ELTRA®
ELEMENTAL ANALYZERS

Oxygen and nitrogen determination in ferrochrome

Suitable analyzers

- ELEMENTRAC ONH-*p*
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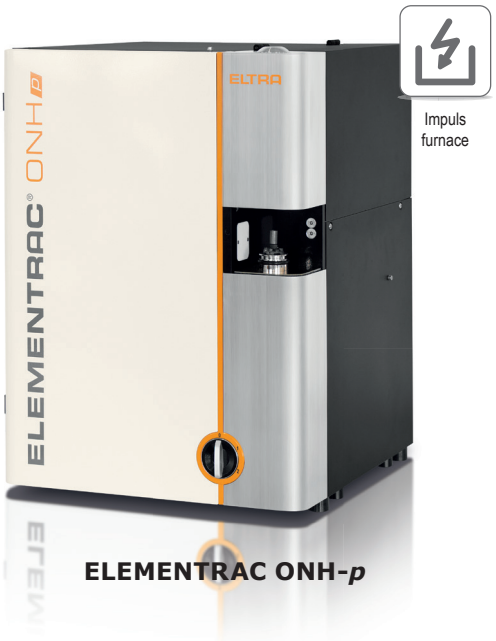
Used accessories

- Graphite crucibles (90180 and 90185)
- Nickel capsule, pressed (88400-0066)
- Suitable calibration material (NIST or other)



ELEMENTRAC ONH-*p*

Application Settings

I) General

Furnace mode: ON
Furnace cooling: 35/45 °C
Standby Flow: 0

A flow of 10 l/h could improve precision when there is a long time distance between 2 measurements.

II) Outgasing and stabilizing

Setting / Phase	Time [sec]	Power [W]	Flow [l/h]
Outgasing (1 Cycle)	20	0	27
Outgasing (2 Cycle)	30	5700	27
Stabilizing	65	5500	27

An increased outgasing time (2. Cycle) could improve the precision for very low oxygen and nitrogen contents.

III) Analysis

Power duration: 80 sec
Power: 5500 W
Flow: 27 l/h
Drift compensation: on
Open furnace: yes

Channel	Minimum time [sec]	Maximum time [sec]	Integration delay [sec]	Comperator factor [%]
Low and High O	25	80	10	0.3
Low and High N	20	80	20	0.5

IV) Postwaiting

Postwaiting time: 20 sec
Furnace clean up: no

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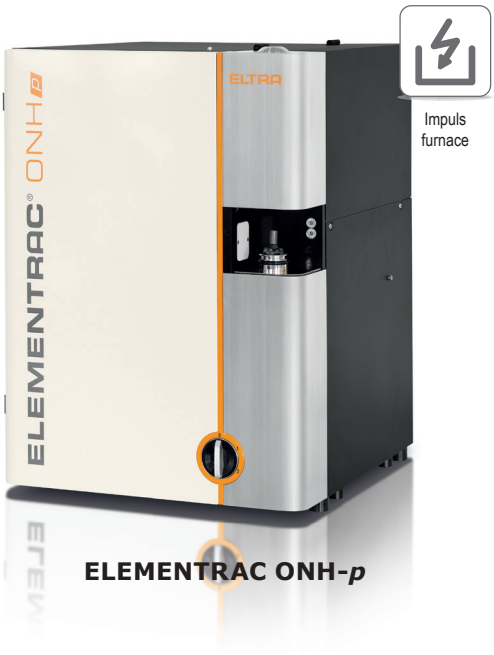
Sample preparation
Make sure that the surface of the ferrochrome is free from contaminations;
otherwise clean the sample with acetone p.a. and let dry at atmosphere.

Procedure

- Prepare ELTRA analyzer (exchange anhydrone, sodium hydroxide, if necessary), sample dropmechanism, electrode tip (if necessary)
- Run three blanks with empty crucibles
- Calibrate the analyzer with suitable calibration material (NIST or other)
  (1) Fill one empty inner crucible (90180) in one outer crucible (90185) and place them on the electrode tip, close furnace
  (2) Weigh calibration material and place it in a nickel capsule (88400-0066) and seal it; place the nickel capsule with the sample in the sample drop mechanism and start analysis
  (3) After analysis give the inner crucible into waste and fill in a new one. The outer crucibles can be used approximately 10 times



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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	
Euronorm ZRM 580-1 [1]	
Weight (mg)	**ppm N**
212.70	345.30
203.60	345.70
201.00	346.40
202.40	333.90
203.20	346.50
202.40	347.40
200.50	353.60
198.10	353.80
200.40	345.00
197.40	337.40
Average values	
	345.50
Deviation / Relative deviation (%)	
	± 6.15 / 1.78 %

[1] certified: ppm N : 352 (± 20 / 5,69 %)

Typical results		
Euronorm ZRM 585-2 [2]		
Weight (mg)	**% O**	**ppm N**
269.70	0.143	123.50
221.20	0.150	125.20
233.90	0.144	129.30
264.30	0.146	126.00
270.00	0.150	122.80
234.00	0.148	127.70
283.20	0.146	121.40
242.10	0.147	128.10
229.70	0.149	126.60
245.70	0.150	129.90
Average values		
	0.147	126.05
Deviation / Relative deviation (%)		
	± 0.002 / 1.72 %	± 2.83 / 2.24 %

[2] certified: ppm O : n/a
ppm N : 127 (± 12 / 9,40 %)