

Water Activity Guide

- Selecting the Best Novasina Instrument -



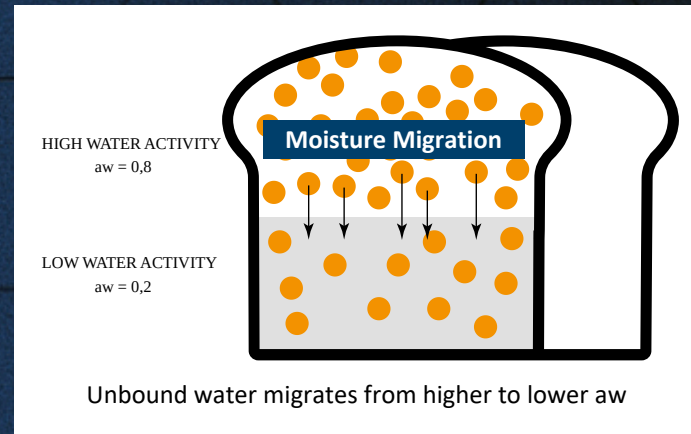
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What is Water Activity?

Water activity (also known as 'aw' or ERH%) specifies the unbound water available in your product. It's an important measurement to determine product quality and safety, especially microbial stability.

Water activity is the measurement of the equilibrium relative humidity of a material, that is the humidity that a hygroscopic material generates when it comes into balance with the air surrounding it in a sealed headspace. This "Available Water" is the unbound water able to come and go from a material by adsorption / desorption. The water activity of the sample is equal to the relative humidity of air surrounding the sample in a sealed measurement chamber, normally at controlled temperature 25°C. Unbound water will also migrate from higher to lower to achieve equilibrium.



Unbound water migrates from higher to lower aw

The higher the aw value, the greater the influence of temperature on the stability of water activity

Water Activity can be expressed as either:

**Equilibrium relative humidity (erh)
scaled 0-100% erh units**

OR

Water activity (aw) scaled 0-1 aw units. Most microbiologists tend to use aw units.

Air relative humidity is influenced by temperature so it follows that equilibrium relative humidity (water activity) will be too. The higher the aw value, the greater the influence of temperature on the stability of water activity.

For most samples, temperature control of 25°C is essential above 0.85 aw units.

The aw value of a product may be critical to ensure microbial stability and safety, it may even be a legal parameter, often measured as part of Critical Control Point (CCP) validation, monitoring or verification.

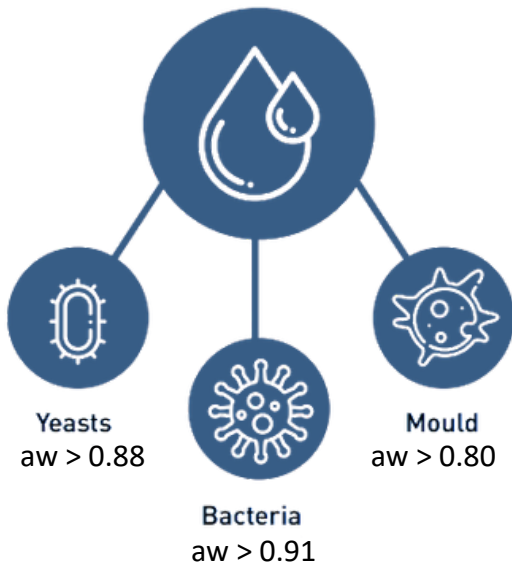
Water activity can be used for microbiological growth control, shelf-life, the stability of product composition (moisture migration), general product quality (texture, taste, potency & colour).

Why Measure Water Activity?

Water activity measurement is important to maintain high product quality safety and shelf life. By measuring water activity, it is easier to predict which microorganisms will be possible sources of spoilage.

Measuring water activity makes it possible to control and improve the manufacturing process to ensure mechanical, physical, chemical and microbiological stability. The measurement of water activity is critical for the quality and health and safety of a product.

Water activity shows the amount of water which is available to micro-organisms for reproduction. Each type has a minimum water activity value. Below this aw value, the growth of that species isn't possible.

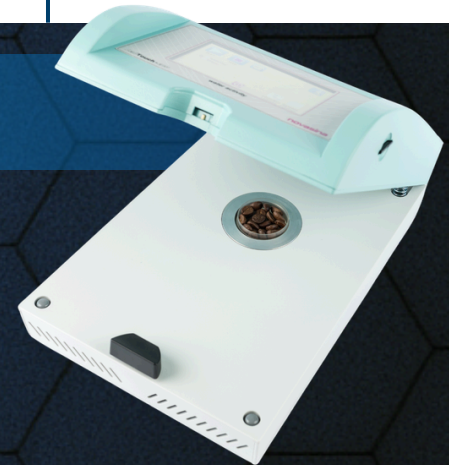


Water activity has a direct impact on growths of moulds, yeast and bacteria.

