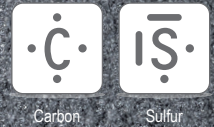


Carbon and sulfur determination in blast furnace dust



Suitable analyzers

- ELEMENTRAC CS-i

Used accessories

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



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: 3 sec
 Furnace purge flow: 180 l/h

Stabilizing

Stabilize by time: on
 Stabilize duration: 20 sec

II) Analysis

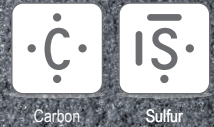
Voltage: 100 %
 Power duration: 90 sec
 Flow: 180 l/h
 Chamber only: 5 sec
 Lance and chamber: 5 sec
 Drift compensation: on

Channel	Max time [sec]	Min time [sec]	Integration delay [sec]	Comparator peak [%]
High C	90	60	5	0.1
Low S	90	60	5	0.1

III) Postwaiting

Postwaiting time: 10 sec

Carbon and sulfur determination in blast furnace dust



Sample preparation

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

Procedure

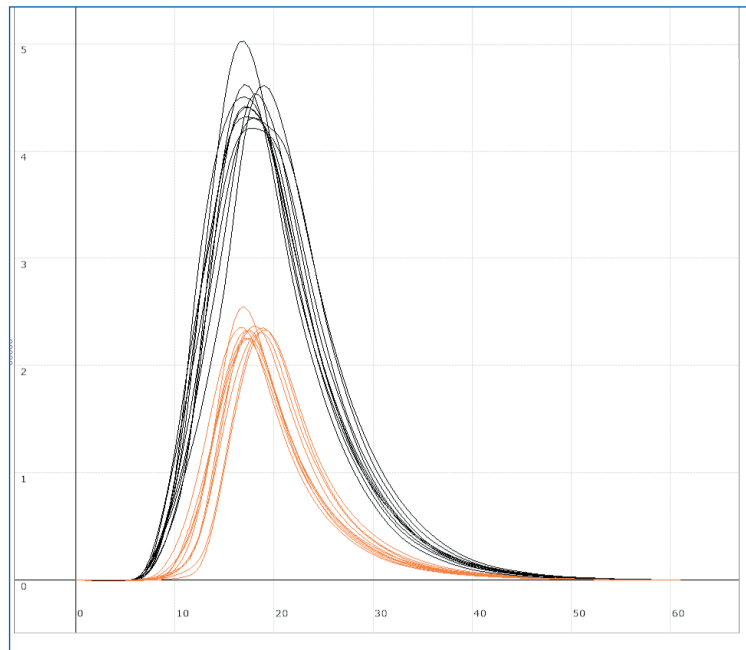
- Prepare ELTRA analyzer (e.g. exchange anhydron, sodium hydroxide, platin catalyst if necessary); clean the combustion tube, brush, heat shield, dust trap
 - Run three warm up samples (e.g. steel samples (92400-3050) with a minimum weight of 500 mg; add 1.7 g tungsten)
 - Calibrate the analyzer with suitable calibration material (NIST or other)
- Analysis procedure:
- (1) Weigh in approx. 50 mg of sample into the crucible
 - (2) Add 0.7 g of high purity iron accelerator (88600-0013)
 - (3) Add 1.7 g of tungsten (90220)

Repeat steps (1) – (3) at least three times;
Mark the results and use the calibration function in the software.

→ Now start with the actual analysis.



Typical results			
CRM 880-1 ¹⁾			
Id	Weight (mg)	Carbon (%)	Sulfur (%)
880-1	50	38.53	0.431
880-1	51.4	38.66	0.442
880-1	49.1	37.59	0.421
880-1	48.8	37.70	0.416
880-1	50.7	38.64	0.430
880-1	48.8	37.30	0.411
880-1	51.1	37.28	0.423
880-1	53.4	36.44	0.419
880-1	48.7	37.49	0.424
880-1	49.7	38.19	0.430
Average value			
		37.78	0.425
Deviation / Rel. deviation (%)			
		0.72 / 1.90	0.009 / 2.102



¹⁾ certified: %C: 37.77 (deviation not certified); %S: 0.4246 ± 0.02