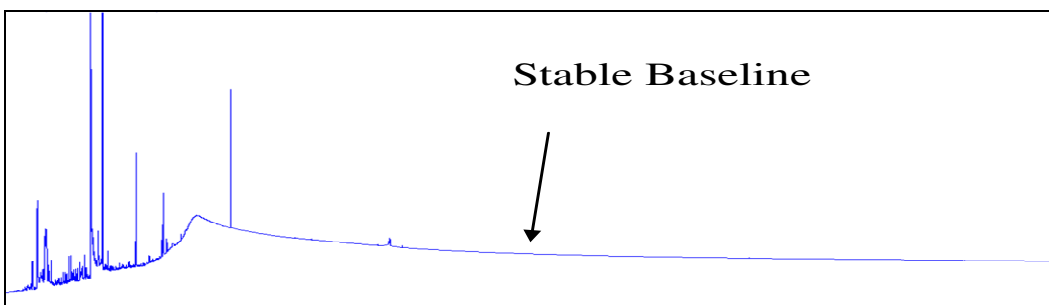


KORY'S TECK-TIPS

How Long Should A GC Column Be Conditioned?

We generally state that a column has been conditioned when a stable baseline has been reached. When is my baseline stable? What should the bleed level be at a stable baseline?

There are a couple of ways to reach a 'stable baseline'. The value that would numerically answer the question is located on the QC document. Each QC document has a bleed level on it from when the column was tested at QC. This value is listed just above the test chromatogram and is on the right hand side of the page. This value is taken by subtracting the baseline reading while the oven is cool from the signal while at high temperature. This value should be close to what the customer would get if they did the same calculation after conditioning the column. Note - it is necessary to subtract the baseline to compensate for different background values from different detectors.



Chromatogram resulting from column conditioning. The peaks at the front are results of contamination that was introduced during the installation process and is expected.

There is another way to empirically determine when a stable baseline is achieved. When a column is initially conditioned (chromatogram shown above), the bleed level will rise and then reach a maximum just after the conditioning temperature is reached. The bleed level should then start to decline. The signal will continue to decline but at a slower rate until the rate of decline is so small that it is no longer valuable to continue conditioning the column. The column would have then reached a 'stable baseline' at that point.

To phrase differently, this occurs when the drop in baseline is negligible when compared to the expected signal intensity of an analytical peak. At that point, the baseline has reached a point of stability suitable for the analysis. For example, if the peak intensity is around 60 pA, a decrease in baseline of 0.1 pA will be small relative to the peak so the column can be considered stable for that analysis. The baseline may continue to decrease over many injections, but would not be noticeable in any one injection. This may be another way to look for a 'stable baseline' that may save time instead of waiting to achieve the value listed on the QC document.

There is one other thing to look for when collecting a chromatogram of a column that is conditioning. As shown above, the signal should decrease after the maximum temperature has been reached. If the signal continues to climb minutes after the maximum temperature is reached then something is damaging the column. The temperature should be reduced **immediately** to avoid further damage to the column. The most common cause of this type of damage would be a leak or some other source of oxygen that is reacting with the phase at high temperature. Once the leak or source of damage is fixed, the column can continue the conditioning process but will need to be conditioned longer to remove any damaged phase.

Key words: Column conditioning, baking, baseline, bleed

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