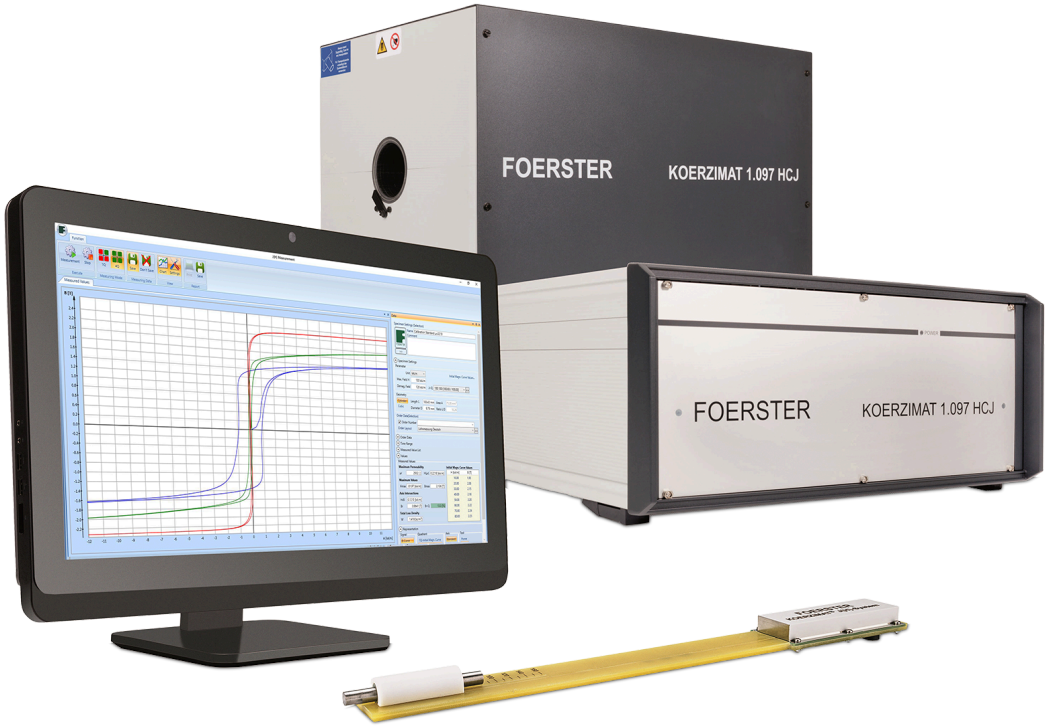
FOERSTER

KOERZIMAT PRODUCT FAMILY

Systems for measuring magnetic parameters



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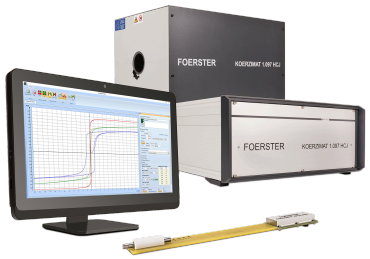


Material evaluation based on magnetic properties. With the KOERZIMAT 1.097 FOERSTER offers a measuring system for the precise, automatic and fast measurement of magnetic values of materials. Depending on the function package, the coercivity H_{CJ}, the weight-specific saturation polarization σ_s and the volume-specific saturation polarization J_s can be measured. The largely geometry-independent measurement allows in particular the testing of complex shaped samples.

With the KOERZIMAT J-H as an extension to the HCJ, the complete J-H hysteresis including the initial curve of soft magnetic steels can be determined in the open magnetic circuit. The hysteresis is determined by means of a J-sensor in a user-friendly measuring procedure on round bars or sheet samples.

YOUR ADVANTAGES AT A GLANCE

PC-controlled measuring system

Coercive field measurement: Determination of coercive field strength in accordance with IEC 60404-7

Hysteresis measurement: Determination of hysteresis J(H) for soft magnetic steel bars

Permeability determination: Determination of relative permeability μr(H) for soft magnetic steel bars

Magnetic saturation magnetization: Determination of magnetic saturation magnetization in accordance with IEC 60404-14

Magnetic phase: Determination of the magnetic phase in austenitic steels

Geometry independent measurement

Compact design: Light weight and compact design

Measurement control software: Application software to control single and serial measurements

Data management: Data base to store measuring data and process parameters

Customized reports

NORMS

ASTM B886: Describes the method for determining the saturation magnetism of sintered hard metals.

ASTM B887: Describes the method for determining the coercitivity of sintered hard metals.

EN IEC 60404-14: Describes the determination of the magnetic saturation dipole moment jS using moment coils in open magnetic circuits. The method described above is advantageous as it provides the option to perform measurements regardless of the geometry of the sample. It is not required to manufacture special measuring samples.

EN IEC 60404-7:2020: Describes the determination of the Coercitivity in the open magnetic circuit. Method B described above is advantageous as it provides the option to perform measurements regardless of the geometry of the sample. It is not required to manufacture special measuring samples.

KOERZIMAT 1.097 HCJ/J-H

System for the measurement of coercivity HCJ, hysteresis J(H) and relative permeability μr(H)

Material evaluation based on magnetic properties. Magnetic values such as coercivity H_{CJ} correlate with numerous important process parameters and material properties in the production of sintered hard metals and powder-metallurgical components. The KOERZIMAT 1.097 HCJ measuring system by FOERSTER facilitates the accurate, automatic, and fast measurement of the coercivity H_{CJ}. The largely geometry-free measurement is particularly suitable for testing samples with complex shapes. The extension module J-H measurement offers the possibility to determine the complete J-H Hysteresis on soft magnetic steel incl. the initial curve.

