



OXYGEN / HYDROGEN ANALYZER

ELEMENTRAC OH-p

**The new ELEMENTRAC OH-p is a powerful and robust elemental analyzer for measurement of oxygen and hydrogen concentrations in inorganic samples like steel, iron, copper or ceramics. The highly sensitive NDIR and thermal conductivity detectors reliably detect element concentrations from low ppm content to high percentages.**

The innovative sample port system with pulsed chamber rinsing and vertical sample drop allow for user-friendly and comfortable analysis of rod-shaped, granular or powdery samples with a weight of up to 2 grams.

The ELEMENTRAC OH-p elemental analyzer meets or exceeds the requirements of all relevant international standards such as ASTM E 1019 or DIN EN 3976.



[Click to view video](#)

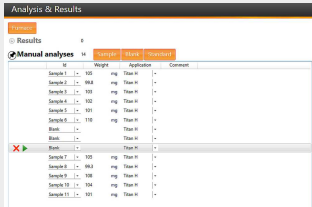
## Product Video

## OXYGEN / HYDROGEN ANALYZER ELEMENTRAC OH- P

- | Low gas consumption and high sensitivity due to closed gas system
- | Easy application of pins, powders and granules
- | Inexpensive argon as carrier gas possible
- | Short analysis time
- | Powerful impulse furnace with 8.5 kW
- | Optional Autocleaner
- | Reliable OH elemental analysis of inorganic materials like steel, non-ferrous metals, ceramics, slags, ores, etc.

**ELTRA**

## OXYGEN / HYDROGEN ANALYZER ELEMENTRAC OH-P OPERATION AND ANALYSIS PROCESS



### Step 1: Logging the sample into the ELEMENTS software

The sample ID is logged into the software and the weight is automatically transferred (see step 2).



### Step 2: Weighing and introduction of sample into the port

The ELEMENTRAC OH-P analyzes volumes from a few mg up to 2 grams safely and precisely. Rod-shaped or granular samples can be applied directly. For the elemental analysis of powders, a capsule is recommended which does not have to be sealed.



### Step 3: Analysis

The empty graphite crucible is then placed on the lower electrode and the elemental analysis is started via the ELEMENTS software. The software controls all subsequent process steps.



### Step 4: Data output and export

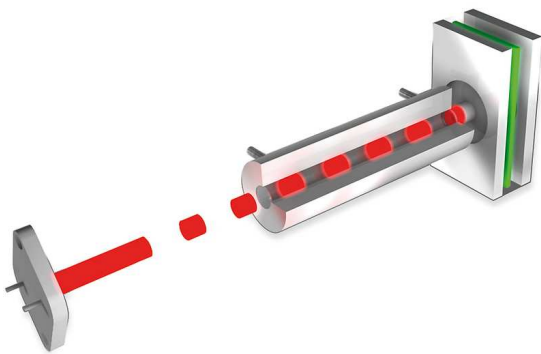
120 to 180 seconds after the analysis has started, the measured concentrations are available for export as a report or via LIMS.

OXYGEN / HYDROGEN ANALYZER ELEMENTRAC OH-P

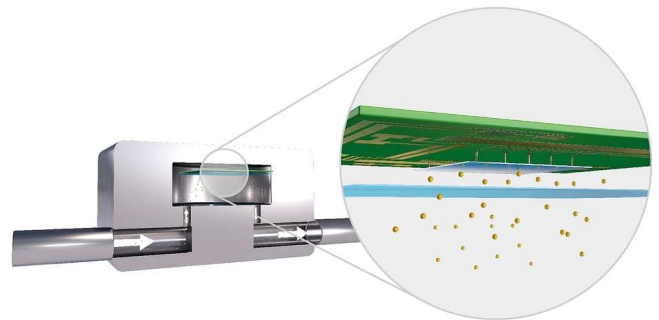
## CONFIGURATIONS

The ELEMENTRAC OH-p is available as a single-element analyzer for oxygen or hydrogen only, or in a multi-element configuration for measuring OH. Whereas oxygen is determined as CO<sub>2</sub> in up to two infrared cells, nitrogen and hydrogen are detected in their elemental form in a thermal conductivity cell.

