the PortaSCC® milk test Troubleshooting Checklist

This guide is intended solely for the use of PortaCheck dealers and distributors, as a tool for troubleshooting specific technical issues. Some information is repeated as it applies to more than one issue.

Problem	Possible Causes	Explanation
Results lower than expected.	1. The milk is more than 8 hours old.	The test is based on enzyme activity which can decrease as the milk ages. For best results, test milk as close to milking as possible.
	2. The milk tested was from a bulk tank.	This test is not designed for bulk tank use. As the milk ages in the tank, enzyme activity can decrease resulting in low PortaSCC results. This is especially true if multiple milkings are co-mingled in the tank.
	3. The user did not wait 45 – 60 minutes before taking a reading.	The test is designed to be read at 45 – 60 minutes. Before this time, color development may be incomplete.
	4. Preservatives were added to the sample.	The test does not work with some preservatives such as Bronopol. Preservatives affect enzyme activity, and can give a "0.00" or "LO" reading.
	5. Not enough milk was dispensed onto the strip: • The pipette touched the sample well before a full drop of milk had formed. • There was an air bubble in the pipette. • The pipette used was different from the one in the kit. • The milk was thick and did not fully penetrate the sample well.	The test is designed to work with a 40 µL milk sample. Too little milk will give a lighter color.

Problem	Possible Causes	Explanation
Results lower than expected (cont'd.)	6. Less than 3 drops of activator solution were added.	The strip will not react fully with less than 3 drops.
	7. The sample was not mixed well before taking a drop.	Somatic cells can attach to fat cells and clump together when the sample is allowed to sit.
	8. The test was conducted in a location that was cooler than 7° C (45° F).	The enzyme works more slowly at cooler temperatures, so color will also develop slower.
	9. The test was performed with refrigerated milk.	The enzyme works more slowly at cooler temperatures. If milk has been refrigerated, it is best to let it warm up to room temperature before testing.
	10. The test was performed in direct sunlight.	Strong direct sunlight will affect the enzyme and slow down color development. Perform test in a shaded area.
	11. The color on the test strip was uneven. Uneven color can occur if: • The milk does not absorb properly into the sample well. • The milk contains clumps of cells. • Impurities get into the sample well.	Check visually. If the color is uneven, redo the test making sure to thoroughly mix the sample. Clumps of cells are not always visible to the naked eye. The reader reads only a portion of the sample well, so it might be reading a lighter spot.
	12. Errors in reader operation: • The reader was not "blanked" or was "blanked" incorrectly. • The strip was inserted with the sample well facing up. • The strip was not inserted all the way. • The reader window was dirty.	Improper use of the reader can affect results. Check reader User's Guide for correct operating and cleaning instructions.

Problem	Possible Causes	Explanation
Results higher than expected.	1. The strip was read after 45 – 60 minutes.	The test is calibrated to be read at 45 – 60 minutes. The color will continue to develop after this time giving higher results.
	2. The sample was not mixed well before taking a drop.	Somatic cells can attach to fat cells and clump together when the sample is allowed to sit.
	3. The milk samples were tested in a place that was warmer than 35° C (95° F).	Very high temperature will speed up color development and yield falsely high readings. It is recommended that the test be run between 7° C and 35° C (45° F and 95° F).
	4. Too much milk was dispensed onto the strip: • The pipette used was different from the one in the kit. • More than one drop of milk was added.	The test is designed to work with a 40 µL milk sample. Too much milk will give a darker color.
	5. The strip was read too soon after the addition of activator.	If the strip has not dried out sufficiently, the reader measures moisture and yields high results. Read at 45 – 60 minutes.
	6. Too much activator solution was added to the strip causing slightly higher results.	Adding an extra drop of activator will not affect results. Larger quantities can cause higher readings.
	7. The color on the test strip was uneven. Uneven color can occur if: • The milk does not absorb properly into the sample well. • The milk contains clumps of cells. • Impurities get into the sample well.	Check visually. If the color is uneven, redo the test making sure to thoroughly mix the sample. Clumps of cells are not always visible to the naked eye. The reader reads only a portion of the sample well, so it might be reading a darker spot.

