

FISCHERSCOPE® ST 200
Automated scratch tester



Testing adhesion properties

In the area of surface technology, coatings have long been high-tech products. Especially with coatings meant to protect such parts as cutting tools from wear, how well the coating adheres to the substrate is decisive for its reliability and service life.

The scratch test is an established method for simulating in a laboratory setting the stresses that a coating undergoes in everyday use. Particularly suitable for R&D, quality assurance and incoming goods inspection is the FISCHERSCOPE® ST200 – Fischer's automated scratch test system. It tests the adhesive and cohesive strength of thin coatings that are at least 1 µm thick.

The principle behind the scratch test

During the scratch test, a diamond-tip indenter is drawn across the sample at constant speed. The resulting scratch provides information about how the coating will behave in real life. But since this is a comparative procedure, the test conditions must be precisely defined. The measurement results depend on, among other things, the shape of the indenter, the length of the scratch and, of course, on the test force.



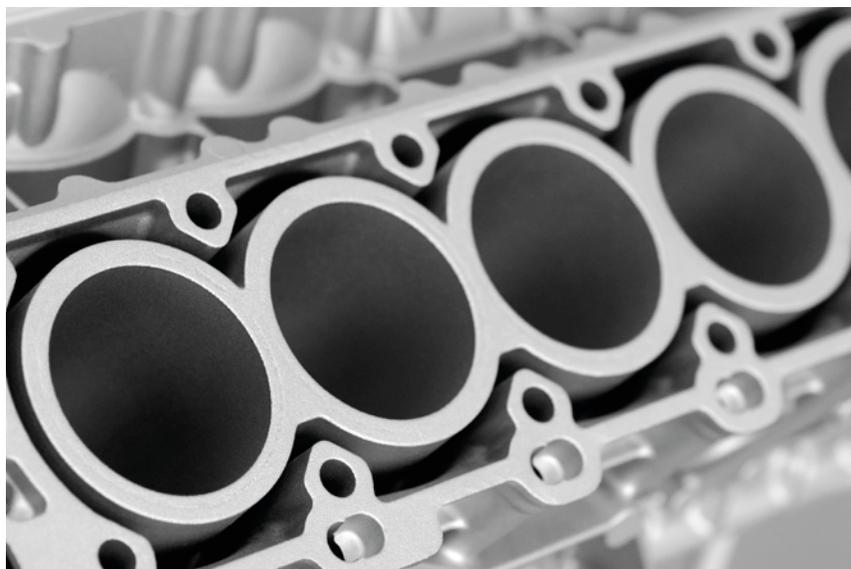
Areas of application

- Cutting tools
- Engine parts
- Dental prostheses
- Artificial joints
- Decorative coatings
- Car paint

Here, not only do the initial and end forces play a role, but also the load increase over time. Either the force exerted by the indenter stays constant, or it is increased – continuously or in steps. As the penetration depth grows, so does the material stress, until finally a certain force is reached, the critical load L_C , when the material fails: cracks form and the coating starts to chip off.

Testing hard coatings

In order to handle diverse coatings, the ST200 offers a wide range of possible test loads: from 0.5 to 200N. That makes it ideal for measurements on hard coatings while still allowing for the testing of thicker paint layers.





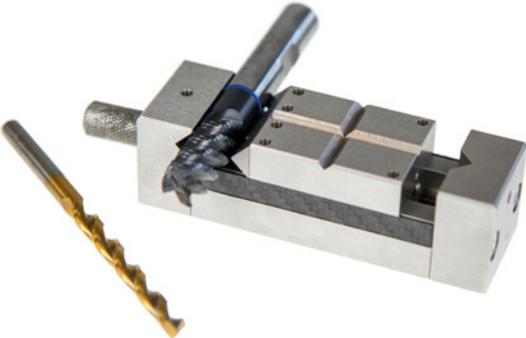
Convenient operation and evaluation

The FISCHERSCOPE ST 200 has a powerful microscope for automatically detecting and precisely evaluating the course of the scratch. In addition, the tangential force, the penetration depth and the acoustic emissions are measured. The intuitive WinSCU® software combines all three parameters in just one evaluation in real time: the critical loads are thus defined in just a few mouse clicks.

The FISCHERSCOPE ST 200 is designed for easy operation. And with just one USB cable, you can easily connect the scratch tester to any computer. The programmable measuring stage also allows for automated measurements. The samples require little to no preparation. As the measurement head can be moved vertically over a long distance it is possible to analyze parts as tall as 8 cm.

Features

- Test force between 0.5 and 200 N
- 3 measurement modes in which the test force stays constant or increases linearly or incrementally
- Standard issue comes with a Rockwell indenter (radius 200 µm); other indenters available
- Robust construction with stone plate
- Complies with ISO 20502, DIN EN 1071-3 and ASTM C1624 standards



Using special holders, it is possible to reliably measure even samples with complex shapes

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