

Carrier Gas Hot Extraction

Non-Metals in Metals



LECO ONH 836

Simultaneous measurement with Auto-Sampler – faster and more precise.

Methods

Carrier gas hot extraction in an inert gas atmosphere (H, N, O)

Modified carrier gas hot extraction for fractionated O and N determination with thermo-chemically controlled reaction procedure.

Carrier gas hot extraction in a reactive gas atmosphere (C, S)

Oxygen (O); Nitrogen (N)

Melting of the solid sample at high temperatures (up to 2700 °C); selective CO₂ determination by means of IR detection; unspecific N₂ determination in thermal conductivity cells; using helium as an inert and carrier gas; flux additives normally necessary.

Hydrogen (H)

Melting of the solid sample at high temperatures (up to 2100 °C); selective CO₂ determination by means of IR detection; unspecific N₂ determination in thermal conductivity cells; using helium as an inert and carrier gas; flux additives normally necessary.

Carbon (C); Sulfur (S)

Oxidation of the carbon or sulfur resp. of the solid sample at high temperatures (up to 1300 °C) with oxygen in induction and tube furnaces under CO₂ formation; selective CO₂ and SO₂ determination by means of IR detection; metallic combustion accelerators normally necessary.

Our Services (Analysis)

QUANTITATIVE DETERMINATION OF

- Hydrogen (H)
- Nitrogen (N)
- Oxygen (O)
- Carbon (C)
- Sulfur (S)

Sample Requirements

Compact pieces, chips, powder; 20 mg to 1 g net weight per measurement; sample specific preparation (if necessary, chemical surface treatment)

Applications

- Superalloys, superconductors
- Titanium composite materials (fibers)
- Oxides, nitrides, carbides
- Ceramic materials
- Semi-conductors
- Titanium, zircon, titanium-aluminides
- New materials
- Copper
- Aluminum
- Zinc-plated sheet steel
- Orthopedic products
- Biomaterials
- Hydrides
- Ultra-pure chemicals
- Ores
- Slags
- Iron alloys
- Hard metals etc.

Specifications

Element	Detection Limit
Carbon	20 µg/g
Sulfur	20 µg/g
Oxygen	20 µg/g
Nitrogen	20 µg/g
Hydrogen	0,2 µg/g
Carbon-unbound	20 µg/g
Carbon-soluble	20 µg/g

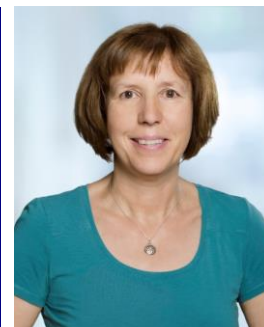
Concentration range: µg/g to major component

Precision: 0.5 – 5 % relative standard deviation

Detection limits: depend on matrix and sample

Test Standards Excerpt

ASTM E-1019	C, S, N, O in Steel, Iron, Nickel/Cobalt Alloys
ASTM E-1587	C, S, N, O in Refined Nickel
ASTM E-1941	C in Refractory and Reactive Metals and their Alloys
ASTM E-1409	N in Titanium & Titanium Alloys
ASTM E-1409	O in Titanium & Titanium Alloys
ASTM E-1569	O in Tantalum
ASTM E-1447	H in Titanium und Titanium Alloys
ASTM E-1915-97	C, S in Metal Bearing Ores and Related Materials (i.e. tailings, waste rock)
ASTM E-1806 replaced DIN EN ISO 14284	All Metals for C, H, N, O, S Sampling and Sample Prep. (Iron and Steel),
Manual for the Iron Works Laboratory, Part 2 Analysis of Metals Part 2 New Methods 2nd edition (1998) pages 235 – 239	Determination of the Hydrogen Content in Steel
DIN EN 3976 Standard, 2007-04	Aerospace – Titanium and Titanium Alloys – Test Methods – Chemical Analysis for the Determination of the Hydrogen Content; German and English publication EN 3976:2006
DIN EN ISO 3908	Insoluble C in ceramic materials



Task Force Carrier Gas Hot Extraction

Lieselotte Klein

Phone
+49 201-87421-24

E-mail
chemie@revierlabor.de

Headquarters:

Phone
+49 201-87421-0

Fax
+49 201-87421-19

E-mail
chemie@revierlabor.de

Internet
www.revierlabor.de

revierlabor
Chemische Laboratorien
für Industrie und Umwelt
GmbH

Westendhof 17
D-45143 Essen



edition: 10/2021

