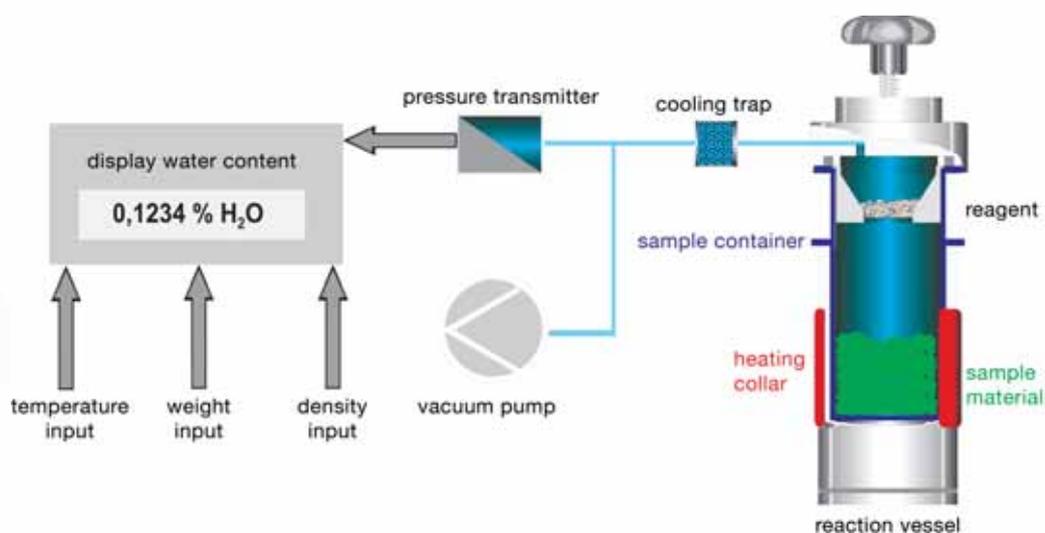
Reagent

The reagent used by **AQUATRAC-3E** is calcium hydride in a granular form and is specific to water. It is nonpolluting and nontoxic, so no special disposal is required. By using the dosing spoon, the mesh based insert has to be filled with a certain amount of the reagent. The quantity of one filling is sufficient material for a couple of measurements and the amount of produced hydrogen by each measurement is rather low. The calcium hydride can be supplied in quantities of 250 g, which is sufficient for approx. 1000 tests.

Product data bank

AQUATRAC-3E contains an extensive product data bank with the required default settings for bulk density and measuring temperature. This allows measurements to be taken quickly, without having to input the necessary parameters each time.

The databank can be expanded or updated at any time, ensuring a perfect fit for individual customer needs!



AQUATRAC-3E

Applications

Some typical plastics

Acrylonitrile butadiene styrene ABS
 Polybutyleneterephthalate PBT
 Ethylene Copolymer EVA
 Polyacryletherketone PAEK
 Polyamide 6.6 PA 6.6
 Polyamide 6 PA 6 GF 30
 Polyamide 12 PA 12
 Polycarbonate PC
 Polyester PET
 Polyester elastomer TPE
 Polyether imide PEI
 Polyethylene HDPE
 Polyethylene LDPE
 Polyethyleneterephthalate PETP
 Polymer blend PETP/PC
 Polymethylmethacrylate PMMA
 Polypropylene PP
 Polyphenylene ether PPE
 Polyphenylene sulphide PPS
 Polysulphone PSU
 Polyurethane TPU

Data storage

The **AQUATRAC-3E's** internal hard drive can store up to 500 readings. Measurement results can be easily transferred to a computer for further processing via an USB stick. By connecting a printer, one can even print out the results data directly from **AQUATRAC-3E**.

Technical data

Measuring principle:	Chemical reaction with calcium hydride	Ranges:	3 different ranges: lower 0,1% 0,1 - 0,5% higher 0,5%
Sample weight:	0,1 - 100 g according to range		
Test temperature:	60°C - 200°C in 1°C - steps	Test time:	10 - 30 min. dependent on material
Accuracy:	Measurement accuracy ± 2% of reading	Display:	% H ₂ O or ppm
	± 1% of range	Power supply:	100 – 230V (50/60 Hz, 450 W) dependent on version
	Reproducibility	Dimensions:	w x h x d: 51 x 32,5 x 23 cm
	approx. ± 1% of range	Weight:	13,0 kg / 14,8 kg

**Brabender
 Messtechnik®
 GmbH & Co. KG**

Kulturstraße 51-55
 D- 47055 Duisburg

Tel.: +49 203 99819-0
 Fax: +49 203 9981922

www.brabender-mt.de
sales@brabender-mt.de

**brabender
 Messtechnik**