

Document Title: Description, AN, Sample Prep		Part # and Rev. 13439-00	
		Release Date:	
Rev.	Description	Revision By	Date

Production Filename: 13439 (In Product Library)

Path to Working Files: DecaDoc\Application Notes\Master

Dimensions: 8.5 inch wide, 11 inch tall

Material: Paper, 92 Bright White or better, 75g/m² or heavier

Colors: Color Print on White

Printer: HP Color LaserJet 8550-PS

Finish: None

Adhesive: None

Special Notes: Illustrations are Ref Only ** Not to Scale ** (Shown page 1 of 2)



Application Note

Sample Preparation Applications Note

One factor that may affect the water activity (a_w) measurement is the sample preparation procedure. Eliminating or reducing this potential variable will yield more consistent and reliable water activity readings. Reducing variability due to sample preparation will also enable researchers and technicians to better identify other causes of a_w change in their products.

Prominent reasons for product a_w fluctuation not due to sample preparation include changes in product formulation, processing methods, or temperature. Such changes may influence product quality, shelf-life, and safety.

It is important to understand the effects of sample preparation and establish procedures to minimize this variable. In order to do that, it is necessary to understand how preparation methods affect different products. Decagon conducted the following research on a diverse range of multi-component food, pharmaceutical, and cosmetic products using three different preparation methods.

Sample Preparation Testing

To test the effect of sample preparation three different methods were used. The first sample preparation method involved taking the sample from its original packaging and directly placing into a sample cup. All samples fit into the sample cup with no modification to their original form. The water activity was measured using an AquaLab Series 3 water activity meter. Sample temperature and water activity were recorded. In the second portion of the experiment, new samples were removed from the original packaging and cut or sliced in half before placing into a sample dish. The water activity of each was measured immediately after slicing. In the third experiment, samples were taken from their original packaging and ground for approximately 30 seconds using a mortar and pestle. The samples were immediately transferred to a sample cup, and again, the water activity of each processed sample was measured.

Results

Sample Name	No Sample Preparation		One cut or slice		Ground with Mortar and Pestle	
	a_w	Temp (°C)	a_w	Temp (°C)	a_w	Temp (°C)
Frosting Coated Cookie	0.233	24.8	0.234	24.7	0.235	27.2
Chocolate Sandwich Cookie	0.120	24.8	0.127	26.0	0.126	24.9
Arachno Tablet	0.269	25.4	0.269	25.9	0.264	26.1
Sandy-coated Chocolate	0.279	25.0	0.311	25.8	0.287	26.5
Hard-filled Capsules	0.559	23.0	0.558	25.1	N/A	N/A
Gel-Coated Solid Dosage Form	0.458	24.9	0.372	25.1	0.349	25.9
OTC Pharmaceutical (non-coated)	0.118	27.9	0.270	26.0	0.269	26.0
Chocolate-coated Raisins	0.345	26.0	0.345	26.0	0.421	27.1