brabender Messtechnik®

**NEW**

**DIN EN ISO 15512:2019**

„Plastics - Determination of water content“


Mobile Moisture Meter for Plastics

# AQUATRAC - V

Brabender Messtechnik® GmbH & Co. KG

# AQUATRAC-V

**Moisture meter for plastics according to DIN EN ISO 15512:2019 „Plastics - Determination of water content“**

For 30 years, the AQUATRAC has been the measuring instrument for the residual moisture content in solids for the plastics processing industry. It has a robust and compact design and can be easily transported due to its well-known mobility. Therefore, there are many possibilities for direct use at the production site, for example in the production of

- Incoming goods inspection
- Monitoring and optimization of the granulate drying process
- Measurement of the granulate on the machine/ machine hopper
- Measurement on the finished part, e.g. after conditioning or final inspection
- Laboratory measurement

As an absolute measuring instrument it requires no calibration work for different materials. It can be used independently of a PC or other peripherals.

**What are the advantages of the AQUATRAC-V?**

- Standard-compliant measuring method according to DIN EN ISO 15512:2019
- Transportable and flexible in use
- Recognized in the industry for 30 years
- Easy handling and menu navigation
- Standalone - device can be used without additional peripherals
- Indispensable in modern quality management

Since 30.04.2019 the measuring method of our AQUATRAC-V is described as method E - Determination of water content by the calcium hydride method, in DIN EN ISO 15512:2019 „Plastics - Determination of water content test“. The same standard also mentions the Karl Fischer titration as a possible method. The water content is an important parameter for the quality of the manufactured product in the processing of high-quality engineering plastics. The required measurement should be carried out quickly and easily.

## Measurement procedure

The measuring procedure is convenient and completely natural to use. The sample is weighed, whereby there is a prescribed weighing range, which guarantees a practical procedure. The weight read on the scale is entered. The sample is then filled into the sample container and the reagent insert is filled with calcium hydride. Both are automatically evacuated in the closed reaction vessel by the built-in pump, which takes about 30 seconds. The vacuum achieved is <10 mbar absolute. The reaction vessel with the sample is then heated; temperatures between 60 °C and 200 °C are freely selectable. The few necessary operating steps are carried out on the AQUATRAC-V via the touch display. The entire procedure is intuitive and carried out within 2 minutes.

**Measuring principle according to DIN EN ISO 15512:2019 „Plastics - Determination of water content“.**

Water and calcium hydride react with each other under hydrogen development according to the following reaction equation: $CaH_2 + 2\ H_2O \rightarrow Ca(OH)_2 + 2\ H_2$ This reaction takes place in the AQUATRAC-V in a closed vessel, the reaction vessel. It is evacuated before the measurement with a built-in vacuum pump and electrically heated during the measurement. The water vapor released by the heating reacts with the calcium hydride and the pressure in the measuring system increases due to the developing hydrogen. The gas pressure is proportional to the amount of water introduced, as the reaction is specific to water. The gas pressure is the measured variable of this method. The ratio of pressure to sample weight is calculated and the result displayed in %, ppm

and mg water content. Other volatile substances are condensed in a cooling trap at room temperature and therefore do not participate in the measurement. It is therefore an absolute measurement method exclusively for water - as also described in DIN EN ISO 15512:2019 as method E - Determination of water content by the calcium hydride method.

## Reagent

Calcium hydride in granular form is used as a water-specific reagent. It is non-toxic and environmentally friendly, so that no costly disposal is required. The reagent is filled into the AQUATRAC-V using a dosing spoon. Contrary to conventional handling, only 0.3 g calcium hydride is added for each measurement and has to be replaced during the next measurement. This makes the use of the AQUATRAC-V even more intuitive, in addition to the fact that the resulting amount of hydrogen is guaranteed to be minimal with every measurement.

## Product database

The AQUATRAC-V already contains an extensive product database with the necessary data for the raw density and the measuring temperature. Thus, measurements can be carried out quickly without having to enter additional parameters. This database can be supplemented or edited at any time and thus adapted to any customer requirements.


