PHASCOPE® PAINT

Easy, Convenient, Fast and Non-destructive
Coating Thickness Measurements with
PHASCOPE PAINT
and Smart Phone or Tablet

PHASCOPE® PAINT

Description

The PHASCOPE PAINT is a probe in pen design. Measure non-destructive the coating thickness of el. non-conductive coating materials on steel or iron and on non-ferrous metals by using the PHASCOPE PAINT. Use the probe PHASCOPE PAINT for measurement capturing. Use the App PHASCOPE PAINT for viewing, analyzing and reporting data on your smart phone or tablet.

Properties

- Ideal for on-site applications due to the small size, light weight and robust and durable probe design
- Easy operation of the App PHASCOPE PAINT on smart phone or tablet
- Conductivity compensation for measurements on non-magnetic substrate materials (NF)
- Automatically recognition of base material
- Applicable for measurements both smooth and rough surfaces
- Two measuring modes available:

Measurement capture

- Single value mode: After each placing of the probe PHASCOPE PAINT on the surface the measurement is captured automatically and the measuring reading is displayed
- Continuous mode: Scanning surface area with the PHASCOPE PAINT probe with free running display. Measured readings are displayed continuously while scanning surface area. Manual measurement capture is possible.

Applications

	Steel, iron, cast iron base materials (Fe)	**Non-ferrous metal base materials (NF)**
Examples	• Paint, varnish or plastic coatings on steel, iron or cast iron (NC/Fe)	• Paint, varnish or plastic coatings on aluminium, copper or brass (NC/NF) • Anodized coatings on aluminium *The probe has a conductivity compensation feature so different electrical conductivities (particularly various aluminium alloys) have no effect on the coating thickness measurement.*

- Coating thickness measurement on both ferrous base material and on non-ferrous base material in one application

App PHASCOPE PAINT, Properties

Block size	Preset block size or manual setting of block separation
Tolerance limits	Adjustable per batch (application file)
Unit of measurement	Selectable between dimensions metric (mm, µm) or imperial (inch, mils)
Measuring Modes	• Single value mode: Automatic measurement capturing after placing the probe PHASCOPE PAINT on the surface and display of the measurement value in the App • Continuous mode: Measured readings are displayed continuously in the App PHASCOPE PAINT during scanning surface area by probe. Measurements must be captured manual.
Measurement capturing	Indicated by phone vibration (default setting) and at the probe by flash up a LED
Normalization	Adaption to the base material and the shape of specimen
Calibration	*Factory calibration* Each individual PHASCOPE PAINT probe is factory calibrated at several reference points with the greatest care to ensure the highest possible degree of trueness *Corrective calibration* Adaption to the base material, to the shape of specimen and to a thickness value using a calibration foil.
Evaluation	Display of mean value, standard deviation, min. value, max. value, number of measurements per block, histogram
Language	English, German, French
Data memory	Data volume depending on the memory capacity of the used smart phone
System requirements for smart phone or tablet	• Operating system Android 5.0 or higher or operating system IOS 9.0 or higher • Bluetooth® 4.0 (Low Energie, BLE 4.0) support
App download	• via Google Play Store and Apple App Store

