

C, S determination in steel rings



Suitable analyzers

- ELEMENTRAC CS-i

Used accessories

- Ceramic crucibles (90149)
- Tungsten accelerator (90220)
- Suitable calibration material (NIST or other)



Application Settings

I) General

Sample type:	Advanced
Standby flow:	180 l/h
Lance Purging:	on
Purging while closing:	yes
Open Furnace:	yes
Furnace purge through:	Exhaust
Furnace purge time:	3 sec
Furnace purge flow:	180 l/h

Stabilizing

Lance valve:	on
Stabilize by time:	off
Stability:	0.001
Minimum time:	15 sec
Maximum time:	40 sec

II) Analysis

Voltage:	100 %
Power duration:	30 sec
Flow:	180 l/h
Chamber only:	1 sec
Lance and chamber:	1 sec
Drift compensation:	off

Channel	Max time [sec]	Min time [sec]	Integration delay [sec]	Comparator level [mv]	Comparator peak [%]
High and Low C	90	30	6	10	1
High and Low S	90	30	6	10	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 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 anhydrous, 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 steel rings should be like this:

- (1) Weigh in a steel ring of approx. 1000 mg
- (2) Add 1.7 g of tungsten accelerator (90220)
- (3) Place the crucible on the pedestal and start analysis

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

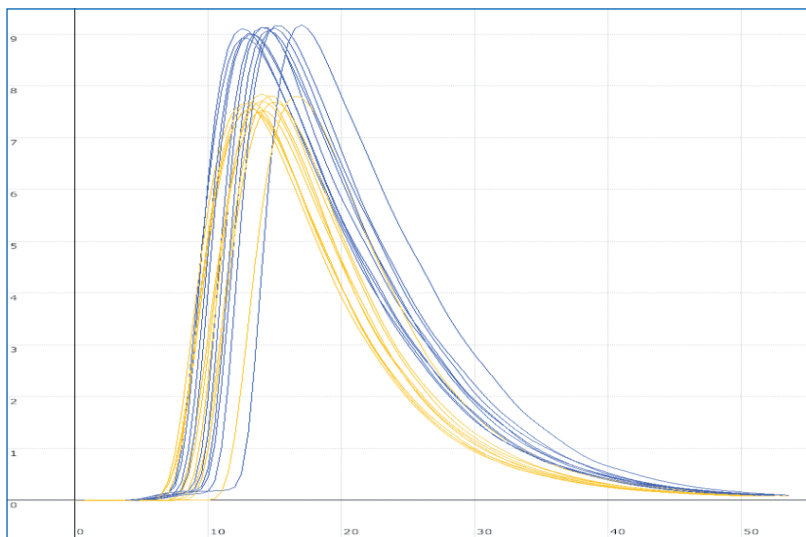
Mark the results and use the calibration function in the software.

-> Now start with the actual analysis.

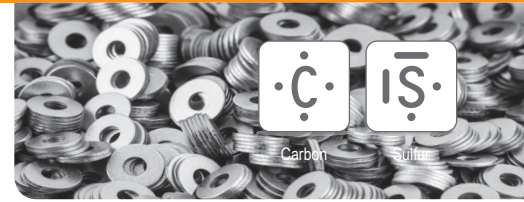


Typical results		
LECO 501-510 (LOT 286-129-4) ¹⁾		
Weight (mg)	Carbon (%)	Sulfur (%)
999.4	0.084	0.126
1000.5	0.084	0.126
1001.1	0.084	0.128
1001.4	0.083	0.128
997.3	0.084	0.127
1001.2	0.084	0.126
1002.4	0.083	0.127
995.1	0.082	0.127
1000.2	0.082	0.128
1000.6	0.083	0.127
Average values		
	0.083	0.127
Deviation / Relative deviation (%)		
	0.001/0.99	0.001/0.61

