

Sulphated Ash with prepASH 340 Series

Sulfated Ash

Ashing test procedures performed on pharmaceutical, polymer, and food samples frequently involve the use of H_2SO_4 resulting in sulphated ash.

As the "crude" ash sulphated ash may be used to indicate the level of known metal-containing additives or impurities in an organic material.

Hot sulfuric acid vapour released during these procedures is both hazardous to analysts and corrosive to equipment. In addition to these complications, sulphate ashing procedures are typically labour-intensive and time consuming, requiring manual fuming of acid from crucibles.

The chemical background

The chemical background of doing sulphated ash instead of "crude" ash is to get the ash in a defined form:

When phosphorus is absent, barium, calcium, magnesium, sodium and potassium are converted to their sulphates. Tin and zinc are converted to their oxides. Some minerals are essential to a healthy diet (e.g., calcium, phosphorous, potassium and sodium) whereas others can be toxic (e.g., lead, mercury, cadmium and aluminum).



Pharmaceutical Industry:

Pharmaceutical Industry: Sulphated ash is the standard method of ashing in American and European pharmacopoeia.

The pharmaceutical industry and their suppliers therefore have to do sulphated ash.

- chemicals
- dry plants
- celluloses



Precisa APPLICATION



PRE-ASHING AND ASHING

SAFETY: no manual fuming of toxic and irritating sulfuric acid
Automatic fuming of sulfuric acid within closed prepASH
Condensing and washing of the gases in the attached scrubber.

Scrubber B-414 (with condenser)

Consists of:

- Condenser (1) receiving vessel (2)
- Neutralization stage (3)
- Adsorption stage (4)



ADDITION OF SULFURIC ACID

Take the hole carousel of the prepASH.

Easy pipetting of sulfuric acid in cold crucibles under the hood.



Working Steps of moisture and ash determination

Standard Method with oven	vs.	prepASH
Heating out crucibles for constant weight before	Dry matter	Possibility to pre-define a "heating out"
Measuring tare of crucible one by one		AUTOMATIC PROCEDURE
Sampling		Sampling
Weighing + documentation of each crucible		AUTOMATIC + entering the sample
Samples in drying oven + START		START PROGRAM
Removing samples from oven + cool down		RESULTS (moisture)
Adding Sulfuric Acid	Sulfuric Ash	
Back weighing Samples, calculation (moisture) and documentation		
Slowly pre-ashing, fuming the acid manually		Adding Sulfuric Acid
Samples in muffle furnace		
Removing samples + cooling down in exsiccator		
Calculation and documentation (ash)		RESULTS (ash)

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■ The Balance of Quality ■



Precisa APPLICATION



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.

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