Probe PHASCOPE PAINT, Features

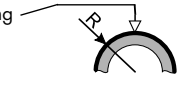
Applications	**Steel, iron, cast iron base materials (Fe)**	**Non-ferrous metal base materials (NF)**
	NC/Fe or NF/Fe	NC/NF
Measurement ranges	**Steel, iron, cast iron base materials (Fe)**	**Non-ferrous metal base materials (NF)**
	0 … 2500 µm / *0 … 98 mils*	0 … 2500 µm / *0 … 98 mils*
Trueness based on Fischer factory calibration standards	**Steel, iron, cast iron base materials (Fe)** 0 … 250 µm: ≤ 7.5 µm 250 … 1000 µm: ≤ 3 % of nominal value 1000 … 2500 µm: ≤ 4 % of nominal value *0 … 9.84 mils: ≤ 0.295 mils* *9.84 … 39.37 mils: ≤ 3 % of nominal value* *39.97 … 98.43 mils: ≤ 4 % of nominal value*	**Non-ferrous metal base materials (NF)** 0 … 100 µm: ≤ 3 µm 100 … 1000 µm: ≤ 3 % of nominal value 1000 … 2500 µm: ≤ 4 % of nominal value *0 … 3.94 mils: ≤ 0.12 mils* *3.94 … 39.37 mils: ≤ 2 % of nominal value* *39.97 … 98.43 mils: ≤ 4 % of nominal value*
Repeatability precision based on Fischer factory calibration standards, 5 single readings per standard	**Steel, iron, cast iron base materials (Fe)** 0 … 400 µm: ≤ 2 µm 400 … 2500 µm: ≤ 0.5 % of reading *0 … 15.7 mils: ≤ 0.08 mils* *15.7 … 98.43 mils: ≤ 0.5 % of reading*	**Non-ferrous metal base materials (NF)** 0 … 200 µm: ≤ 1 µm 200 … 2500 µm: ≤ 0.5 % of reading *0 … 7.87 mils: ≤ 0.039 mils* *7.87 … 98.43 mils: ≤ 0.5 % of reading*
Influence	**Steel, iron, cast iron base materials (Fe)**	**Non-ferrous metal base materials (NF)**

The following values are valid for a coating thickness with a nominal value of 250 µm (9.84 mils). The quantity of influences are stated with the expanded measurement uncertainty U with the expanded factor of k = 2 (defines an interval with the confidence level of 95.45 %) - according to ISO/IEC Guide 98-3:2008-09 "Guide to the expression of uncertainty in measurement".

Curvature (R), measurement error from nominal value with reference to master calibration on flat surface

No measurement error within the trueness as of R = 45 mm ± 5 mm / *R = 1.77 " ± 0.2 "*	No measurement error within the trueness as of R = 136 mm ± 16 mm / *R = 5.35 " ± 0.63 "*
Measurement error of 10 % for R < 40 mm / *R < 1.57 "*	Measurement error of 10 % for R < 40 mm / *R < 1.57 "*
Probe requires a minimum of R = 40 mm / *R = 1.57 "*	Probe requires a minimum of R = 40 mm / *R = 1.57 "*

Curvature (R), measurement error from nominal value with reference to master calibration on flat surface

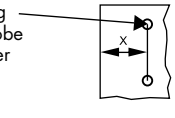


No measurement error within the trueness as of R = 41 mm ± 6 mm / *R = 1.61 " ± 0.24 "*	No measurement error within the trueness as of R = 115 mm ± 3 mm / *R = 4.53 " ± 0.12 "*
Measurement error of 10 % for R = 11 mm ± 1.5 mm / *R = 0.43 " ± 0.06 "*	Measurement error of 10 % for R = 23 mm ± 0.5 mm / *R = 0.91 " ± 0.02 "*
Probe requires a minimum of R = 2 mm / *R = 0.08 "* (support stand necessary)	Probe requires a minimum of R = 2 mm / *R = 0.08 "* (support stand necessary)

Edge distance (R), specification from probe tip center, measurement error from nominal value

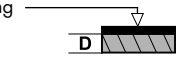
No measurement error within the trueness as of R = 5.1 mm ± 0.6 mm/*R = 0.20 " ± 0.024 "* (support stand necessary)	No measurement error within the trueness as of R = 3.8 mm ± 0.3 mm/*R = 0.15 " ± 0.012 "* (support stand necessary)
Measurement error of 10 % for R = 3.6 mm ± 0.13 mm / *R = 0.14 " ± 0.05 "* (support stand necessary)	Measurement error of 10 % for R = 3.2 mm ± 0.2 mm/*R = 0.13 " ± 0.008 "* (support stand necessary)

Edge distance (X), specification from probe tip center, measurement error from nominal value



No measurement error within the trueness for X ≥ 2 mm / *X ≥ 0.08 "*	No measurement error within the trueness as of X ≥ 2 mm / *X ≥ 0.08 "*
Measurement error ≥ 10 % for X ≤ 1 mm / *X ≤ 0.04"*	Measurement error of 10 % for X ≤ 1 mm / *X ≤ 0.04"*