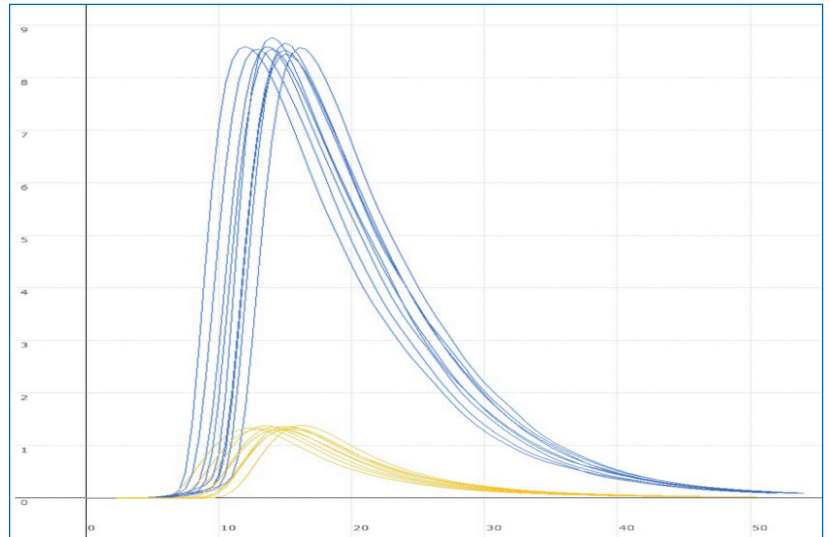
¹⁾ certified value: C: 0.083% ±0.002
S: 0.126% ±0.004



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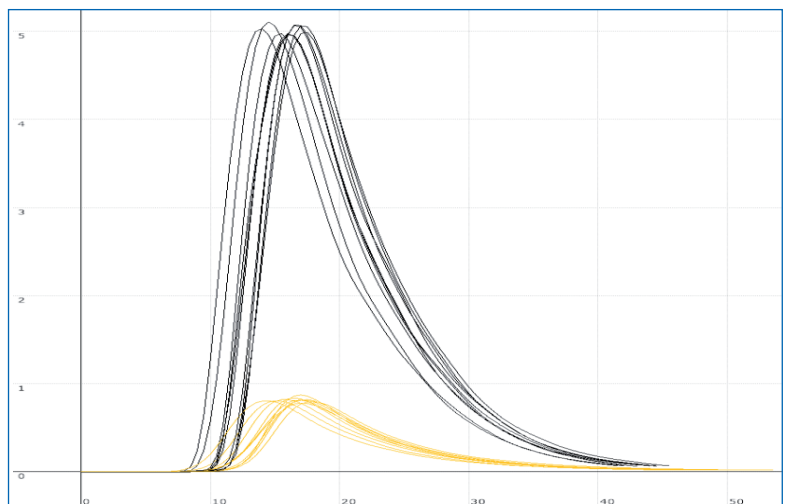


Typical results		
LECO 501-502 (Lot 1344) ¹⁾		
Weight (mg)	Carbon (%)	Sulfur (%)
998.3	0.0721	0.0169
999.4	0.0716	0.0167
999.4	0.0719	0.0169
999.1	0.0725	0.0168
1000.5	0.0724	0.0166
999.7	0.0718	0.0166
999.3	0.0720	0.0167
1001.3	0.0718	0.0170
998.3	0.0721	0.0169
Average values		
	0.0720	0.0168
Deviation / Relative deviation (%)		
	0.0003/0.41	0.0001/0.84



1) certified value: C: 0.071% ±0.002
S: 0.0167% ±0.0008

Typical results		
Alpha Resources AR 875 (LOT 1216F) ¹⁾		
Weight (mg)	Carbon (%)	Sulfur (%)
1003.4	0.8005	0.0128
1001.9	0.8003	0.0125
1002.6	0.8012	0.0126
1003.2	0.8007	0.0126
1001.8	0.7971	0.0125
1004.2	0.7952	0.0125
1003.6	0.7962	0.0124
1003.1	0.7976	0.0123
1003.2	0.8020	0.0124
1002.9	0.8024	0.0123
Average values		
	0.7993	0.0125
Deviation / Relative deviation (%)		
	0.0026/0.32	0.0002/1.20



1) certified value: C: 0.799% ±0.017
S: 0.0125% ±0.0034