

Sulfur determination in zinc sulfide



Sulfur

Suitable analyzers

- ELEMENTRAC CS-*i*
(extended configuration for sulfur required)

Used accessories

- Ceramic crucibles (90149)
- Tungsten (90220)
- High purity iron accelerator (88600-0013)
- Suitable calibration material (NIST or other)

ELEMENTRAC CS-*i*

Application Settings

I) General

Sample type:	Advanced
Standby flow:	10 l/h
Purging while closing:	no
Open Furnace:	yes
Furnace purge through:	Exhaust
Furnace purge time:	0 sec
Furnace purge flow:	180 l/h

Stabilizing

Stabilize by time:	on
Stabilize duration:	20 sec

II) Analysis

Voltage:	90 %
Power duration:	100 sec
Flow:	180 l/h
Chamber only:	5 sec
Lance and chamber:	35 sec
Drift compensation:	off

Channel	Max time [sec]	Min time [sec]	Integration delay [sec]	Comparator level [mV]	Comparator peak [%]
High S	100	45	7	40	0.5

III) Post waiting

Post waiting time:	10 sec
--------------------	--------

Sulfur determination in zinc sulfide



Sulfur

Sample preparation

Make sure that your sample is free from contaminations and inclusions which could influence the sulfur determination. Pre-heat the crucibles at least for 1 h at 1000 °C. Let the crucibles cool down in a desiccator.

Procedure

- Prepare ELTRA analyzer (e.g. exchange anhydron, sodium hydroxide, platin catalyst if necessary); clean the combustion tube, brush, heat shield, dust trap
 - Run three warm up samples (e.g. steel samples (92400-3050) with a minimum weight of 500 mg; add 1.7 g tungsten)
 - Calibrate the analyzer with suitable calibration material (NIST or other)
- Analysis procedure:
- (1) Weigh in approx. 100 mg of sample into the ceramic crucible
 - (2) Add 0.7 g of high purity iron accelerator (88600-0013)
 - (3) Add 1.7 g of tungsten (90220)
 - (4) Place the crucible on the pedestal (use tongs!) and start analysis

Repeat steps (1) – (4) at least three times;

Mark the results and use the calibration function in the software.

→ **Now start with the actual analysis.**



Induction furnace

ELEMENTRAC CS-i

Typical results	
AR 3085 #W28D016: ZnS ¹⁾	
Weight (mg)	% Sulfur
113.7	32.94
110.5	32.90
109.7	32.81
111.2	33.00
112.7	32.99
111.1	32.93
79.8	32.46
84.7	33.03
94.5	33.01
100.3	32.89
Mean value	
	32.90
Deviation / Rel. deviation (%)	
	0.16 / 0.5%

¹⁾ certified values: sulfur 32.9% (deviation not certified)

