

New Application and Measurement Fixture for the Coverage Checker™



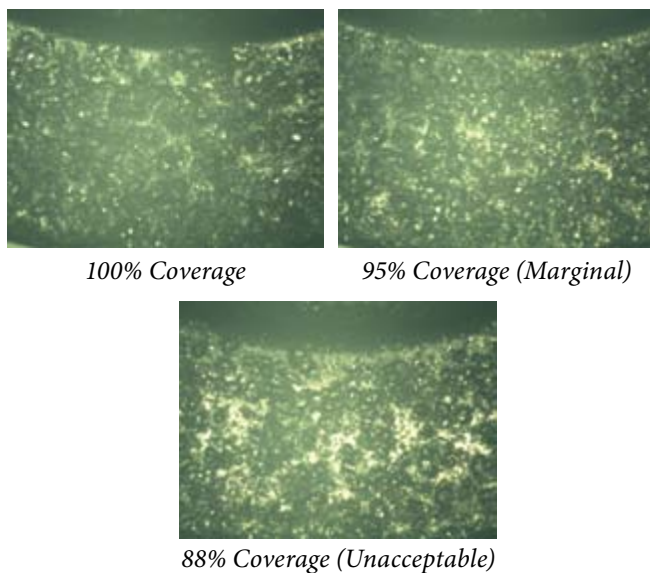
TOYO SEIKO is introducing two new applications and a new fixture for measuring small samples for their handheld coverage measurement device, the Coverage Checker™.

The New Applications

1.1 Surface texture before welding

Automobile suppliers are continually required to decrease costs. For example, due to its high costs, the cutting process is destined to be replaced with press or cold forging. If welding is done after the press process, this provides an opportunity to use shot peening, since welding quality can be improved by putting shot-peened dents on the surface of the part.

When shot peening (or shot blasting) is applied to this process, its quality verification can only be done by visual inspection. Therefore, Coverage Checker™ is an ideal tool to inspect the coverage. It will help prevent poor welds and also enable the shot peener to use the minimum amount of shot to obtain the desired results. Coverage has a strong correlation with welding quality, and therefore, we can monitor the welding quality with the Coverage Checker™. See Fig.1.



100% Coverage

95% Coverage (Marginal)

88% Coverage (Unacceptable)

Fig.1 Images captured by Coverage Checker™

1.2 Shot blasting before powder coating

Shot blasting is used to remove oxidized scale after heat treatment and also to make a roughened surface for powder

coating. Shot blasting has a positive affect on coating quality, but visual inspection was the only way to evaluate its results before the development of the Coverage Checker™.

Now Coverage Checker™ makes it possible to verify the quality of shot blasting. Since the surface to be measured will be covered with black oxidized scale after heat treatment, the blasted area is captured as white area in the Coverage Checker™ image. Please see Fig 2 for an image captured by Coverage Checker™. It is able to judge the subtle difference easily by quantifying the pixel count of white area.



Acceptable

Unacceptable



Fig.2 Quantifying blasted area by Coverage Checker™

New Measurement System

2.1 Fixture for measuring

Since the purpose of the Coverage Checker™ is to measure coverage onsite, it is designed to press the attachment nozzle against the object to be measured. However, it was difficult to use when the object was very small, so Toyo Seiko developed a fixture to measure small samples. (See Fig.3 on page 36.)

The sample and Coverage Checker™ are not touching each other in the fixture. Before this new system, we had to adjust the angle and distance of the sample with a nozzle. Now, if you are measuring parts with the same dimension and shape, you only need to set the adjust handle in advance and then



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a subsequent adjustment isn't required. The LED light source provides enough light to shut out the outside light. The fixture enables a fast and stable measurement.

2.2 Checking Kit

A coverage sample piece (100~42%) made of an aluminum Almen strip is attached to each Coverage Checker™ as a standard sample. This standard sample is for checking if Coverage Checker™ shows the correct result for this sample every time. However, since there is coverage distribution depending on sample's measuring point, it might not always be the same result, and its reliability was not enough for a daily check.

We then developed a standard sample fixture (Fig.4). Using this fixture, you can fix the measuring point of the standard sample and it guarantees that you can check the coverage by the same measuring point every time. This fixture improves the reliability of Coverage Checker™. ●

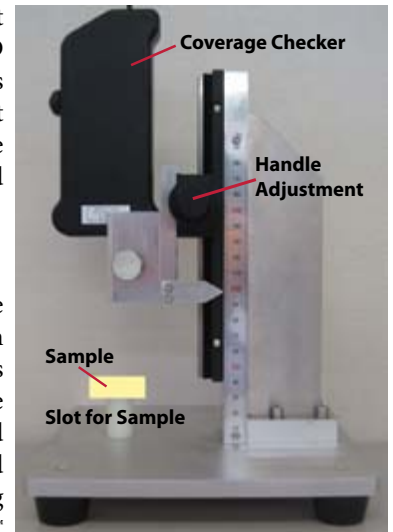


Fig 3 Measurement system for small samples

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Fixture



Almen strip applied

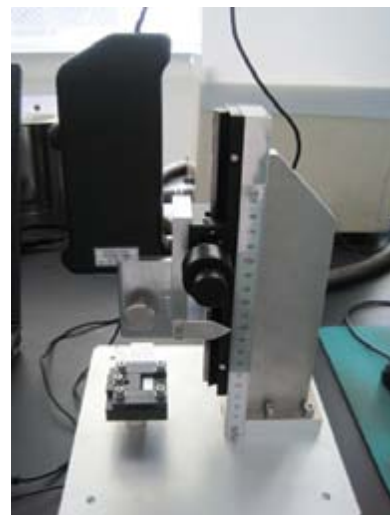


Fig.4 Standard sample fixture