



Laboratorio Elettrofisico
LE GROUP



CEMENTED CARBIDES

AMH-5800

AMH-5800 is the latest technology for measuring the magnetic properties of cemented carbides (WC in Co matrix) and semi-hard magnetic materials.

AMH - 5800 HARD METAL MAGNETOMETER

DESCRIPTION

The AMH-5800 provides accurate magnetic parameters to evaluate correlated metallurgical properties, such as: hardness, the presence of undesired phases, grain size. This revolutionary measuring equipment utilizes a technique that provides the fastest, repeatable and accurate measurements available on the market today.

The AMH-5800 meets the International Standards ASTM B886 e B887

Magnetic Properties of Cemented Carbides

Cemented Carbides are composite materials made with tungsten carbide (WC) mixed in a binder metal, mainly cobalt. The addition of Co allows the final alloy to have both an excellent hardness and a good toughness. The weight percentage of Co in the alloy is usually between 3 to 30%. The measurement of magnetic properties of Cemented Carbides gives useful information on the metallurgical process: the magnetic moment provides direct information for the quantity of Co not alloyed in non-magnetic phase. With the 5800 it is now possible to evaluate the quality of the metallurgical bond and the eventual presence of undesired phases. The coercivity H_{cj} data provides an indication of the grain size: the higher H_{cj} reading, the finer the grain size.

KEY BENEFITS

- Coercivity H_{cj}
- Magnetic moment M_{sat}
- %Co or any other magnetic material in the alloy
- Weight-specific saturation magnetization σ_{sat}
- Magnetic polarization J_{sat}

STANDARD CONFIGURATION

- Main cabinet equipped with fluxmeter, gaussmeter, DC power supply and polarity control
- Electromagnet
- Hall probe
- Inductive Sensor Assembly with sample holder
- Digital scale
- Latest PC processor class and LCD screen

AMH-5800 ACCESSORIES

MC MEASURING COIL



The measuring coil has an embedded sensor and a slot to insert a Hall probe. The samples are placed in the sample holder and then inserted into the measuring coil. The sample holder has the following dimensions:

MODEL	DIAMETER	HEIGHT
MC-1	37 mm	19 mm
MC-2	27 mm	13.6 mm

LP POLES



Two types of poles are available for AMH-5800: LP-100 (100 mm diameter) and LP-120 (120 mm).

STANDARD SAMPLE



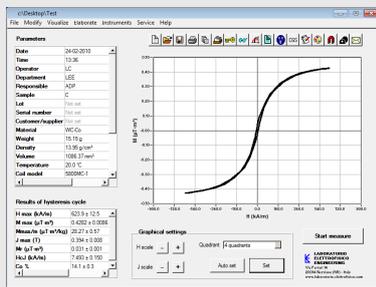
For the best performance a reference standard is available for periodic control and calibration.

MODEL	MATERIAL
HYS-Ni	Nickel

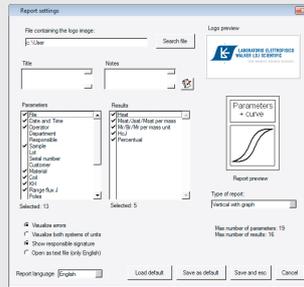
AMH-5800 SOFTWARE HELIUM 1/2

Our proprietary Helium software automatically manages measurements for the AMH-5800, including comparison of different curves and statistical analysis. The software ensures the measuring process is accurate and guide the operator to properly set the samples's parameters.

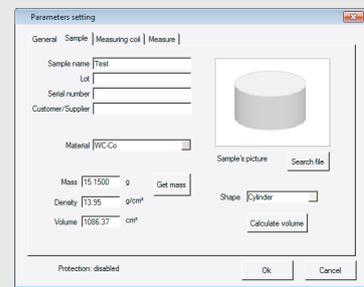
The Automatic Assistant notifies the operator and makes suggestion for the appropriate procedures or settings. The software also provides automatic generation of printing reports, database search feature and curve comparison.