### CUVETTE WITH VARIABLE LENGTH



### THERMAL CONDUCTIVITY CELL WITH HIGH SENSITIVITY



OXYGEN / HYDROGEN ANALYZER ELEMENTRAC OH-P

## INTEGRATED STANDARD SOLUTIONS

The chemicals and filters required for the operation of the ELEMENTRAC OH-p elemental analyzer are arranged conveniently on the front panel and can be concealed behind a removable door during routine operation. This arrangement significantly reduces the time required for maintenance and increases user-friendliness. In addition, innovative details considerably improve the reproducibility of measurements.

### Innovative sample port & pulsed chamber flushing

The new sample port of the OH-p elemental analyzer ensures comfortable operation and reproducible measured values. Differently shaped samples like solid pieces, granules or powder in capsules can be applied up to a weight of 2000 mg, and are quickly freed from the surrounding atmosphere with the help of pulsed carrier gas flushing in the sample port. Then they drop vertically into the preheated graphite crucible for analysis.



- | Robust against dust development
- | No closing of capsules required
- | Direct application of up to 2000 mg granulate
- | Low in maintenance and wear

### Closed gas management

The ELEMENTRAC ONH elemental analyzer series uses a closed gas system in overpressure. This ensures that always 100% of the released sample gas is fed to the detectors which guarantees low detection limits and good reproducibility.

## OXYGEN / HYDROGEN ANALYZER ELEMENTRAC OH-P

### OPTIONS

In addition to the integrated solutions of the ELEMENTRAC OH-p elemental analyzer, further options are available to increase efficiency and extend the application range.

#### Autocleaner

By melting the sample in a graphite crucible at temperatures of up to 3000 °C deposits are generated at the upper electrode and in the furnace chamber which may affect the reproducibility of ONH measurements in a negative way.

The new optional Autocleaner reliably removes these deposits, enabling precise elemental analysis even for high throughputs. Additionally, an efficient gas calibration and cleaning furnace for thorough carrier gas pre-cleaning are available for the elemental analyzer.



#### The comprehensive Windows-based ELEMENTS software is an essential part of all ELEMENTRAC generation elemental analyzers.

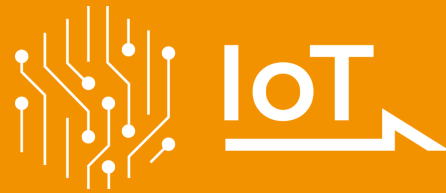
A central window (analysis and results) is the starting point from which all functionalities required for the daily routine are easily accessible. From here it is possible to group and export analyzed samples, or register and analyze new ones. The user may call up various subordinate functionalities like application settings, calibration, diagnosis, or status.



IOT - INTERNET OF THINGS

## THE PLATFORM FOR REMOTE ACCESS TO YOUR DEVICES

All ELTRA analyzers seamlessly integrate with the Verder Scientific IoT platform, providing enhanced functionality, seamless connectivity, and additional benefits:



- | **Real-time Monitoring:** Gain insight into the status of your machines at any time thanks to immediate access to important data.
- | **Live Notifications:** Stay up to date on the status of your devices with instant notifications.
- | **Effortless Backup:** Whether you need to back up a single device or an entire fleet, back up your data effortlessly and minimize downtime.
- | **Automatic Software Updates:** Verder Scientific IoT keeps your device software up to date, optimizing performance and reliability.
- | **Access to Analyses Data:** ELTRA analyzers offer remote access to analysis data. This allows you to conveniently access important data while on the move.
- | **Autoloader Efficiency:** Get the most out of remote analysis preparation with our autoloader feature, which ensures uninterrupted operation and increased productivity for all instruments equipped with it.

Experience the power of the Verder Scientific IoT platform today and unlock the full potential of your ELTRA analyzers!

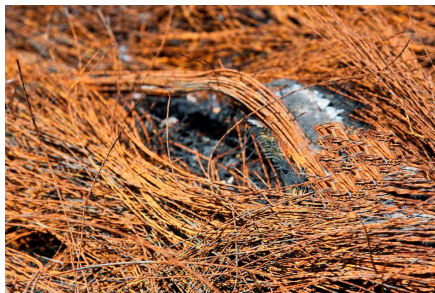


**FREE SOFTWARE  
DOWNLOAD**

OXYGEN / HYDROGEN ANALYZER ELEMENTRAC OH-P

## **TYPICAL SAMPLE MATERIALS**

alloys, aluminum, ashes, carbides, cast iron, copper, ferroalloys, iron, metals, ores, refractory metals, silicon, steel, ...



