

C, S determination in cast iron



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:	180 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:	10 sec

II) Analysis

Voltage:	100 %
Power duration:	60 sec
Flow:	180 l/h
Chamber only:	3 sec
Lance and chamber:	1 sec
Drift compensation:	on

Channel	Max time [sec]	Min time [sec]	Integration delay [sec]	Comparator peak [%]
High C	80	50	0	0.05
Low S	80	50	0	0.05

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 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)

The procedure of analysis cast iron should be like this:

- (1) Weigh in approx. 500 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)

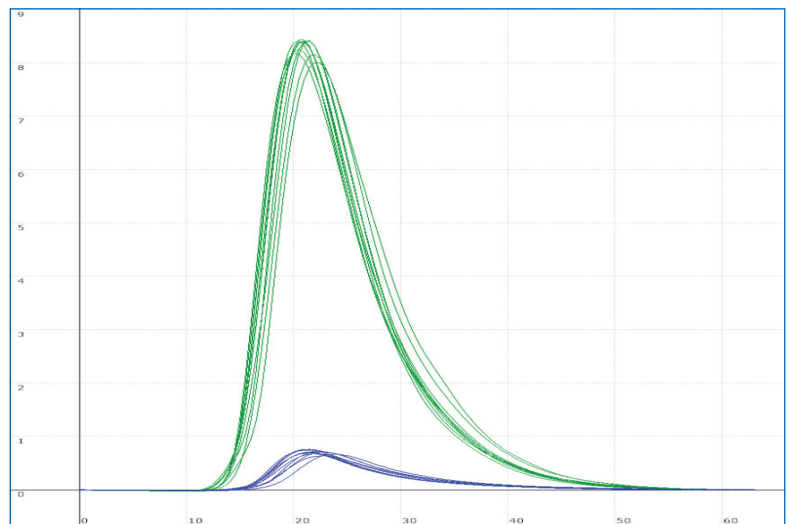
Repeat steps (1) – (3) at least three times;

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

-> Now start with the actual analysis.



Typical results		
ELTRA cast iron 92400-3100 (LOT1014C) ¹⁾		
Weight (mg)	Carbon (%)	Sulfur (%)
512.2	4.19	0.024
501.1	4.19	0.024
509.5	4.20	0.022
507.0	4.21	0.023
505.1	4.21	0.023
500.8	4.19	0.022
518.1	4.20	0.022
500.0	4.20	0.022
502.2	4.19	0.022
500.5	4.21	0.022
Average Values		
	4.20	0.023
Deviation / Relative deviation (%)		
	0.01/0.20	0.001/3.54



¹⁾ certified value: C: 4.20% ±0.06 (1.42%)
S: 0.023% ±0.002 (8.69%)