



## **General Information**

The ELEMENTRAC ON-p determines oxygen and nitrogen in inorganic samples by inert gas fusion in an impulse furnace with temperatures in excess of 3,000 °C.

The ELEMENTRAC ON-p guarantees precise and fast sample analysis. The analyzer covers a wide range of applications such as metal, ceramics and other inorganic materials.

The ELEMENTRAC ON-p can be supplied with up to two infrared cells with different path lengths, accommodating both high and low level oxygen analysis. Nitrogen concentrations are determined in the ELEMENTRAC ON-p by a robust and sensitive thermal conductivity cell.

## **Application Examples**

alloys, cast iron, ceramics, copper, refractory metals, steel, ...

### **Product Advantages**

- simultaneous nitrogen and oxygen determination with inert gas fusion technique
- NEW: closed gas management and optimized gas circulation for sensitive ON determination
- NEW: use of cost efficient argon as carrier gas possible
- NEW: powerful catalyst furnace for precise oxygen measurement
- NEW: gas flow system with electronic gas flow control and new leakage test
- NEW: water-cooled sample port system for effective removal of atmospheric gases
- flexible configurations and measuring ranges for O and N
- high sensitivity IR and TC cells with low detection limits
- · short analysis time
- powerful 8,5 kW\* impulse furnace for temperatures in excess of 3,000 °C
- NEW: chemicals and tubes are hidden behind a door (removable)
- NEW: powerful software supporting data and application export, with comment fields
- single and multipoint calibration (linear regression)
- NEW: cooling via tap water, heat exchanger or chiller
- New design allows operation in production control and laboratory

#### Features

Measured elements	nitrogen, oxygen
Samples	inorganic
Furnace alignment	vertical
Sample carrier	graphite crucibles
Field of application	ceramics, engineering / electronics, steel / metallurov

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Furnace	electrode impulse furnace (max. 8,5 KW*), temperatures in excess of 3,000 °C
Detection method	solid state infrared absorption for oxygen thermal conductivity for nitrogen
Typical analysis time	120 - 180 s
Chemicals required	copper oxide, magnesium perchlorate, sodium hydroxide
Gas required	compressed air, helium 99.995 % pure, argon 99.995% pure (if required), all gases with (2 - 4 bar / 30 - 60 psi)
Power requirements	3~ 400 V, 50/60 Hz, max. 8,500 W
Dimensions (W x H x D)	57 x 77 x 63 cm
Weight	~ 161 kg
Required equipment	balance (resolution 0.0001g), monitor, PC
Optional accessories	carrier gas purification, external chiller, gas calibration unit
-	* limited to 6.8 kw in application settings

## **Function Principle**

Operation ELEMENTRAC ON-p

Operation of the ELEMENTRAC ON-p is simple and safe. The samples are weighed on the interfaced balance and the weight is transferred to the linked PC. Manual weight entry is also possible.

Depending on the application the sample has to be placed in a nickel basket or capsule. Granulates or pins made of steel can be placed directly on the sample port without any other tools. Some applications also require some additional fluxes like tin or nickel, which have to be filled into an empty graphite crucible. This graphite crucible is placed on the lower electrode tip and the analysis can be started. Typical analysis time is about 2,5 minutes.

All cell outputs and analyzer parameters are displayed in real time and are saved in a data base along with the results. Of course the results and application settings can be exported. The ELEMENTRAC ON-p requires minimum maintenance and all particle filters and chemicals which need to be maintained are easily accessible. During daily work a door hides chemicals and filters. It can be removed easily to observe these during analysis.

Measuring Principle ELEMENTRAC ON-p





The measuring principle of the ELEMENTRAC ON-p allows for a wide measuring range. To analyze the sample, it is weighed and placed on the sample port. Flushing with carrier gas prevents atmospheric gas (oxygen and nitrogen) from getting into the furnace.

