
Preparation and calibration of QIAxcel® Gel Cartridges

This document describes how to examine the condition of QIAxcel Gel Cartridges before performing calibration. Problems with calibration are most likely to occur with older cartridges, where capillary tips may become clogged with dried gel. This document outlines the steps to follow if this occurs, and then how to recalibrate the cartridge.

Procedure overview

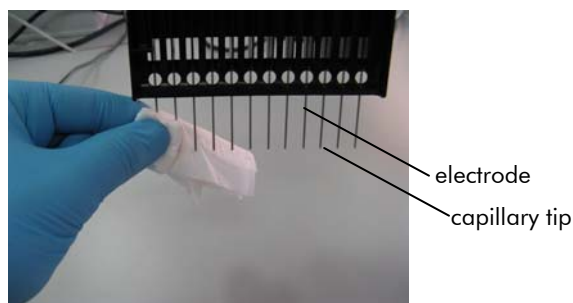
This section provides a summary of the steps required to prepare and calibrate QIAxcel gel cartridges. More detailed instructions are provided in subsequent sections of this document.

1. **Prepare the cartridge (see page 1).**
2. **Perform the standard gel-droplet test (see page 2).**
3. **Perform the gel droplet test with hot water (see page 3).**
4. **Perform the CAL2.mtd or CLA-FA.mtd method (see page 4).**
5. **Perform intensity calibration (see page 5).**
6. **Perform recalibration (see page 6).**

Preparation of QIAxcel Gel Cartridges

1. **Remove the QIAxcel gel cartridge from its packaging.**
2. **Remove the seal tape (3M tape) from the purge hole.**

The purge hole is located at the back of the cartridge and aligns with the purge port inside the QIAxcel instrument. The seal tape can be saved for later use.
3. **Use a wet tissue to wipe off any gel that is adhered to the purge port.**
4. **Use a wet tissue to remove any debris on the cartridge. In particular, remove soft gel from the electrode surfaces and partially dried gel from the 12 capillary tips.**

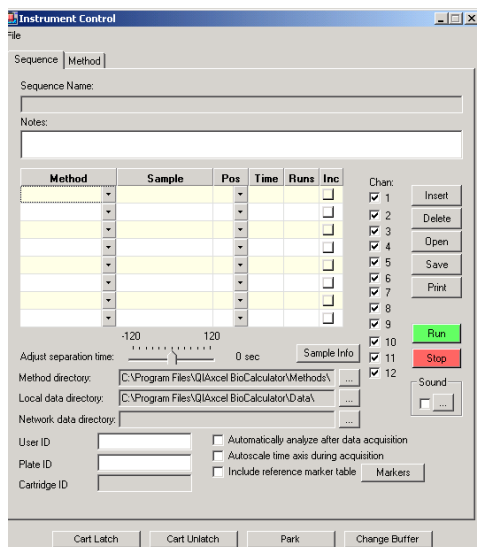


5. **Repeat step 4 twice.**
6. **Proceed with the standard gel-droplet test (see page 2).**

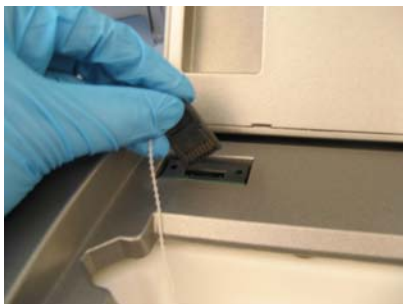
Standard gel-droplet test

Note: The QIAxcel Gel Cartridge must be prepared before the standard gel-droplet test is performed.

1. Open the BioCalculator Software and click “Change Buffer”.
2. Place a tissue on the buffer tray holder and click “Park” in the “Instrument Control” window.



3. Place the cartridge into the QIAxcel instrument.
4. Install the cartridge and the smart key as described in “Installing a QIAxcel Gel Cartridge and smart key” in the *QIAxcel User Manual*.



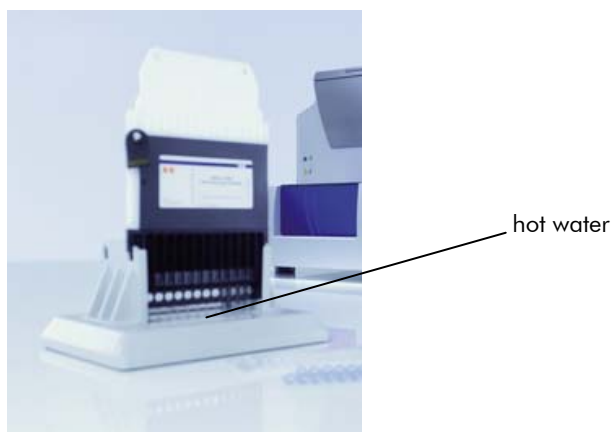
5. Ensure that the cartridge ID is displayed in the “Instrument Control” window.
6. Click “Cart Latch”.

