

C determination in titanium

Suitable analyzers

- ELEMENTRAC CS-*i*

Used accessories

- Ceramic crucibles (90149)
- Copper (90240)
- 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:	yes
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:	80 sec
Flow:	180 l/h
Chamber only:	0 sec
Lance and chamber:	0 sec
Drift compensation:	on

Channel	Max time [sec]	Min time [sec]	Integration delay [sec]	Comparator factor [%]
Low C	80	40	6	0.1
Low S	80	30	6	0.1

III) Postwaiting

Postwaiting time:	10 sec
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Sample preparation

Make sure that your sample is free from contaminations which could influence the carbon determination. When necessary clean the sample with acetone p.a. or use abrasive paper to clean the surface.

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 titanium should be like this:

- (1) Weigh in approx. 250 mg of titanium (pin or powder)
- (2) Add 0.7 g of high purity iron accelerator (88600-0013)
- (3) Add 1 g of copper accelerator (90240)

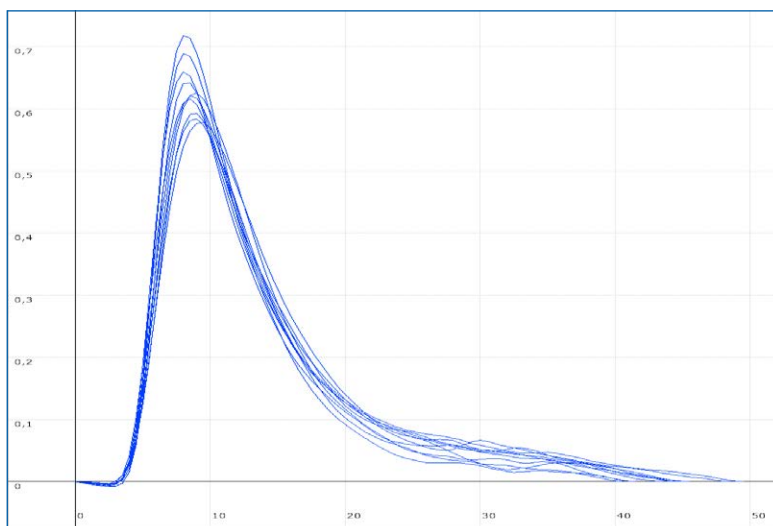
Repeat steps (1) – (3) at least three times;

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

-> Now start with the actual analysis.



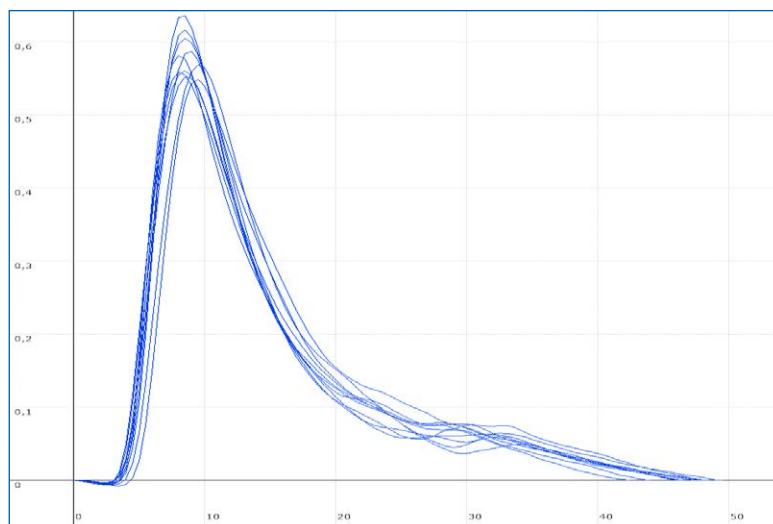
Typical results	
Alpha Resources AR 587# 215B; C: 80 ppm $\pm$ 20 ppm	
Weight (mg)	Carbon (ppm)
249.3	83.14
250.9	83.22
249.3	77.96
249.9	79.96
251.4	79.98
250.8	78.87
251.9	76.11
250.7	79.32
252.1	81.76
251.8	80.24
Average Values	
	80.06
Deviation / Relative deviation (%)	
	2.2 ppm (2.8%)



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Typical results	
Alpha Resources AR 585# 618C; C: 63 ppm $\pm$ 19 ppm	
Weight (mg)	Carbon (ppm)
251.2	62.38
253.0	60.91
256.5	62.63
251.7	61.98
252.0	65.27
252.1	63.83
251.7	63.37
256.5	64.86
251.7	62.81
253.3	62.20
Average Values	
	63.03
Deviation / Relative deviation (%)	
	1.3 ppm (2.1%)



Typical results	
Alpha Resources AR 586# 315D; C: 190 ppm $\pm$ 20 ppm	
Weight (mg)	Carbon (ppm)
247.4	194.39
247.6	189.87
248.1	201.03
246.9	190.47
247.9	157.28
247.4	197.00
245.9	192.85
246.4	193.76
247.1	194.72
247.2	196.86
Average Values	
	190.82
Deviation / Relative deviation (%)	
	12 ppm (6.4%)

