

How to test coating hardness using the Elcometer 3092 Sclerometer Hardness Tester

Knowing how well a coating has dried (or cured) is important, as it helps in determining whether the coating is fit for purpose, and if further coating inspections such as adhesion or pinhole testing may be performed. This is why we test coating hardness, as it helps to assess the degree of cure in coatings. Typically, the harder the coating, the more complete the cure.

A quick and effective way to test coating hardness is the Scratch method, which is completed using a sclerometer, also known as a hardness pen or durotest stylus. So, how does it work?

A sclerometer, such as the Elcometer 3092, measures the hardness of a coating by moving a hardened tip over the surface at a predetermined force. The coating is then visually examined for damage. The harder the coating, the greater the force required to scratch it.

To begin testing, you need to select a spring, and set the tip force. There are four springs of varying ranges available for use with the Elcometer 3092, and the stiffness of each is identified by their colour. Typically, you should start testing with the softest spring.

To insert the spring into the sclerometer, first loosen the locking screw on the side, remove the end cap, and slide the collar off. If there is already a spring inside the sclerometer, remove it and store in the case provided, and then insert the appropriate spring in its place. Refit the collar, ensuring the bevelled edge goes on first, replace the end cap, and then locate the scale on the sclerometer which matches the colour of your chosen spring.

Simply slide the collar to the required setting on the scale, and tighten the locking screw to set the tip force - typically you start testing with a smaller force, and work upwards.

Remember, the scratch method is a destructive test and will damage the coating, so we recommend using test panels when testing using this method.

Place the sclerometer onto the coating. It is important that only the tip comes into contact with the surface during the test, as you don't want the gauge case scratching the surface giving you an inaccurate result. That's why you should ensure the sclerometer is perpendicular to the surface, and you should only apply enough downward force to compress the spring by approximately 2mm.

Move the gauge across the surface to produce a linear scratch approximately 10mm (0.4") long. Then remove the gauge, and examine the coating.

If the surface is unmarked, use the collar on the Elcometer 3092 to increase the spring loading, and repeat the test until surface marking is detected. If necessary, you may have to fit the next stiffer springs to achieve this.

The Elcometer 3092 is supplied with a Tungsten Carbide tip as standard, however an ISO type 90° Diamond Point Cone tip is available, allowing you to obtain results equivalent to EN 438-2, and ISO 4586-2.

Please note, while this video is a guide on how to use a sclerometer, we recommend you always refer to the test method or Standard you are working to directly, before testing.

For more information on Elcometer's range of Hardness and Scratch testers, simply visit Elcometer.com, or click on one of the links on screen to watch one of our adhesion or pinhole testing videos.

And please, don't forget to subscribe to the Elcometer Channel to be notified of any new videos.