7. Open "File/Settings" and click "Purge".
8. The purging process stops automatically after 3 minutes. To stop the purging process immediately, click "Purge".
9. Open the sample door. If all capillaries have formed homogenous gel droplets, click "Cart Unlatch". Remove the gel cartridge from the instrument and carefully clean the capillary tips with a wet tissue.
Note: If any capillary fails to form gel droplets, perform the gel-droplet test with hot water (see page 3).
10. Remove the tissue from the buffer tray holder.
11. Place the gel cartridge back inside the QIAxcel instrument and perform the manual CAL2.mtd or CAL-FA.mtd method (see page 4).

Gel-droplet test with hot water

This test is designed to unclog capillary tips that are blocked with dried gel.

1. Fill the QX Cartridge Stand with 12 ml hot water (approximately 90°C).



2. Empty the reservoir and refill with 12 ml hot water.
3. Repeat step 2.
4. Place the cartridge in the QX Cartridge Stand reservoir. Submerge the tips for 7–10 minutes in the hot water. This should soften the dried gels at the capillary tip.
5. Place the cartridge into the QIAxcel instrument and perform the standard gel-droplet test (see page 2). If any capillaries still do not form homogenous gel droplets, proceed to step 6.
6. Place the cartridge in the QX Cartridge Stand reservoir. Submerge the capillary tips for 20–30 minutes in hot water and then repeat step 5. If after 3 attempts a capillary fails to form homogenous gel droplets, contact QIAGEN Technical Services

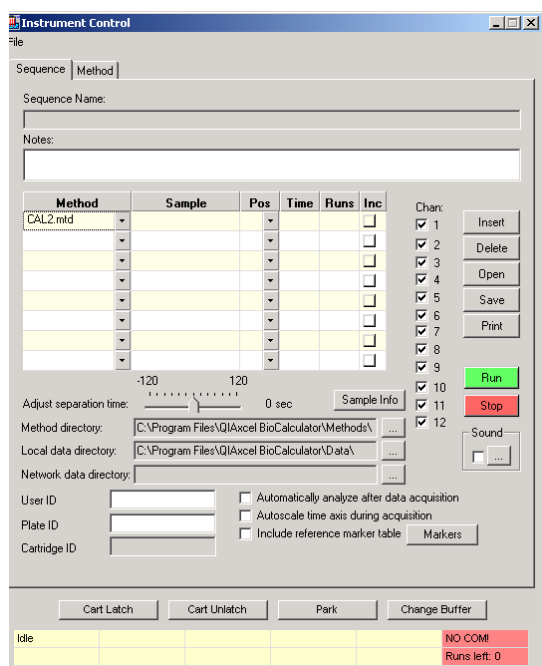
Performing the manual CAL2.mtd or CAL-FA.mtd method

Performing the CAL2.mtd or CAL-FA.mtd method verifies the performance of the cartridge channels. The CAL2.mtd method is for use with the QIAxcel High Resolution, Screening, Large Fragment, and Quality Control QIAxcel Gel Cartridges and the CAL-FA.mtd method is for use with the QIAxcel DNA Fast Analysis Cartridge. Before running the automatic calibration wizard, one of these methods must be successfully performed. All channels should detect a single peak at 1.0–2.4 minutes.

