Environment, Geology
Microwave Digestion of Coal Fly Ash

Summary Reference Material Coal Fly Ash NCS ZC 78001 is digested in an acid solution with a Berghof microwave digestion system. The method is in accordance with DIN EN 14385.

Method

Equipment

	Type	Manufacturer
	Speedwave Xpert	Berghof Products + Instruments GmbH
	DAK-100	Berghof Products + Instruments GmbH

Reagents	Acid	Volume
	HNO_3 (65%)	7.0 mL
	HF (40%)	3.0 mL

Procedure

Weigh 250 mg of the sample into the digestion vessel. Add 7.0 mL of HNO_3 and 3.0 mL of HF. Shake the mixture carefully or stirr with a clean Teflon or glass bar. Wait at least 10 min before closing the vessel. Heat in the microwave with the following program.

Temperature Program	Step	T [°C]	P [bar]	Ta [min]	Time [min]	Power [%]*
	1	180	80	5	15	80
	2	200	80	5	20	90
	3	50	60	1	10	0
	4					
	5					

Note: To avoid foaming and splashing wait until the vessels have cooled to room temperature (about 20 min). Carefully open the digestion vessel in a fume hood wearing hand, eye and body protection since a large amount of gas will be produced during the digestion process.

Results

Clear solution

We recommend to complex the excess of HF present with crystalline or saturated H_3BO_3 solution to avoid any damage of the glassware used for the analysis (see also application report “Complexation of HF”).

Note: This application serves only as a guide line and may need to be optimized for your sample.

*This application is outlined for 8 samples. Increase or decrease the power by 10% per sample, when using more or less sample. Minimum is 40% independent of the sample number.