OXYGEN / HYDROGEN ANALYZER ELEMENTRAC OH-P

## FUNCTIONAL PRINCIPLE

The measuring principle of the ELEMENTRAC OH-p elemental analyzer 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 of the analyzer 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 material. 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 CO<sub>2</sub>, whereas hydrogen remains in its elemental form.

The CO<sub>2</sub> is measured by the infrared cells and removed chemically. Afterwards the hydrogen content is determined in the thermal conductivity cell.

OXYGEN / HYDROGEN ANALYZER ELEMENTRAC OH-P

## TECHNICAL DATA

|                               |                                                                                  |
|-------------------------------|----------------------------------------------------------------------------------|
| <b>Measured elements</b>      | hydrogen, oxygen                                                                 |
| <b>Samples</b>                | inorganic                                                                        |
| <b>Furnace alignment</b>      | vertical                                                                         |
| <b>Sample carrier</b>         | graphite crucibles                                                               |
| <b>Field of application</b>   | ceramics, engineering / electronics, steel / metallurgy                          |
| <b>Furnace</b>                | electrode impulse furnace (max. 8,5 KW*), temperatures in excess of 3,000 °C     |
| <b>Detection method</b>       | solid state infrared absorption for oxygen, thermal conductivity for hydrogen    |
| <b>Typical analysis time</b>  | 120 - 180 s                                                                      |
| <b>Chemicals required</b>     | Schuetze reagents, magnesium perchlorate, sodium hydroxide                       |
| <b>Gas required</b>           | compressed air, nitrogen 99.995 % pure, all gases with (2 - 4 bar / 30 - 60 psi) |
| <b>Power requirements</b>     | 3~ 400 V, 50/60 Hz, max. 8,500 W                                                 |
| <b>Dimensions (W x H x D)</b> | 56 x 78 x 64 cm                                                                  |
| <b>Weight</b>                 | ~ 165 kg                                                                         |
| <b>Required equipment</b>     | PC, monitor, balance (resolution 0.0001g)                                        |
| <b>Optional accessories</b>   | carrier gas purification, external chiller, gas calibration unit                 |
| -                             | * limited to 6.8 kw in application settings                                      |

[www.eltra.com/ohp2](http://www.eltra.com/ohp2)

## ORDER DATA

### ELEMENTRAC OH-P 2

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

**Measuring ranges at 1,000 mg sample weight (further measuring range combinations on request)**

**2)**

88200-2207  OH-p 2 2xH 0.08 ppm – 0.25 % H

88200-2209  OH-p 2 1xO 0.04 ppm – 0.04 % O  
+ 2xH 0.08 ppm – 0.25 % H

88200-2210  OH-p 2 2xO 0.04 ppm – 1 % O  
+ 2xH 0.08 ppm – 0.25 % H

### REQUIRED ACCESSORIES

PC, MONITOR, BALANCE

71015-1000 Computer with Intel Core i5-8400 Processor, 256 GB SSD; 8 GB RAM; Windows 10 operating system; keyboard; mouse

88400-0584 Monitor, TFT (23.8")

88400-0645 Balance (resolution 0.0001 g)

### REQUIRED CONSUMABLES / CHEMICALS FOR FIRST OPERATIONS

88500-0019 OH-Starter-kit for 500 analyses  
(400 graphite crucibles, 50 outer graphite crucibles, 200 inner graphite crucibles, 50 g glass wool)

90200  Anhydrone (magnesium perchlorate), 454 g 1)

90210  Sodium hydroxide, 500 g 1)

90270  Schuetze reagent, 100 g, for OH-p and ONH-p 1)

90289  Copper II oxide, 100 g, for ON-p and ONH-p 1)

88600-0021 Copper oxide wire (for older ONH 2000 analyzer) 1)

