



## **HYDROGEN ANALYZER H-500**

# **PRECISE DETERMINATION OF HYDROGEN VIA HEAT EXTRACTION**

The Eltra H-500 is a reliable, precise and robust hydrogen analyzer. The resistance furnace provides temperatures up to 1100 °C and is used for the determination of the diffusible hydrogen content or, in some cases, for the determination of the total hydrogen content through heat extraction.

## H-500: RELIABLE HYDROGEN ANALYSIS

# PRECISE HYDROGEN DETERMINATION IN LARGE AND SMALL SAMPLES

The hydrogen content of metallic samples is accessible via inert gas fusion (ELEMENTRAC ONH-p 2) or carrier gas heat extraction (H-500). The ELTRA H-500 utilizes a resistance furnace with quartz tube, nitrogen as carrier gas and a wide range thermal conductivity cell.

The maximum temperature of 1100°C can be applied in steps of 1°C and assures a safe, reliable and robust analysis of small and big sized samples.



### BENEFITS

- | High-capacity thermal conductivity cell
- | Easy calibration with standards or gas
- | Precise measurement even of low concentrations
- | For samples of up to 10 g and max. 17 mm diameter

## H-500: RELIABLE HYDROGEN ANALYSIS

# OPERATION

Operation of the H-500 is easy and safe. After weighing the sample, for example in a quartz boat, the weight is transferred to the connected PC. It is also possible to enter the weight manually in the H-500 software. The sample is placed into the cold zone of the horizontally positioned furnace (fig. 1). After the analysis has started the furnace is rotated upwards (fig. 2) for the sample to fall into the hot zone. By adding nitrogen as carrier gas hydrogen diffuses out and is carried to a thermal conductivity cell with up to two different sensitivities.

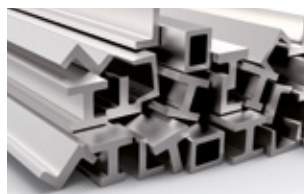
The typical analysis time is about 3 to 15 minutes. Detector signals and instrument parameters are displayed during analysis. Evaluation of the signals and display of the results are done automatically; the data can be transferred to a laboratory information management system (LIMS). The H-500 requires minimum maintenance.

The particle filters and chemicals which need to be maintained are easily accessible.



### TYPICAL SAMPLE MATERIALS

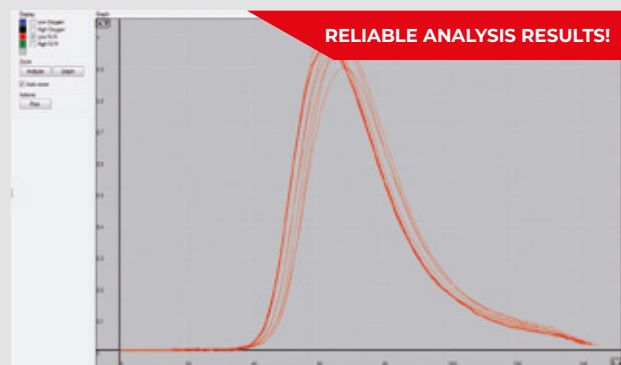
Steel, cast, copper, alloys, etc.



### APPLICATION | EXAMPLE: HYDROGEN STANDARD AR 556 FROM ALPHA RESOURCES

Only a resistance furnace with quartz tube is suitable to determine the content of diffusible and residual hydrogen in a steel sample, due to the required temperature of up to 1100°C and the sample length of several centimeters (for H-500: 10 cm). ELTRA's H-500 provides precise analysis results even in the low ppm range.

Sample weight	Hydrogen content
1,001.4 mg	6.55 ppm H
1,002.1 mg	6.73 ppm H
999.5 mg	6.55 ppm H
1,000.1 mg	6.67 ppm H
1,000.9 mg	6.41 ppm H
999.8 mg	6.45 ppm H
1,001.5 mg	6.69 ppm H



## TECHNICAL INFORMATION

Sample weight (nominal)	1 g
Measuring range	0.01 – 1,000 ppm
Analysis time	3 – 15 minutes
Calibration	Solid standards (one point; multi point), gas calibration
Detection	Thermal conductivity cell
Chemicals	Magnesium perchlorate; sodium hydroxide on inert carrier; Schuetze reagent
Required gas	Nitrogen (99.995 %, 2 – 4 bar)
Nominal gas flow	10 – 15 L/h
Furnace	Resistance furnace with quartz tube up to 1100 °C
Working conditions	15 – 35 °C; 20 – 80 % humidity (not condensating)
Power supply	230 V AC ± 10 %; 50/60 Hz; 2.0 A; 450 W
Weight (analyzer only)	40 kg
Dimensions (W x H x D)	75 x 52 x 60 cm
Inner combustion tube diameter	13 mm (88100-2016) 17 mm (88100-2018)
Options	Carrier gas purification furnace



### ELTRA APPLICATION LABORATORY

For many applications (e.g. hydrogen determination in special alloys) no international standard is released. To assure a reliable and safe analysis the ELTRA application laboratory in Haan provides free of charge test measurements and application support. This support encompasses not only the H-500, but the full ELTRA product portfolio of TGA, ONH and CS measurement.

Participation in interlaboratory tests (e.g. ASTM Powder Metallurgy) and participation in the certification of reference materials (e.g. ECRM 268-1; ECRM 049-1) ensure a consistently high analysis quality.



**ELTRA**<sup>®</sup>  
ELEMENTAL ANALYZERS

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