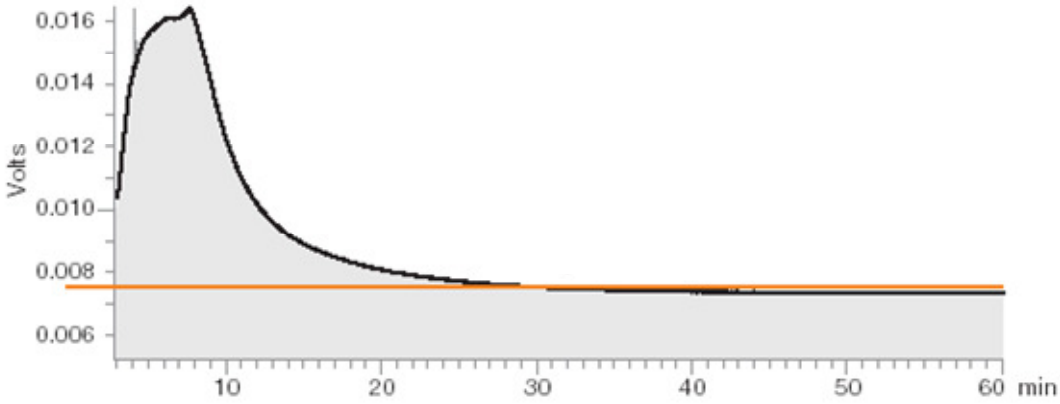
KORY'S TECK-TIPS

How long should you condition a GC column?



The actual time that a column should be conditioned will depend on the stationary phase and column dimensions including column length, column diameter, and film thickness. Columns with greater amounts of stationary phase will take longer to condition. Since the recommended conditioning time will vary for each column will depending on column dimensions, it is best to determine when a column is conditioned empirically.

A GC column is considered conditioned when a stable baseline is achieved. When a column is initially conditioned, the signal will rise and then reach a maximum just after the maximum conditioning temperature is reached. The signal would then decline but at a decreasingly slower rate until the decline over time is small relative to the expected peak intensities. The column would have then reached a 'stable baseline' at that point.

The resulting signal intensity will also be dependent on the phase and column dimensions. Again, columns with greater volumes of stationary phase (longer, wider ID, or thicker film columns) are expected to have greater signal at elevated temperatures.

When manufactured, each Zebron column undergoes rigorous testing to ensure that each column gives the lowest possible signals at elevated temperatures. The value obtained from this test is listed just above the test chromatogram on the QC document that accompanies each individual column. This value would be what the customer should expect if they did the same calculation after conditioning that column.

This value is obtained by subtracting the baseline reading while the oven is cool from the signal at elevated temperature after column conditioning. This subtracted value is therefore only the result of the signal from the column and doesn't include background signal from the instrument.

Caution should be taken when initially conditioning columns. As shown above, the signal should decrease after the maximum temperature has been reached. If the signal continues to climb after the maximum temperature is reached then something is continuously damaging the column. The temperature should be reduced **immediately** to avoid further damage to the column. The most common cause of damage would be a leak or some source of oxygen that is damaging 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 extended conditioning to remove any additionally damaged phase.

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