Problem	Possible Causes	Explanation
Results higher than expected (cont'd.)	8. Errors in reader operation: • The reader was not "blanked" or was "blanked" incorrectly. • The reader window was dirty.	Improper use of the reader can affect results. Check reader User's Guide for correct operating and cleaning instructions.
Different results for the same sample using two different test strips.	1. The sample was not mixed well before taking a drop.	Somatic cells can attach to fat cells and clump together when the sample is allowed to sit.
	2. The color on the test strip was uneven. Uneven color can occur if: • The milk does not absorb properly into the sample well. • The milk contains clumps of cells. • Impurities get into the sample well.	Check visually. If the color is uneven, redo the test making sure to thoroughly mix the sample. Clumps of cells are not always visible to the naked eye. The reader reads only a portion of the sample well, so it might be reading a lighter or darker spot.
	3. Normal variation.	It is normal for there to be some variation in readings, but the difference should not be such that it will impact on-farm decision making. Also, keep in mind that this is designed as an on-farm tool and not as a substitute for lab equipment.
Different results when same strip is reinserted in reader.	1. The strips are not designed for re-reading.	Compression of the strip and changes in moisture levels over time can cause fluctuations. Read the strip ONCE at 45 – 60 minutes.
Results do not match the lab (also refer to 'High Results' and 'Low Results' sections).	1. Make sure test conditions and reader directions were followed correctly.	See test kit insert and digital reader User's Guide. Also refer to 'Low Results' and 'High Results' sections of this checklist.
	2. The milk tested was from a bulk tank.	This test is not designed for bulk tank use. As the milk ages in the tank, enzyme activity can decrease resulting in low PortaSCC results. This is especially true if multiple milkings are co-mingled in the tank.

Problem	Possible Causes	Explanation
Results do not match the lab (cont'd.)	3. The samples were not properly mixed before splitting or testing, either at the lab or on the farm.	Somatic cells can attach to fat cells and clump together when the sample is allowed to sit.
	4. Even if samples are from the same animal, they were taken at different times, for example at morning and evening milkings.	Somatic cell counts can change rapidly. For more information about this, visit our website at www.portacheck.com/pdfs/SCCVariabilityArticle.pdf.
	5. Preservatives were added to the sample.	The test does not work with some preservatives such as Bronopol. Preservatives affect enzyme activity, and can give a "0.00" or "LO" reading.
	6. The test strips have exceeded their "Best if Used by" date.	Outdated strips can give erroneous results.
	7. Normal variation.	University studies have shown a correlation of 85% – 90% with lab values. However, as with any statistical analysis, it is possible for a single measurement to show variation from the lab value. It is common for there to be variation of approx. 100,000 cells/mL at cell counts below 500,000. It is important to keep in mind that this is a relatively simple tool that is designed for on-farm testing. Small variations should not significantly affect farm management decisions.
The Sample Well is pink.	1. The test strips have been stored for an extended period in a location where the temperature is greater than 25° C (77° F) or for several days at temperatures above 40° C (104° F). The "Best if Used by" date on the back of the kit has passed.	As the strips age, they can develop a slight pink color. The strips can still be used if the color is slightly pink. The reader reads only the blue color.

Problem	Possible Causes	Explanation
The reader display is blank or the reader does not turn on.	1. The reader has shut itself off automatically after 2 minutes of inactivity, or the battery needs to be replaced.	Turn the reader back on, blank it, and continue to read test strips. If the reader does not turn on, replace the battery. (See "User's Guide for Instructions).
The 543 Code does not appear when the reader is turned on.	1. The user pressed and held down the DOWN ARROW for more than 5 seconds. This changes the calibration of the reader.	To reset the code: • Turn on the reader. • Press and hold the DOWN ARROW button until the CODE begins to flash in the upper right corner of the screen. • Release the DOWN ARROW button. • Use the UP and DOWN ARROW buttons to change the code. (Note: If either of the buttons is held down, one can scroll through the numbers quickly.) • Once the code is set to 543, shut off the reader. Turn on the reader to verify that the code is correct.
Reader does not read test strips properly.	1. The Reader reads "HI".	This indicates that the cell count is greater that 3,000,000 cells/mL.
	2. The Reader reads "LO" or 0.00.	This indicates that the cell count is lower than 50,000 cells/mL. You may also get a "LO" or 0.00 reading if the strip is inserted upside down, or if the milk contains preservatives.
	3. "MEM" shows on the screen.	The user pressed the UP arrow while the reader was ON, placing the reader in memory mode. In this mode, the up and down arrows will scroll through previous readings, but the reader will not read any new strips. Turn the reader off, and on again. Then blank it and continue reading test strips.
The reader display says E2.	1. The test strip was removed before a reading could be taken.	Turn the reader off, turn it back on, blank the reader and reread the test strip.