

identifying the threshold value for DCB specimens

This information will guide you through the process of identifying the threshold value that is required for a particular type of specimen being tested.

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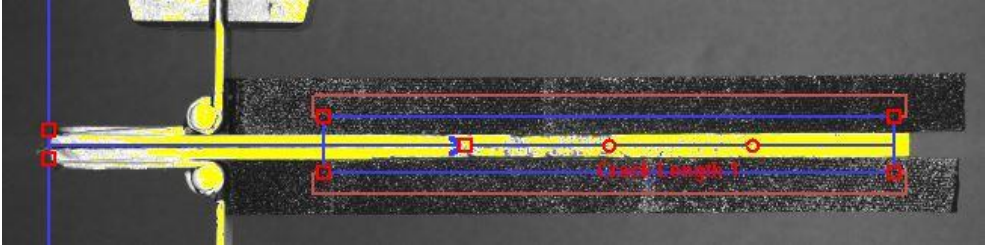
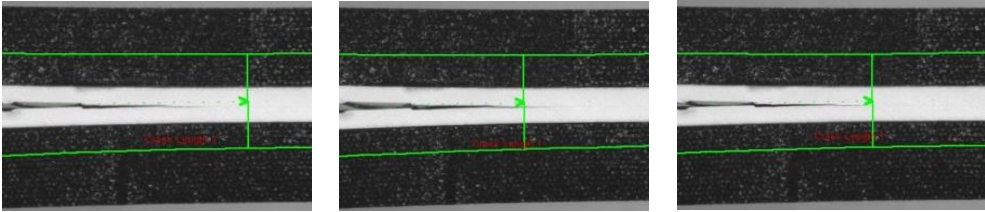
Background

The Crack Length Gauge threshold value defines the amount a crack must open before the gauge considers it as open. The default value works well in many situations but if you find that the gauge is over or under-reading the crack length then this value may need adjusting. The following steps will guide you through the process of identifying the threshold value that is required for a particular type of specimen being tested. This process only needs to be conducted once per type and material; so usually, once the correct threshold has been ascertained for that type of specimen, the same threshold can be used every time a specimen of that type is tested.

Setting the threshold value enables consistency with any previous method of determining crack length (usually visual inspection). With this in mind, the sample preparation for this validation step needs to enable crack tip identification visually. This is usually done by applying a thin white paint (or correction fluid) to the area of the specimen that the crack is likely to grow along, so that when re-examined in the video, the crack length can be seen both visually and with the crack length gauge. The threshold is then adjusted until the visible tip of the crack corresponds with the position of the crack tip as measured by the crack gauge.

Identifying the threshold value

1.1	Prepare the test specimen for visual identification
1.2	Prepare the test specimen for measurement with the Crack Length Gauge tool (refer to Application Guide AG1033 for specimen marking and mounting)
1.3	Ensure that you have calibrated the coordinate plane in Video Gauge™ (the threshold value is specified in real units)
1.4	Record a test using Video Gauge™ (there is no need to have a Crack Length Gauge at this stage)
1.5	Open it in Post Process mode once the test is completed and saved
1.6	Add a Crack Length Gauge to the plane as per Application Guide AG1033

1.7	<p>Position and resize the Crack Length Gauge to cover the sample appropriately and position the Crack Start Offset and Pre-crack handles as shown in Figure 1.</p>  <p><i>Figure 1: Crack Length Gauge set up on DCB specimen</i></p>
1.8	<p>Process the test in Post Process mode</p>
1.9	<p>Review the test, following the crack tip procession visually (zoom in using Video Gauge™ and scroll the video window as the test progresses). If the crack tip indication line is ahead of the crack tip position throughout the test, the threshold value needs to be increased. Conversely, if the indication line is behind the tip position, the threshold value needs to be lowered, as per Figure 2</p>  <p><i>Figure 2: Threshold too low (left, too high (centre) & correct (right)</i></p>
1.10	<p>Repeat step 1.9 until the crack tip progression reported by Video Gauge™ closely aligns with that identified by visual inspection. For each threshold change the test will need to be repeated</p>
1.11	<p>Once aligned, record the threshold value used (usually best done using a Video Gauge™ template file)</p>
1.12	<p>Use this recorded threshold value for all future tests on similar specimen types</p>