The applications of the KOERZIMAT include the control of the sintering level and particle size of hard metals and the quality control of metallic powders for the production of magnets and hard metals. The unit can also be used for monitoring the quality of the annealing and the mechanical stress state of soft-magnetic components (SMC) and for controlling electromechanical components in the electronics, automotive, computer, and clock sectors.

YOUR ADVANTAGES AT A GLANCE

Coercive field measurement: Determination of coercivity in accordance with IEC 60404-7

PC-controlled measuring system

Geometry-free measurement

Compact design: Lightweight, extremely compact design

Measurement control software: Software for controlling individual and series measurements

Data management: Database for collecting measurement data and parameter sets

Customer-specific reports

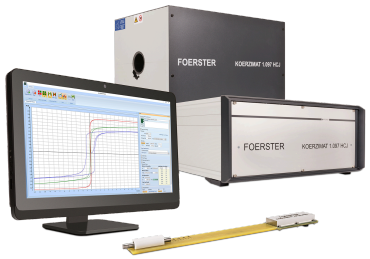
Remote port: Remote port for automation, data access, etc.

TECHNICAL INFORMATION

MEASUREMENT RANGE:	H_{CJ} 0 – 100 kA/m $\mu_r(H)$ 100 – 2500
MAGNETIZATION FIELD STRENGTH:	up to 450 kA/m
HOMOGENOUS FIELD AREA:	170 × 40 mm (L × D), coil 40 120 × 60 mm (L × D), coil 60
MEASUREMENT UNCERTAINTY:	1 % of measured value
SENSOR ELEMENTS:	Förster probes (fluxgates)
POWER SUPPLY:	100 – 240 VAC, 50/60 Hz

KOERZIMAT 1.097 J-H

System for the measurement of magnetic properties



Determination of the complete J-H hysteresis of soft magnetic materials. The KOERZIMAT J-H measuring system is an extension of the KOERZIMAT 1.097 HCJ. It determines the complete J-H hysteresis, including the initial magnetization curve of soft magnetic materials in an open magnetic circuit. The hysteresis is determined by means of a J-sensor and a simple, user-friendly measuring procedure.

Measurements can be taken on round bars (diameter 8-14 mm, length/diameter ≥10 mm) or sheets (width 10mm, thickness 1.6 / 2.00 mm, length <150 mm). Before measurement, the (bar) specimens need not be precisely ground or mechanically loaded.

YOUR ADVANTAGES AT A GLANCE

Precise hysteresis measurement: Fast and precise measurement of J(H)- / B(H)-DC hysteresis, incl. initial magnetization

Magnetization in open magnetic circuit

Magnetization field strength up to 100 kA/m

Wide measuring range: Measuring range 100 – 4,000 µr

Easy specimen mounting: Simple specimen fitting on the specimen slide

Shielded measurement technnology: Magnetically shielded measuring coil

Minimal sample preparation: Minimal effort for sample preparation

Sample-friendly testing: No mechanical stress on the samples

TECHNICAL INFORMATION

PERMISSIBLE AMBIENT TEMPERATURES:	0 to +40 °C
PROTECTION GRADE:	IP 32
MAGNETIZATION FIELD STRENGTHS:	100 kA/m
MEASURING TIME - COMPLETE HYSTERESIS INCL. INITIAL MAGNETIZATION:	approx. 2 min
MEASURING RANGE - RELATIVE PERMEABILITY:	100 - 4,000 µr

KOERZIMAT 1.097 MS

Systems for measuring the saturation polarization σs and Js

Material evaluation based on magnetic properties. Magnetic values such as weight-specific saturation polarization σs and volume-specific saturation polarization Js correlate with numerous important process parameters and material properties in the production of sintered hard metals and powder-metallurgical components.

The KOERZIMAT 1.097 measuring system by FOERSTER facilitates the accurate, automatic, and fast measurement of the weight-specific saturation polarization σs and volume-specific saturation polarization Js. The largely geometry-free measurement is particularly suitable for testing samples with complex shapes.

The KOERZIMAT 1.097 MS is used for applications such as controlling the sintering level during hard metal sintering processes and determining the tungsten content dissolved in cobalt as well as the free iron, cobalt, and nickel content in powder / hard metals. The saturation polarization Js in Tesla can also be determined in soft magnetic components of magnetic circuits.

YOUR ADVANTAGES AT A GLANCE

Saturation magnetization measurement: Determination of the saturation magnetism in accordance with IEC 60404-14

Magnetic phase analysis: Determination of the magnetic phase in austenitic steel

PC-controlled measuring system

Geometry-free measurement

Compact design: Lightweight, extremely compact design

Measurement control software: Software for controlling individual and series measurements

Data management: Database for collecting measurement data and parameter sets

Customer-specific reports

Remote port: Remote port for automation, data access, etc.

TECHNICAL INFORMATION

SENSITIVITY:	2*10 – 11 Vsm (MS 26 × 60) 1*10 – 10 Vsm (MS 31 × 69)
MAGNETIC FLUX DENSITY (IN GEOMETRIC CENTER):	≥ 1.00 T (MS 26 × 60) ≥ 1.05 T (MS 31 × 69)
MEASUREMENT UNCERTAINTY	0.5 % of measured value
SENSOR ELEMENT:	Helmholtz detection coils with fluxmeter
POWER SUPPLY:	100 – 240 VAC, 50/60 Hz
COMPRESSED-AIR SUPPLY:	6 bar (MS 31 × 69)

FOERSTER

foerstergroup.com

The FOERSTER Group is represented by subsidiaries and representatives in over 60 countries worldwide. You can find a complete overview on our website.

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