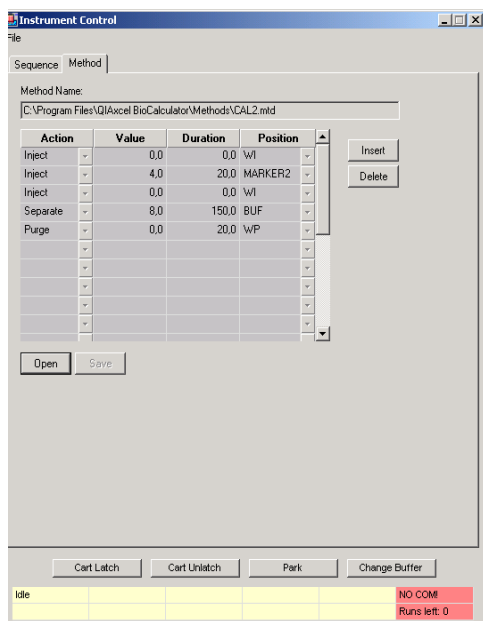
1. Prepare the buffer tray as described in “Preparing the buffer tray” in the *QIAxcel User Manual*.
2. Load the buffer tray as described in “Loading the buffer tray” in the *QIAxcel User Manual*.
3. Load 15 µl of the QX Intensity Calibration Marker onto the buffer tray at the Marker 2 position.



4. Launch the QX BioCalculator Software.
5. Select “CAL2.mtd” or “CAL-FA.mtd” from the drop-down list in the “Method” column in the “Instrument Control” window.



6. To view the method parameters, select the “Method” tab.



7. To run the method, select the “Sequence” tab and click “Run”.

The process takes 150 s to complete for all cartridges. The intensity calibration marker peaks migrate at 1.0–2.4 min, depending on the cartridge type.

8. If a single peak is detected in all channels, perform “Intensity Calibration”, see next section. If one or more channels fail to detect a peak (i.e., no band present), contact QIAGEN Technical Service.

Intensity Calibration

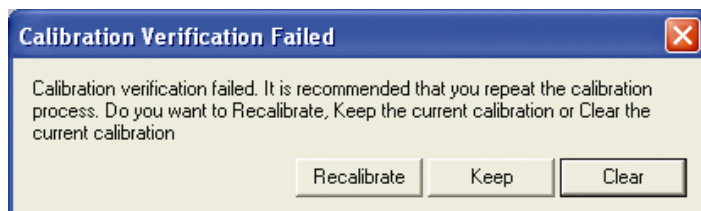
The automated calibration wizard is used to perform intensity calibration.

Note: The CAL2.mtd or CLA-FA.mtd method must be successfully performed before performing “Intensity Calibration”. When performing the CAL2.mtd the run is subtracted from the number of remaining sample runs. The number of remaining sample runs is shown in the “Instrument Control” window.

1. Prepare the buffer tray as described in “Preparing the buffer tray” in the *QIAxcel User Manual*.
2. Load the buffer tray as described in “Loading the buffer tray” in the *QIAxcel User Manual*.
3. Install the cartridge and the smart key as described in “Installing a QIAxcel Gel Cartridge and smart key” in the *QIAxcel User Manual*.
4. Ensure that the cartridge ID is displayed in the “Instrument Control” window.
5. Perform intensity calibration using the calibration wizard as described in “Performing cartridge intensity calibration” in the *QIAxcel User Manual*.

6. When calibration is complete, the "Calibration Verification" dialog box will open. This will show "Pass" or "Fail" for each channel. If "Pass" is displayed for all 12 channels, proceed to step 8.

The acceptable range for calibration values is 0.004–0.006. If calibration fails, the following message will appear.



7. To repeat the calibration process, click the "Clear" button. This clears existing calibration values. If the failed values are slightly outside of the acceptable range, click "Keep" to save these values.

Note: Do not click "Recalibrate". This will reinitiate the calibration wizard, without requiring that the intensity marker solution is changed. For detailed instructions about performing recalibration, see page 6.

Note: If calibration fails 3 times, contact QIAGEN Technical Service. Do not perform all 5 calibration runs before contacting QIAGEN Technical Service.

8. Proceed to sample analysis.

Recalibration

1. Transfer 15 µl of the appropriate intensity marker to a new strip.

Note: Add a drop of mineral oil to the intensity marker to prevent evaporation. If no mineral oil is added, ensure that calibration is performed within 3 hours of adding the marker.

2. Centrifuge the strip for a few seconds to remove any air bubbles.

Note: Some very small air bubbles are not visible to the naked eye and may cause air traps, preventing injection of the correct volume of intensity marker into the capillary.

3. Load QX Intensity Calibration Marker onto the buffer tray as described in "Preparing the buffer tray" in the *QIAxcel User Manual*.



4. Select "File/Intensity Calibration" in the "Instrument Control" window to launch the calibration wizard.
5. Click "Start" to repeat the calibration routine.
6. If calibration is successful, proceed with sample analysis.

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at www.qiagen.com or can be requested from QIAGEN Technical Services or your local distributor.

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