

ELEMENTRAC[®] ONH-p 2

GENERAL SPECIFICATION SHEET

ELEMENTRAC ONH-p 2 SERIES



	Oxygen	Nitrogen	Hydrogen
Instrument Range¹ (2O/2N/2H) O: 100 / 5 mm cell O: 100 / 3 mm cell	0.00004 mg – 10 mg (0.04 ppm – 1% for a 1000 mg sample)	0.00004 mg – 20 mg (0.04 ppm – 2% for a 1000 mg sample)	0.00008 mg – 1 mg (0.08 ppm – 1000 ppm for a 1000 mg sample)
Precision²	0.00002 mg (0.02 ppm) or 0.2% RSD whichever is great	0.00002 mg (0.02 ppm) or 0.2% RSD whichever is greater	0.00004 mg (0.04 ppm) or 0.2% RSD whichever is greater
Analysis time³	85 sec	95 sec	90 sec
Typical sample size	10 -1000 (2000 ⁴) mg		
Measuring method	Inert gas fusion in electrode impulse furnace followed by infrared detection for O ₂ (as CO ₂) and detection of H ₂ or N ₂ in a thermal conductivity cell		
Chemical reagents	<ul style="list-style-type: none"> - Magnesium perchlorate - Sodium hydroxide on carrier - Schuetze reagent - Copper oxide 		
Gas requirements	Helium 99.995% pure; 2 – 4 bar (30 – 60 psi) Nitrogen 99.995% pure; 2 – 4 bar (30 – 60 psi) Compressed air: 4 – 6 bar (60 – 90 psi) Optional argon: 99.995% pure; 2 – 4 bar (30 – 60 psi)		
Gas consumption	40 l/h (during analysis)		
Furnace	Electrode impulse furnace; 8500 W; 6000 W usable in application		
Operation conditions	15 – 35 °C; 20 – 80% rel. humidity (not condensing)		
Electrical power requirements	400 VAC ±10%, 50/60 Hz; 3 phase; 1 phase on request		
Weight	Approx. 165 kg		
Dimensions (W x H x D)	560 x 780 x 640 mm		
Required Accessories	<ul style="list-style-type: none"> - PC - TFT - Balance 		
Options	<ul style="list-style-type: none"> - Carrier gas purification furnace - Gas calibration unit (hydrogen) 		

*1 Other configurations / working ranges see next page or ask Eltra.

*2 One sigma deviation; tested by gas dose and blank analysis; Nominal weight 1000 mg

*3 Includes outgas, stabilize, analysis and postwaiting. Tested with 10 times measurement of one CRM. Sample depending other settings for outgas, stabilize and analyze could be suitable.

*4 Some steel granulates can be processed with 2000 mg sample weight

THEORY OF OPERATION

The ELEMENTRAC ONH-p 2 measures the oxygen, nitrogen and hydrogen content in inorganic samples like steel, iron, copper, titanium and alloys. The sample is fused in a graphite crucible at temperatures up to 3000°C where different reactions take place. The oxygen of the sample forms with the graphite of the crucible carbon monoxide which is subsequently oxidized to carbon dioxide and measured in infrared cells. The hydrogen and nitrogen content of the sample is released in elemental form and is measured with a thermal conductivity cell.

AVAILABLE CONFIGURATIONS

Due to a wide variety of samples ELTRA provides different configurations to fit the user requirements. ELTRA offers single element analyzers for oxygen, nitrogen and hydrogen as well as different element combinations like ON, OH, NH or ONH.

Compliance

The ELEMENTRAC ONH-p 2 is compliant to the following international standards:

Analyzed Elements & Matrix	Compliant Standards
Nitrogen and oxygen in steel, iron, nickel and cobalt alloys	ASTM E 1019-18
Oxygen and nitrogen in titanium	ASTM E 1409-13
Hydrogen in titanium and titanium alloys	ASTM E 1447-09
Nitrogen, oxygen in silicon nitride powder	ASTM C 1494-13(reapproved 2018)
Oxygen in copper	ASTM E 2575-19
Hydrogen in aluminium	ASTM E 2792-13
Titanium and titanium alloys – determination of hydrogen	DIN EN 3976: 2007
Metallic powders – determination of oxygen content	DIN EN ISO 4491-4:2019
Steel and iron – determination of nitrogen content	DIN EN ISO 10720:2007 DIN EN ISO 15351:2010
Chemical analysis of silicon carbide – nitrogen, oxygen	DIN EN ISO 21068-3: 2008
Steel and iron- determination of oxygen	ISO 17053:2005
Titanium and titanium alloys- determination of oxygen	ISO 22963:2008
Ceramic raw and basic materials – total oxygen and nitrogen in boron carbide, boron nitride	DIN 54387-3:2016

ELTRA[®]
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