The graphite crucible is outgassed in the impulse furnace to reduce possible contaminations (e.g. residual oxgen). After a stabilization phase the sample is dropped into the crucible and melts. Carbon monoxide is produced by the reaction of carbon in the graphite crucible and oxygen of the sample. Nitrogen is released in its elemental form. The carrier gas (helium) and sample gasses pass through a filter before entering a copper oxide catalyst which converts the CO to CO2.

The CO2 is measured by the infrared cells to determine the oxygen content. CO2 and water are removed chemically and the nitrogen content is measured in the thermal conductivity cell. As on option the less expensive Argon as carrier gas can be used instead of the more expensive helium.

#### incl. order data

### **ELEMENTRAC® ON-p**

## (Please order PC, monitor, balance and consumables (starter-kit, anhydrone, sodium hydroxide, copper II oxide) separately) Measuring ranges at 1 000 mg sample weight

medealing ranges at 1,000 mg sample noight	
88200-2001	ON-p 1xO 0.1 - 200 ppm O
88200-2002	ON-p 2xN 0.1 - 200 ppm N   10 ppm - 2 % N
88200-2003	ON-p 2xO 0.1 - 200 ppm O   10 ppm - 0.7 % O
88200-2004	ON-p 1xO 0.1 - 200 ppm O + 2xN 0.1 - 200 ppm N   10 ppm - 2 % N
88200-2005	ON-p 2xO 0.1 - 200 ppm O   10 ppm - 0.7 % O + 2xN 0.1 - 200 ppm N   10 ppm - 2 % N

#### ON-p with new cell length configurations

88200-2030	ON-p 1xO 40 ppm - 2 % O + 2xN 0.1 - 200 ppm N   10 ppm - 2 % N
88200-2031	ON-p 1xO 40 ppm - 2 % O
88200-2032	ON-p 2xO 0.1 - 200 ppm O   40 ppm - 2 % O
88200-2033	ON-p 2xO 0.1 - 200 ppm O   40 ppm - 2 % O + 2xN 0.1 - 200 ppm N   10 ppm - 2 % N

#### Further measuring range combinations on request

#### PC, Monitor, Balance

71015

Computer with dual core processor, 300 GB HDD, 4 GB RAM, Windows operating system, DVD-ROM, keyboard, mouse



71016	Monitor, TFT
88600-0002	Balance (resolution 0.0001 g)
71002	Printer
Accessories	
27000-2021	Gas calibration unit ELEMENTRAC series (integrated in analyzer)
21000	Carrier gas purification furnace, without filling (integrated in analyzer, please order filling and quartz wool separately)
72081	Pressure regulator
88400-0467	Chiller
Consumables	
Required consumables	
88500-0007	Starter-kit for 500 analyses (400 graphite crucibles, 50 outer graphite crucibles, 200 inner graphite crucibles, 50 g glass wool, 50 g guartz wool)
90200	Anhydrone (magnesium perchlorate), 454 g
90210	Sodium hydroxide, 500 g
90289	Copper II oxide, 100 g
90426-1001	Filling for carrier gas purification furnace
Optional consumables	
90190	Graphite crucibles, 400 pieces
90180	Inner graphite crucibles, 100 pieces
90185	Outer graphite crucibles, 50 pieces
90331	Glass wool, 454 g
90330	Quartz wool, 50 g
91000-1001	Calibration standard - Copper, 100 pins, 1 g each ~500 ppm O
91100-1001	Calibration standard - Steel, 100 pins, 1 g each 25-40 ppm N
91205-1001	Calibration standard - Titanium, 100 pins, 0.1 g each 10-35 ppm H
92610	Tube of high vacuum grease
90870	Cooling agent, 0.5 I

#### **Spare and Wear Parts**

27590	Upper electrode
31360	Graphite tip
31365	Graphite tip holder



71010 71035 11064-3001 88400-0006 88400-0422 88400-0452 Brush Cleaning brush / furnace brush Reagent tube 120x20 mm Reagent tube 280x20 mm Reagent tube 240x20 mm Quartz tube catalyst furnace, curved