Water Activity Upwards Threshold	Type of Microorganism
0.91	Most bacteria
0.88	Most yeasts
0.80	Mildew
0.75	Halophile bacteria
0.70	Osmiophile yeasts
0.65	Xerophile mildew
0.60	Most moulds

Water Activity Influences

- Texture abnormalities
- Flavour abnormalities
- Microbiological stability
- Chemical stability
- Enzymatic stability
- Water migration
- Browning reactions
- Oxidation reactions
- Shelf life
- Packaging



Novasina LabMaster-aw Neo

The Benchmark in Water Activity Testing

The LabMaster-aw Neo is a high precision water activity meter that is the ideal choice for routine determination of water activity with sample temperature control, where absolute confidence is essential.



Technical Specification:

Technology	Precision electrolytic sensor system
Calibration	Automated & secure - RFID technology (0.04 to 1.0 aw)
Measurement Range	0.030 to 1.000 aw / 15 to 30°C
Temperature Control	0 to 60°C (heat or cool with respect to ambient)
Display	7-inch touchscreen
Accuracy	± 0.0030aw / ±0.10°C
Dimensions	423 x 260 x 186 mm
Power Supply	90 to 260 VAC

Applications / Industries:



Bakery



Powder / Spices



Hygiene



Pet Food



Pharmaceuticals

Novasina LabTouch-aw

Mid-range with Temperature Control:

The LabTouch is a mid-range water activity meter with above ambient sample temperature control (heating only), designed for applications between the LabMaster aw Neo and LabSwift. Data and protocols are stored on an SD card and can be transferred to a PC or printer for analysis. It operates over a recommended range of 0.11 to 0.95 aw.



Technical Specification:

Technology	Precision electrolytic sensor system
Calibration	Menu intuitive guided calibration (11 to 97% rh)
Measurement Range	0.11 to 0.970 aw / 15°C to 30°C
Temperature Control	Heating above ambient 15°C to 30°C
Display	4" Touch screen
Accuracy	± 0.005 aw / ±0.1°C
Dimensions	105mm (H) x 200mm (W) x 300mm (D)
Power Supply	90 to 260 VAC

Applications / Industries:



Cereal



Powder / Spices



Tobacco



Confectionary



Pet Food

Novasina LabSwift-aw

Fast, Portable and Reliable Testing:

The LabSwift-aw is a fast, portable water activity meter for low to medium aw products such as powders and dried foods. It offers high accuracy, reproducibility and robustness, stores data on an SD card, supports PC analysis, and is supplied with sample cups and UKAS-certified calibration salts.



Technical Specification:

Technology	Precision electrolytic sensor system
Calibration	11 to 85% rh
Measurement Range	0.11 to 0.85 aw / 15°C to 30°C
Temperature Control	No temperature control available
Display	Reflective, high contrast LCD (35 x 69mm)
Accuracy	± 0.010 aw / ±0.3°C
Power Supply	90 to 260 VAC

Applications / Industries:



Cereals



Powder / Spices



Tobacco



Confectionary

Novasina LabStart-aw

The Entry Level Solution for Water Activity:

The LabStart-aw is a low-cost, portable water activity and ERH% meter for the mid range (0.33–0.75 aw), offering fast, accurate, and reproducible measurements. Ideal for food applications such as baking and chocolate production, and supplied with 33% and 75% calibration salts and sample cups.



Technical Specification:

Technology	Precision electrolytic sensor system
Calibration	33 to 75% rh
Measurement Range	0.33 to 0.75aw / 15°C to 30°C
Temperature Control	No temperature control available
Display	Reflective, high contrast LCD (35 x 69mm)
Accuracy	± 0.01 aw / ±0.3°C
Dimensions	225 x 140 x 85mm
Power Supply	90 to 260 VAC

Applications / Industries:



Bakery



Powder / Spices



Cereals

Product Selector Guide

Water Activity Meter Recommended Work Range:



Benefits of a Water Activity Meter:



Prevents spoilage



Increases shelf life



Increases product quality



Reduces cost and wastage

Comparison Table:

	LabStart aw	LabSwift aw	LabTouch aw	LabMaster Neo
				
Price	£	££	£££	££££
CFR 21 Part 11 Compliance	—	—	—	✓
Data storage	—	✓	✓	✓
Cooling	—	—	—	✓
Heating Control	—	—	✓	✓
Re-usable standards	✓	✓	✓	✓

The Novasina Difference: Precision You Can Trust

- Novasina is a pioneer in food safety and water activity measurement.
- Their goal is to give customers 100% trust and confidence in their results.
- Novasina stands for highest measurement quality, not compromises.
- Their vision is peace of mind: when our customers use Novasina, they can rely on results.

Calibration & Servicing

We provide an extensive range of calibration services supported by a team of qualified and experienced engineers:

- Calibration to ISO9001,
- Uses traceable standards to ISO17025.
- Quick response.



On-site Services:

Our mobile service offers on-site servicing and preventative maintenance for Novasina water activity meters.

Other types of on-site calibration services with certification traceable to the National Standard are also available.

Benefits of regular servicing:

- ✓ Ensures optimum functionality
- ✓ Continued reliability and drift free calibration.
- ✓ Minor repairs.
- ✓ Cleaning of instrument.
- ✓ Calibration salt capsules condition check (renew or recalibrate to UKAS standards as required).
- ✓ Consultation with end-user and provide training as required.
- ✓ Validation of end-user's own calibration to ensure accuracy.





Certifications

At Novatron Scientific we want you to have absolute confidence in the level of service you receive.

We hold the following accreditations:

