

## Residual Moisture in Solids:

simple, fast & highly accurate

The HydroTracer HT3 is a measuring device for the determination of low water contents in solids. The accuracy of the patented measuring method in connection with relatively high sample quantities enables the measurement of the smallest moisture with a resolution of a few ppm.

A large number of granules, powders and foils can be measured. The HydroTracer is mainly used to determine the residual moisture of plastic granules, where compliance with certain water contents before processing is a quality-determining criterion.

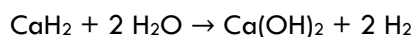
The absolute water content of the investigated material is determined chemically - other volatile components or additives do not influence the measurement result. This basic concept makes it a water-selective measurement method.

The compact, robust design and simple operation enables use in production or in mobile applications. The HydroTracer is easy to use without special training.

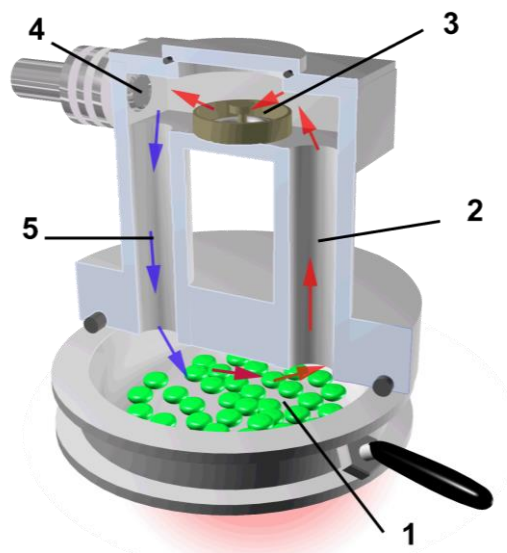


## Measurement Method

The sample material is weighed and placed in a sample tray. The sample tray forms part of the reactor integrated in the HydroTracer. Then, the reagent is added. A heater heats the sample to the selected temperature. Temperatures between 50°C and 210°C are freely adjustable. The water emerging from the sample material reacts in a cooled area with the reagent, which converts water into hydrogen, according to the chemical reaction:



The concentration of the hydrogen gas is measured. It is a measure of the amount of water in the reactor. The water content can be determined with high precision using the sample weight and the automatically recorded moisture values in the air.

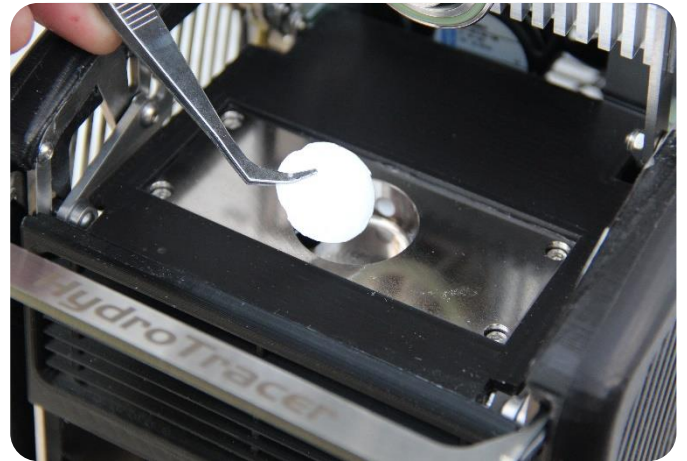


- (1) The sample is heated, water evaporates
- (2) The hot humid gas rises
- (3) The reagent exchanges water for hydrogen
- (4) The sensor detects the concentration of hydrogen
- (5) The cooled, dried gas descends and can absorb water again

## Reagent

The calcium hydride reagent required for a measurement is available in two embodiments. Either as an easy-to-use powder or in the form of a test pad filled with powder. It is environmentally friendly and not toxic. After the reaction with water, the calcium hydroxide formed can simply be disposed of. The shelf life of the reagent is almost unlimited.

For each measurement, a test pad or a small amount of powder is added using a dosing spatula.



## Operation

A PC program controls the HydroTracer. The program gives the user precise instructions so that operating errors are largely excluded. The measurement is simple and can be carried out in just a few steps - approx. 2 minutes of working time are required for each measurement.

An extensive material library with the required information on material density and the measuring temperature is already stored. This database can be supplemented and edited at any time - according to the individual requirements of the customer.