### FURTHER OPTIONS AND CONSUMABLES

#### ACCESSORIES (HARDWARE)

|            |                                                                                                     |
|------------|-----------------------------------------------------------------------------------------------------|
| 88200-2400 | ONH-p Autoloader (incl. autocleaner and vacuum cleaner)                                             |
| 88200-2401 | ONH-p Autocleaner (incl. vacuum cleaner)                                                            |
| 88400-0467 | Chiller (SMC, 5900 W)                                                                               |
| 27000-2021 | Gas calibration unit ELEMENTRAC series (for calibrating hydrogen)                                   |
| 88200-9000 | Carrier gas purification furnace, without filling (please order filling and quartz wool separately) |
| 72080      | Nitrogen regulator, 1 piece                                                                         |
| 72081      | Pressure regulator, 1 piece                                                                         |
| 88400-0610 | Barcode scanner                                                                                     |

#### CRUCIBLES

|            |                                                                                                                                                                   |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 88400-0471 | Graphite crucibles, 400 pieces (recommended for autoloader operation)                                                                                             |
| 90190      |  Graphite crucibles, 400 pieces (for copper, brass and steel analysis)          |
| 90180      |  Inner graphite crucibles, 100 pieces (requires outer graphite crucible 90185) |
| 90185      |  Outer graphite crucibles, 50 pieces                                           |

#### TIPS

|       |                                                                                                                                           |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 31360 |  Graphite tip, 1 piece (for crucibles 90190 and 90185) |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------|

#### CAPSULES (REQUIRED FOR ANY KIND OF POWDER ANALYSIS)

|            |                                                                                                                                       |
|------------|---------------------------------------------------------------------------------------------------------------------------------------|
| 90257      |  Nickel capsules, 3.2 x 7 mm, 100 pieces           |
| 90256      |  Nickel capsules, 4.5 x 10 mm, 250 pieces          |
| 88400-0066 |  Nickel capsules, pressed, 12.5 x 5 mm, 100 pieces |
| 90252      |  Tin capsules, 5 x 18 mm, 100 pieces               |

#### BASKETS (REQUIRED FOR OXYGEN AND NITROGEN DETERMINATION IN REFRACTORIES)

90250  Nickel baskets, 100 pieces, 1 g each

88600-0012  Nickel baskets, high purity (low oxygen), 100 pieces, 1 g each

#### FLUXES (REQUIRED FOR SOME APPLICATIONS)

90251  Tin pellets, 454 g (for determination of hydrogen in titanium)

90800  Graphite, 50 g (improves oxygen determination)

90258  Nickel accelerator, 100 g (for analysis of high amount of refractories)

#### CHEMICALS (FILLINGS FOR GLASS AND QUARTZ TUBES)

88600-0028 Eltrasorb, 500g (black coloured sodium hydroxide)

90200  Anhydron (magnesium perchlorate), 454 g l)

90210  Sodium hydroxide, 500 g

90270  Schuetze reagent, 100 g, for OH-p and ONH-p

90331  Glass wool, 454 g

90332  Glass wool, 50 g

92610  Tube of high vacuum grease, 35 g

## ELEMENTRAC - ADDITIONAL TOOLS

**All ELEMENTRAC analyzers are equipped with a set of necessary tools**

**The following list provide part numbers for replacement of worn tools and some new tools to improve handling.**

## SPATULAS AND TWEEZERS

|            |                                                                                    |                                                                                     |
|------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 88400-0476 |   | Micro spatula, 1 piece, XS size                                                     |
| 23110      |   | Spatula, 1 piece, M size                                                            |
| 23111      |   | Spatula, 1 piece, L size                                                            |
| 88400-0475 |   | Set with 6 spatula and 1 tweezers, for multiple weighing procedures                 |
| 88400-0229 |   | Tweezers (160 mm), curved, 1 piece, for transporting pins and baskets               |
| 88400-0472 |   | Tweezers (145 mm), straight, 1 piece, for removing samples out of the ONH-p furnace |
| 88400-0213 |  | Tongs for crucibles, 1 piece, for putting crucibles on the electrode tip            |

## TOOLS FOR STORAGE, TRANSPORTING AND WEIGHING

|            |                                                                                     |                                                              |
|------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|
| 88400-0477 |  | Weighing boat, 1 piece, for weighing and usage of granulates |
| 36121      |  | Quartz boat, 74x22x10 mm, 1 piece, for weighing pins         |