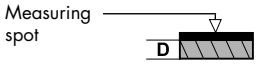
Base material thickness (D), measurement error from nominal value

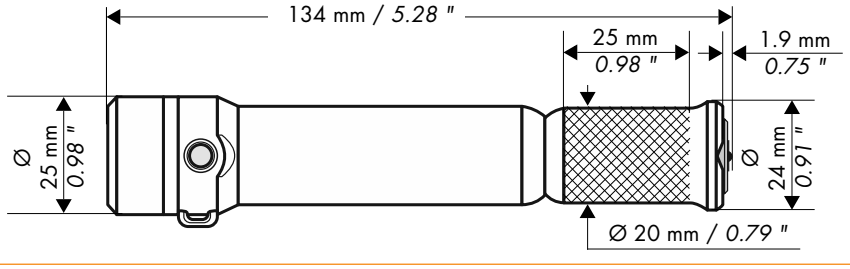


Steel, iron, cast iron base materials (Fe)	
No measurement error within the trueness as of D = 0.14 mm ± 0.04 mm / *D = 5.5 mils ± 1.57 mils*	No measurement error within the trueness as of D = 1.6 mm ± 0.2 mm / *D = 63 mils ± 7.87 mils*

Probe PHASCOPE PAINT, Features

Base material thickness (D), measurement error from nominal value



	Steel, iron, cast iron base materials (Fe) Measurement error of 10 % for D = 0.1 mm ± 0.02 mm / *D = 3.94 mils ± 0.79 mils*	**Aluminium base material** Measurement error of 10 % for D = 0.64 mm ± 0.02 mm / *D = 25.2 mils ± 0.79 mils*
Base material	**Base material: In industry common used Fe sheets** Influence of the permeability of base material (Fe) for a coting thickness of 250 µm *(9.84 mils)*: ≤ 7 %	**Non-ferrous metal base materials (NF)** Influence of the el. conductivity of base material (NF) in the range from 15 to 100 % IACS: Measurement error ≤ 5 %, valid for coating thicknesses ³ 250 µm (9.84 mils)
Min. lift distance	25 mm (*0.98 "*), minimum distance between probe tip and surface after measurement capture	
Operation temperature	0 … +45 °C (*+32 … +113 °F*)	
Storage temperature	-20 … +80 °C (*-4 … +176 °F*)	
Humidity at 25 °C (77 °F)	5 % … 95 %	
Specimen surface temp.	max. +40 °C (*max. +104 °F*)	
Type of protection	Probe tip side: IP65, dust-tight and water repellant and resistant USB port side: IP54, dust- and splash-water proof	
Probe design	Single tip axial probe with spring-loaded measuring system	
Measuring method	ISO/DIS 21968:2018 Non-magnetic metallic coatings on metallic and non-metallic basis materials - Measurement of coating thickness - Phase-sensitive eddy-current method	
Probe tip	not replaceable; Material: Hard metal; Radius: 2 mm / *78.7 mils*	
Power supply	Rechargeable Battery, operating time 4.5 h in continuous operation	
USB charging port	• Charging inside rechargeable battery via micro USB socket, loading time about 3 h • Charging rechargeable battery via PC or by commercial USB charger (Output: 5 V_{DC} ±5 %)	
Bluetooth® Interface	Bluetooth® 4.0 (Low Energy) for data transfer to smart phone or tablet	
Weight Probe	77 g / 2.72 oz.	
Illumination displays	State of the Bluetooth connection; State of charge of the rechargeable battery and indication if reading within (green) or outside (red) the limits	
Dimensions Area for holding/fixing the probe Contact force: 1.6 N		
Ordering data	605-873	
Scope of delivery	Probe PHASCOPE PAINT, App PHASCOPE PAINT for download, calibration set 605-879 with 2 foils (605-337 (ca. 75 µm *(2.95 mils)*) and 601-485 (ca. 250 µm *(9.84 mils)*)) and also 2 metal plates for instrument check labeled with ISO/FE and ISO/NF, operator's manual (download), USB cable for charging battery, carrying strap, etui	
Option	Calibration foils: Various foil thickness are available up to 2500 µm / *98 mils*	

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