Prüferliste	
Name des Prüfers	
Operator 1	
Operator 2	

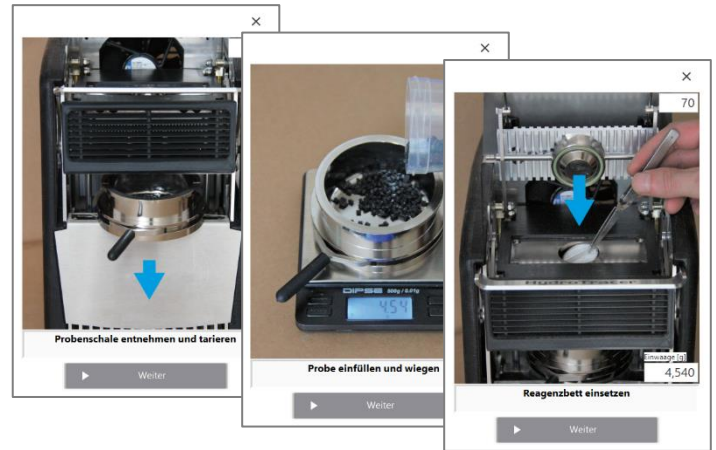
Materialliste		
Material	Dichte	Heiztemperatur
ABS Acrylnitril-Butadien-Styrol	1,05	160
EVA Ethylen-Vinylacetat	1,15	130
PA 6 Polyamid 6	1,10	150
PA 6 GF 30 Polyamid 6/GF	1,50	150
PA 6.6 Polyamid 6.6	1,10	150
PA12 Polyamid 12	1,04	150
PAEK Polyaryletherketon	1,30	175

Standardnutzer verwenden?

Kommentar

The operator is guided through the program with image and text-based instructions. This procedure shortens the training time considerably.

In principle, even inexperienced users are able to carry out an error-free measurement.

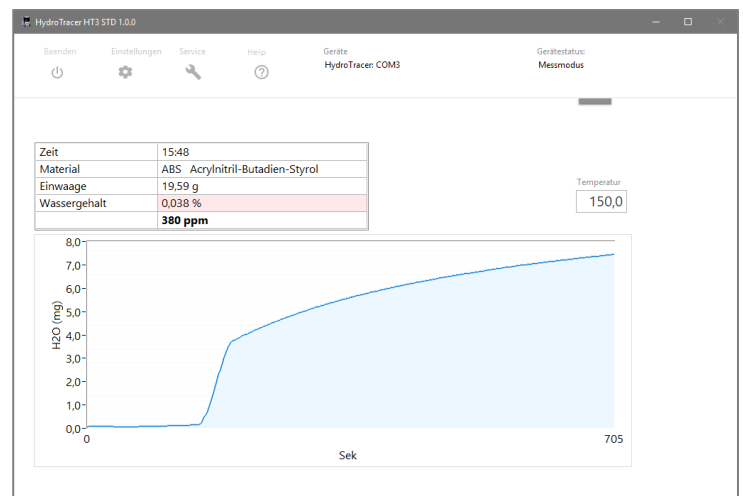


The rest of the process is automatic. The current value of the water content in [mg, %, ppm] is shown graphically in the measuring mode.

The result report will be saved in PDF format at the end of a test.

After a measurement, an integrated fan cools the reactor down to the standby temperature of 50°C. The HydroTracer is ready now for another measurement.

A measurement takes about 15 to 30 minutes, depending on the residual moisture content and the amount of sample.



## Common Applications

### Plastics

- ABS
- PA 6
- PA 6.6
- PA 12
- PAA
- PAI
- PBT
- PC
- PE
- PE talkum
- PEI
- PET-α
- PET-c
- PMMA
- POM
- PP
- PS
- PS expanded
- PVC
- TPE

Anporganic salts  
Caprolactam  
Silicone oils

## Comparison HydroTracer

to Karl-Fischer-Titration

Material	HydroTracer [% H <sub>2</sub> O]	KF-Titration [% H <sub>2</sub> O]
<b>ABS</b>	0,0351	0,0372
<b>PA 6</b>	0,0195	0,0217
<b>PA 66</b>	0,0160	0,0150
<b>PA 12</b>	0,0280	0,0300
<b>PBT</b>	0,0252	0,0270
<b>PC</b>	0,0203	0,0189
<b>PE</b>	0,0442	0,0403
<b>PEI</b>	0,0099	0,0087
<b>PET</b>	0,0029	0,0031
<b>PMMA</b>	0,0430	0,0418
<b>PS</b>	0,0520	0,0563

## Technical Specifications

Test Time	10 – 45 Minutes
Test Temperature	50 – 210 °C in 1°C Steps
Sample Weight	0,1 – 50 g
Reagent	Calciumhydrid (Powder oder Pad)
Measuring Range	0,2 – 25 mg (absolute) 0,0005 – 5 % (relative)
Accuracy	Measuring Error < ± 2% of measuring range end value
Resolution	± 1 ppm (0,0001%) ± 0,1 – 0,6 mg
Ambient Conditions	- 10 – 40°C/ 90% rH (not condensing)
Power Supply	100 – 240 VAC 1000 W 50/60 Hz
Weight	6,4 kg
Dimensions	290 x 180 x 260 mm (H x W x D)
Interface	USB
System Requirements	PC with min. WIN 7 or later

## Calibration

The calibration of the HydroTracer should be carried out every 1-2 years, depending on the frequency of use. As described in DIN EN ISO 15512: 2019, the calibration is carried out with the help of sodium molybdate dehydrate.

## Contact

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