Oxygen / Hydrogen Analyzer ELEMENTRAC OH-p

General Information

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

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

Application Examples

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

Product Advantages

- simultaneous oxygen/hydrogen determination with inert gas fusion technique
- NEW: closed gas management and optimized gas circulation for sensitive OH determination
- NEW: enlarged Schuetze Reagent tube for precise oxygen measurements
- 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 H
- high sensitivity IR and TC cells with low detection limits
- short analysis time
- rapid, precise, accurate and reliable element determination
- powerful 8,5 kW* impulse furnace for temperatures in excess of 3,000 °C
- economic analysis of grains without capsules
- 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	hydrogen, oxygen
Samples	inorganic
Furnace alignment	vertical
Sample carrier	graphite crucibles
Field of application	ceramics, engineering / electronics,

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	steel / metallurgy
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 hydrogen
Typical analysis time	120 - 180 s
Chemicals required	magnesium perchlorate, Schuetze reagents, sodium hydroxide
Gas required	compressed air, nitrogen 99.995 % pure, 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 OH-p

Operation of the ELEMENTRAC OH-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 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 analyser 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 OH-p requires minimum maintenance and all 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 OH-p

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The measuring principle of the ELEMENTRAC OH-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) from getting into the furnace.

The graphite crucible is outgassed in the impulse furnace to reduce possible contaminations (e.g. residual hydrogen). 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. Hydrogen is released in its elemental form. The carrier gas (nitrogen) and sample gasses pass through a filter before entering the Schuetze reagent which converts the CO to CO2, whereas hydrogen stays in its elemental form.

The CO2 is measured by the infrared cells and removed chemically. Afterwards the hydrogen content is determinated in the thermal conductivity cell.

incl. order data

ELEMENTRAC® OH-p

(Please order PC, monitor, balance and consumables (starter-kit, anhydrone, sodium hydroxide, schuetze reagent) separately)

Measuring ranges at 1,000 mg sample weight

88200-2006	OH-p 1xO 0.1 - 200 ppm O
88200-2007	OH-p 2xH 0.01 - 50 ppm H | 20 - 1,000 ppm H
88200-2008	OH-p 2xO 0.1 - 200 ppm O | 10 ppm - 0.7 % O
88200-2009	OH-p 1xO 0.1 - 200 ppm O + 2xH 0.01 - 50 ppm H | 20 - 1,000 ppm H
88200-2010	OH-p 2xO 0.1 - 200 ppm O | 10 ppm - 0.7 % O + 2xH 0.01 - 50 ppm H | 20 - 1,000 ppm H

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

Oxygen / Hydrogen Analyzer ELEMENTRAC OH-p

	wool separately)
72080	Nitrogen regulator
88400-0467	Chiller

Consumables

Required consumables

88500-0008	Starter-kit for 500 analyses (400 graphite crucibles, 50 outer graphite crucibles, 200 inner graphite crucibles, 50 g glass wool, 50 g quartz wool)
90200	Anhydrone (magnesium perchlorate), 454 g
90210	Sodium hydroxide, 500 g
90270	Schuetze reagent, 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
91400-1001	Calibration standard - Steel, 100 pins, 1 g each 0.5 - 1 ppm H
92610	Tube of high vacuum grease
90870	Cooling agent, 0.5 l

Spare and Wear Parts

27590	Upper electrode
31360	Graphite tip
31365	Brush
71010	Cleaning brush / furnace brush
71035	Reagent tubes 160x16 mm, 2 pieces
11064-3001	Reagent tubes 280x16 mm, 2 pieces
88400-0006	Catalyst tube