FISCHERSCOPE® ST200

Automated Scratch Testing System for Analyzing the Adhesion and Cohesion Strength of Coatings

Description

The FISCHERSCOPE® ST200 is a progressive load scratch tester for analyzing the adhesion and cohesion strength of coatings according to ASTM C1624 and ISO 20502. The instrument is perfectly suitable for measurement in development, quality assurance, incoming inspection and process control.

Typical fields of application

- Hard material coatings (PVD, CVD)
- Automotive engine and drive train components
- Electroplated coatings (protective, decorative, functional)
- Materials used specifically in medical technology applications
- Electronic components
- Characterization of hard anodic coatings

Design

Features

- Various measurement modes: constant load, progressive load, incremental load
- Analyzing methods: optical microscopy, friction force measurement, acoustic emission measurement, measurement of the remaining indentation depth
- Motor driven XY-stage and Z-axis
- Measurements on curved surfaces with motion feed-back control
- Automatic image scan of the whole scratch trace
- Diamond styluses of various radiuses
- Optical filters for contrast improvement
- Integrated electronics, no external control unit necessary
- Two microscope objectives, optional: one additional objective
- Easy-to-use software WIN-SCU based on Windows®
- Data and image capturing over the whole scratch length
- Data storage in ASCII format
- Easy creation of test reports

General Specification

Intended use	Scratch tester instrument for characterizing hard coated materials, with a typical coating thickness exceeding 1 µm
Design	Bench top unit with PC, measuring head, positioning device made of natural hard stone, programmable XY-stage, motorised z-axis

Measuring Head

Normal load range	500 mN to 200 N
Load resolution	3.3 µN
Minimum contact load	0.5 N

Friction measurement module

Maximum load	500 mN to 200 N
Resolution	3.3 µN

Depth sensor

Depth range	1600 µm
Depth resolution	0.01 nm

Acoustic emission sensor

Resonance frequency	100 kHz ±20 %	Maximum amplification	1,000,000 x
Dynamic range	73 dB ± 3 dB		

Microscope-/ Camera magnification

Objective	5x, 20x
Video picture (field of vision)	2688 µm x 2150 µm, 672 µm x 538 µm
Camera	Color 1280 x 1024 pixels
Light source	LED

Sample Stage

Design	Programmable XY-stage, motorized z-axis
Stage dimensions	100 mm x 100 mm
Stage speed (Scratch speed)	0.4 – 600 mm/min
Maximum travel	45 mm x 190 mm
Maximum specimen height	100 mm

Indenters

Design	Standard: Spherical diamond-tipped cone with 120° angle (R = 0.05 mm; 0.1 mm; 0.2 mm) others on request

Electrical Data

Main voltage, mains frequency	100 to 240 V ±10 % 47 – 63 Hz
Power consumption	max. 130 W (without evaluation PC)
Protection class	IP20

Dimensions

External dimensions (Height x width x depth)	630 mm x 650 mm x 610 mm
Weight	approx. 110 kg (242 lb)

Environmental Conditions

Operating temperature	Climatic chamber class 3: 15 °C – 40 °C / 59 °F – 104 °F
Storage/Transport temperature	Climatic chamber class 2: -20 °C – 55 °C / -4 °F – 131 °F
Admissible air humidity	≤ 80 %, non-condensing

Evaluation Unit

Software	WIN-SCU
Operating system	Windows® 10/7

Standards

CE approval	EN 55011, EN 61326, EN 61010
Standards	ASTM C1624, ISO 20502, DIN EN 1071-3

Order

FISCHERSCOPE® ST200	605-812

Options

ST Objective (x50)	605-956	
ST STYLUS ROCKWELL	605-864	R = 200 µm DIA ST200

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