Main Page with parameters set, results and graph



Customizable reports



Parameters Settings

KEY BENEFITS

TYPE OF MEASUREMENT

- All results in a single measure
- Complete cycle and fast cycle options

SETTING OF MEASURING PARAMETERS

- Manual or automatic operation
- Automatically weights the sample with an electronic scale connected to the AMH-5800
- The final list parameters are shown on the main page
- Automatic fluxmeter drift control

RESULTS

- Measure of hysteresis cycle
- Coercivity HcJ
- Weight specific saturation moment osat
- % of magnetic material in the alloy
- Magnetic units in SI and CGS

AMH - 5800 SOFTWARE HELIUM 2/2

KEY BENEFITS

DATA ELABORATION

- Curve comparison
 - Curve's interpolation
 - Automatic control of the Fluxmeter
 - Merging and comparison of different curves
-

PRINTING A REPORT

- Customization of reports and formats
 - Different languages are available for printing
 - Prints graphical report
 - Measured data can be opened and saved in Microsoft Word™ or other Word processing programs
-

DATA BASE AND FILE SEARCHING

- A complete Data Base of measurements is stored with custom search capabilities
 - Compatible with Microsoft Excel™
-

PROTECTION

- Password protection for restricting access according to selected parameters.
-

SET OF MEASURES

- Curve comparison provides the grouping of more curves in sets
-

TECHNICAL SPECIFICATIONS 1/2

GENERAL

MEASURABLE MATERIALS

Semi hard materials and Cemented Carbides

MEASURABLE QUANTITIES

Msat, Hc, Jsat, weight specific saturation moment σ_{sat} , %Co

MAIN CABINET

ACCURACY

Gaussmeter: 0.25% reading + 0.1 % range Probe: 0.5% linearity

RESOLUTION

0.1 Oe (300 Oe range), 1 Oe (3000 Oe range)

HC MEASUREMENT

ACCURACY

$\pm 2\%$ for Hc > 500 A/m

MS MEASUREMENT

ACCURACY

$\pm 2\%$ on reading

RESOLUTION

$10^{-4} \mu\text{Wbm}$ (10^{-10}Tm^3 , 10^{-1}emu)

SAMPLE SIZE

WITH COIL 5800 MC-1

$\varnothing 37 \text{ mm} \times \text{h } 19 \text{ mm}$ (1.45" dia x 0.75" H)

WITH COIL 5800 MC-2

$\varnothing 27 \text{ mm} \times \text{h } 13.6 \text{ mm}$ (1" dia x 0.6" H)

POLES DIAMETER

ACCURACY

100 or 120 mm (4" or 4.7")

MAX H FIELD

WITH LP-100 mm POLE

9700 Oe (776 kA/m)

WITH LP-120 mm POLE

7750 Oe (620 kA/m)

TEST TIME

1 minute (typical)

TECHNICAL SPECIFICATIONS 2/2

OPERATING TEMPERATURE RANGE

10° C to 35° C

COMMUNICATION PORT

RS-232/USB2

MAIN ELECTRICAL CABINET

POWER SUPPLY

220V, 50/50 Hz

DIMENSIONS

535 x 655 x 550 mm (21 x 26 x 22")

WEIGHT

58.5 kg (129.3 lb)

FLUXMETER

RANGES

(1,2,5,10,20, 50, 100) x 2000 μ Wb

RESOLUTION

from 1 μ Wb (range 1) to 100 μ Wb (range 100)

ACCURACY

\pm 0.5%

DRIFT

10 k Ω x range

COMMUNICATION

RS232/USB

MAGNETIC YOKE

MAX POLE DIAMETER

LEP/100-4S

120 mm (4.7")

MOVEMENT OPERATING

Manual

POLES SETTING

Micrometric

DIMENSIONS

330 x 410 x 491 mm (12.9 x 16.1 x 19.3")

WEIGHT

350 kg (approx.) 780 lb

PC AND SOFTWARE

OPERATIVE SYSTEM

Windows O.S.

SOFTWARE

Helium



Laboratorio Elettrofisico
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CONTACT US

www.laboratorio.elettrofisico.com

**EUROPE
HEADQUARTERS**

- Italy, Nerviano (Milan)
- +39 0331 589 785
- italy@elettrofisico.com

USA

- Michigan, Lake Orion
- +1 248 340 7040
- usa@elettrofisico.com

CHINA

- Shanghai, Chang Shou Lu
- +86 135 2439 6693
- china@elettrofisico.com

VIETNAM

- Hanoi, Anh Minh Building
- +84 964 174 291
- vietnam@elettrofisico.com