

Carbon and sulfur determination in electrode 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 [%]
Low C	90	60	5	0.1
Low S	90	60	5	0.1

III) Postwaiting

Postwaiting time:	10 sec
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Sample preparation

Make sure that your sample is free from contaminations and inclusions which could influence the carbon and 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. 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 876-1 ¹⁾			
Id	Weight (mg)	Carbon (%)	Sulfur (%)
876-1	49	0.268	0.890
876-1	51.5	0.254	0.865
876-1	53.1	0.253	0.865
876-1	51.7	0.257	0.874
876-1	50.6	0.261	0.869
876-1	51.7	0.257	0.864
876-1	52.3	0.258	0.863
876-1	50.2	0.257	0.861
876-1	49	0.258	0.868
876-1	51.9	0.258	0.874
Average values			
		0.258	0.869
Deviation / Rel. Deviation (%)			
		0.004 / 1.559	0.009 / 0.979

¹⁾ certified: %C: 0.258 ± 0.014; %S: 0.869 ± 0.074