## New with AQUATRAC-V

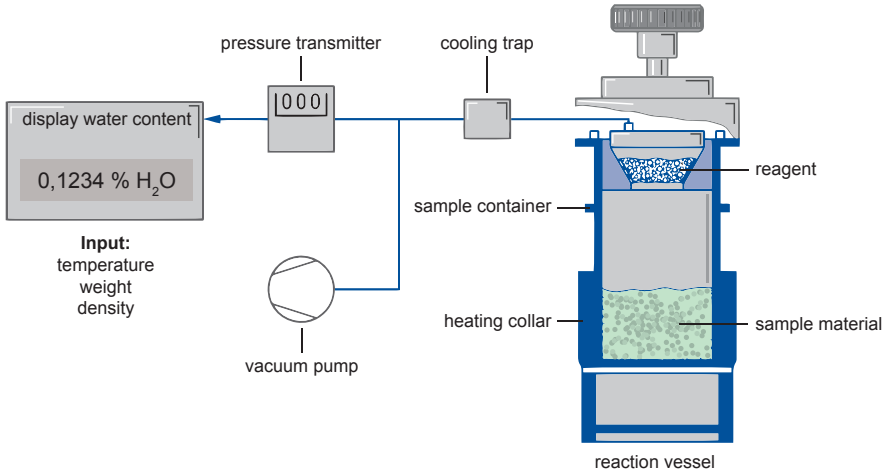
The new software has made quality control and quality management even more convenient and comprehensive. It enables many new features and thus an almost error-free measurement and documentation of all measurement data.

**NEW: User database**

It is possible to set up a user database and assign defined rights to each individual user. This can happen in unlimited number and thus the 100% assignment for the individual user is given.

**NEW: Extensive accessory package**

- Precision and analytical balances from the Swiss company Precisa can be connected directly via USB and thus prevent a frequent source of error in residual moisture analysis, and typing errors are eliminated once and for all.
- The status of the residual moisture measurement can be displayed for everyone via an optional signal lamp. So you are always up to date even from a distance and can avoid idle times.




AQUATRAC - V

- At the end of the measurement, the new software automatically saves all measurement data in CSV or PDF format and can therefore be transferred to many databases or directly as a measurement protocol.
- The measuring protocol can also be printed out simply using an optional label printer and you have a self-adhesive label. All important information are clearly assigned and documented when it is stuck directly onto the granulate container. The handwritten transfer of the results to a laboratory book is also a thing of the past.

## Data storage

The internal memory of the AQUATRAC-V can store up to 1000 measurements. In addition, the measurement results can be transferred to a USB stick for further processing or stored directly on the server via Ethernet.

## Calibration

The AQUATRAC-V is calibrated using sodium molybdate dihydrate as described in DIN EN ISO 15512.

## Applications

Residual moisture is above all a problem in polar, hydrophilic plastics, which can sometimes even be decomposed by water. But even in non-polar, hydrophobic polymers, precise knowledge of the water content helps to make the time-consuming drying and manufacturing process more economical.

The AQUATRAC-V can easily be used for all types of plastics. Here are just a few examples:

**Thermoplastics, e.g.:**
ABS, PA 6.6, PA 6 GF 30, PA 12, PC, PET, TPE, HDPE, PETP, PMMA, PP

**Duroplastics, e.g.:**
Epoxide resin, Acrylate, , Silicon resin, Vinyl resin

**Elastomers, e.g.:**
Styrene-butadiene rubber SBR, Chloroprene rubber CR, Polyurethane rubber PUR

| Technical data | |
|---|---|
| **Measurement principle** | Chemical reaction with calcium hydride according to DIN EN ISO 15512:2019 |
| **Sample weight** | 0.1 – 100 g dependent on the expected residual moisture proportion |
| **Measuring temperatures** | 30 – 200 °C in steps of 1 °C |
| **Precision** | ± 2 % of the measuring range end value |
| **Measuring range** | 1 ppm – 30 % $H_2O$ (relative) |
| **Measuring time / Measurement result in** | 10 – 60 min. / mg, ppm, % |
| **Resolution** | 0.01 mg / 1 ppm / 0.0001 % $H_2O$ |
| **Power supply** | 100, 115, 230 VAC / 50/60 Hz / max. 0.45 kW |
| **Interfaces** | 3 × USB 2.0, 1 × Ethernet |
| **Protection class** | IP20 |
| **Operating temperature** | 10 – 45 °C |
| **Air humidity** | 5 – 95 % non-condensing |
| **Dimension (W × H × D) / Weight** | 510 mm × 325 mm × 230 mm / 14.2 kg |

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