Ash and moisture analysis
with prepASH 340 Series for food analysis

Moisture and ash are crucial analytical values in food samples and are often needed as calculation reference for other analytical parameters too. Furthermore ashing is part of the sample preparation for the analysis of individual elements in the mineral content. Moisture is a critical parameter for shelf life time of food, ash gives information on the salt content.

Automation of the moisture and ash analysis brings efficiency, quality and security into the laboratory.

1. Analysis of meat

The nutrient content of meat and meat products is determined with the following analysis and often calculated as packages by contract laboratories: **Moisture**, **ash**, total fat, total protein, carbohydrate (calculated) and kcal/kJ (calculated). Here the ash is a quality characteristic itself and is need to calculate the carbohydrate.

Carbohydrate = 100 % – moisture – ash – fat – protein

Similar for other food
Nutrient with **moisture**, **ash**, dietary fibre, total protein, total fat, fatty acid composition, total sugar (saccharose, glucose fructose, lactose, galactose, maltose) carbohydrate (calculated), energy value (kcal/kJ).

2. Analysis of milk

Fat and Proteins content are calculated on **dry mass**.

Ash gives the total mineral content of milk: Calcium and phosphorous are the major minerals found in milk. These minerals are required in large quantities by the rapidly growing neonate for bone growth and development of soft tissues. Calcium and phosphorous mostly are associated with the casein micelle structure. Milk also contains most other minerals found in the body.

2. Analysis of flour/pasta

The determination of the ash content in flour serves to estimate the degree of the endosperm separation from the bran during milling, i.e. the grade of flour. The more refined the flour the less ash is produced. In pasta production the ash determination of flour is crucial. The grade of milling determines the properties of the flower and therefore the possible use: e.g. pasta or bread. The final analysis of pasta contains an ash determination too.
This ash contain the minerals from the flower plus the salt given to the dough.

Most food samples have to be dried at 105 °C and ashed at 550 °C (SLMB) until stable weight is reached. Flour and some flour products are dried at 105 °C or 130 °C and ashed at 600 °C or 900 °C (see special application sheet).

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APPLICATION

Applications available from Precisa:
prepASH_0009 Rape _bruised grain.
prepASH_0010 Sour milk. prepASH_0014 Yoghurt.
prepASH_0017 Milk powder. prepASH_0018_Milker food.
prepASH_0020_Quark.
prepASH_0501_Meat. prepASH_0502_Tea.
prepASH_0503_Spices. prepASH_0504_Flour.
prepASH_0801_Wine. prepASH_0705_flour_method_ comp.

Working Steps of moisture and ash determination

Standard Method with oven	vs.	prepASH
Heating out crucibles for constant weight before		Possibility to pre-define a "heating out"
Measuring tare of crucible one by one		AUTOMATICAL PROCEDURE
Sampling	Dry matter	Sampling
Weighing + documentation of each crucible		AUTOMATICAL + entering the sample
Samples in drying oven + START		START PROGRAM
Removing samples from oven + cool down		RESULTS (moisture)
Back weighing Samples, calculation (moisture)		
Pre-ashing with rapid incinerator or hot plate		RESULTS (ash)
Samples in muffle furnace		
Removing samples + cooling down in exsiccator	Ash	
Calculation and documentation (ash)		
Back weighing for stable results (repeat?)		

UFAG●LABORATORIEN

Reference customers: UFAG Laboratorien AG (Official webpage of http://www.ufag-laboratorien.ch/)
Sursee, Switzerland, contract laboratory, 2 prepASH
As the leading independent service laboratory in Switzerland, UFAG LABORATORIEN AG offer integral analyti cal solu tions for the foodstuffs industry. (1 company, 2 business units, 90 employees)
UFAG LABORATORIEN AG define their level of performance and quality as TOTAL QUALITY MANAGEMENT (TQM), including compliance with:
EN ISO/IEC 17025
Good Manufacturing Practice (GMP)
UFAG LABORATORIEN AG created a basis for national and international recognition of their study reports.

Contract laboratories
Contract laboratories have to deal with a huge variety of samples.
The profit of automation is maximal since the time consuming weighing back until stable weight has been reached is omit ted. (Industrials with only few different samples have a big knowledge upon their samples an can therefore dry and ash for a fixed time. So manual work is not as big as in "unknown" samples with several weighing backs until weight is constant).
Contract laboratory often have well trained people which are free to do high qualified work instead of weighing.

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prepASH – optimal solution to determine ash

Reduced time and effort. prepASH is a fully automatic drying and ashing equipment, so no multiple weighing back after time consuming cooling down in the dessicator but automatic calculation of results. Working in groups of similar samples in a single run will rise efficiency and optimise time of analysis.

Improved safety and efficiency. No more dangerous analysis with the open flame. With prepASH analyses can be done in time slots unused or hardly ever used so far, e.g. at night.

Increased quality. Up to 20% of each ash determination has to be re-analysed because of faulty/undefined results. prepASH is highly repeatable and reliable!

Detailed analysis reports. Due to the permanent recording of measurements during the entire process and the automatic saving of the final results, all data are retrievable at any moment.