## TOOLS FOR CLEANING AND MAINTENANCE

|            |                                                                                     |                                                                                 |
|------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| 27000-8007 |                                                                                     | O-ring set ONH-p (furnace)                                                      |
| 27000-8008 |                                                                                     | Maintenance kit ONH-p                                                           |
| 27000-8009 |                                                                                     | O-ring set ONH-p                                                                |
| 71010      |  | Brush, 16 mm, 1 piece, for cleaning balance from dust                           |
| 88400-0500 |  | Telescope mirror, 1 piece, for inspection of upper electrode of ONH-p/ONH-2000  |
| 88400-0473 |  | Powder funnel (plastics), 1 piece, for easy filling of chemical tubes           |
| 88400-0489 |                                                                                     | Rubber plug 14x20x24 mm, 1 piece, for sealing small glass tubes like 88400-0006 |

|            |                                                                                   |                                                                                    |
|------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 88600-0027 |                                                                                   | Sodium hydroxide, Anhydrone filter tube                                            |
| 71032      |  | Composite brush, 1 piece, for cleaning upper electrode of ONH-p furnace            |
| 71035      |  | Cleaning brush / furnace brush, 1 piece, for cleaning sample inlet of ONH furnaces |
| 71031      |  | Metal brush, 1 piece, for cleaning graphite tip and its holder                     |
| 88400-0504 |  | Cylinder brush, brass, for intensive cleaning of lower furnace                     |
| 88400-0501 |  | Micro brush, 1 piece, for cleaning of ONH series furnace outlet tube               |
| 61030      |                                                                                   | Allen key, 3 mm, 1 piece                                                           |
| 61040      |                                                                                   | Allen key, 4 mm, 1 piece                                                           |
| 61050      |                                                                                   | Allen key, 5 mm, 1 piece                                                           |

## CALIBRATION MATERIALS

**Calibration materials may show slight variations depending on the current lot.**

**To see the current certification please visit [www.ELTRA.com](http://www.ELTRA.com).**

### OXYGEN AND NITROGEN IN STEEL, PINS

|            |                                                                                     |                                            |
|------------|-------------------------------------------------------------------------------------|--------------------------------------------|
| 91100-1001 |  | Steel, 100 pins, 1 g each, 25 – 40 ppm N   |
| 91100-1002 |  | Steel, 100 pins, 1 g each, 30 – 70 ppm N   |
| 91100-1003 |  | Steel, 100 pins, 1 g each, 150 – 250 ppm N |
| 91100-1005 |  | Steel, 100 pins, 1 g each, 300 – 600 ppm N |
| 91100-1007 |                                                                                     | Steel, 100 pins, 1 g each, 70 – 130 ppm N  |
| 91100-1010 |                                                                                     | Steel, 100 pins, 1 g each, >1000 ppm N     |
| 91100-1011 |                                                                                     | Steel, 100 pins, 1 g each, 600-1000 ppm N  |

### HYDROGEN IN STEEL, PINS

91400-1001



Steel, 100 pins, 1 g each, 0.5 – 1 ppm H

91400-1002



Steel, 100 pins, 1 g each, 1.5 – 4 ppm H

#### STEEL, BALLS (H)

91110



Steel, 100 balls, gold plated, 1 g each, >1.9 ppm H

#### OXYGEN IN COPPER, PINS

91000-1003

Copper, 100 pins, 1 g each, ~200 ppm O

91000-1004



Copper, 100 pins, 1 g each, ~10 ppm O

#### OXYGEN, NITROGEN AND HYDROGEN IN TITANIUM, PINS

91205-1001



Titanium, 100 pins, 0.1 g each, 10 – 35 ppm H

91205-1002



Titanium, 100 pins, 0.1 g each, 20 – 70 ppm H

91205-1003



Titanium, 100 pins, 0.1 g each, 30 – 90 ppm H

91205-1004



Titanium, 100 pins, 0.1 g each, 60 – 120 ppm H

91205-1005



Titanium, 100 pins, 0.1 g each, 150 – 250 ppm H

91205-1006

Titanium, 100 pins, 0.1 g each, 120 – 150 ppm H

#### HYDROGEN AND CARBON IN TITANIUM, PINS (250 MG)

91305-1001

Titanium, 100 pins, 0.25 g each, < 50 ppm H

91305-1002

Titanium, 100 pins, 0.25 g each, 50 -100 ppm H

91305-1003

Titanium, 100 pins, 0.25 g each, > 100 ppm H

**Please note: Every analyzer requires PC, monitor, balance and some consumables (crucibles, chemicals) which have to be ordered separately**