



Scepter™

FAQs

How does the Scepter cell counter work?

The Scepter cell counter operates on the Coulter principle of impedance-based measurements. A current is established across an open orifice, and, each time a cell passes through the orifice, the current is disrupted. The resulting change in voltage can be recorded and plotted.

How quickly does the Scepter cell counter deliver counts?

The Scepter cell counter delivers accurate and precise counts within 20 seconds.

When should I use the Scepter cell counter?

The Scepter cell counter will give you a quick, accurate, simple cell count and quality check of your cultures, at the hood. It is ideal for counting your cells and checking quality before passaging, re-plating, and splitting your cells. For endpoint assays in which you are looking for detailed information about your cells, such as viability (% live/dead) information or biomarker expression, we recommend that you use Millipore's guava easyCyte™ benchtop flow cytometry systems.

What is the volume of sample required?

For an accurate count, we recommend that you dilute your sample into at least 100 μL .

The Scepter cell counter aspirates approximately 50 μL from each sample with minimal error.

How many cells do I need?

The operating range of the Scepter cell counter is 10,000–500,000 cells/mL. The Scepter cell counter will count lower and higher cell concentrations (outside of the optimal range), but you may experience increased coefficients of variation and decreased accuracy. Because the volume aspirated by the Scepter cell counter is around 50 μL , you can get an accurate count from the Scepter cell counter with just 500 cells.

What do I do if I have a valuable sample?

Even though the Scepter cell counter aspirates 50 μL of cells for sampling, you can dilute your sample into a volume less than 100 mL, as long as the dilution remains in Scepter's operating range (10,000–500,000 cells/mL) and the tip remains fully immersed in the sample.

Does the Scepter cell counter count spores? Bacteria? Yeast?

The Scepter cell counter counts any particle/cell between 8–25 μm . Yeast, bacteria, and spores are generally smaller than 8 μm .

How does the Scepter cell counter compensate for clumping cells?

After a sample is drawn into the Scepter tip, the entire sample passes through a 35 μm nylon filter, which helps to break up cell clumps. Furthermore, the Scepter instrumentation and software is equipped with a coincidence correction factor that can compensate for two or more cells passing through the orifice at one time.

Does the Scepter cell counter count both live and dead cells?

The Scepter cell counter will count any particle that passes through the orifice within the cell diameter range and will display a histogram of size distribution. Therefore, aberrantly large or small cells or debris can be excluded from the count by manual or automatic gating to count only cells within the size constraints you choose.

How do volume and diameter relate to cell health?

Preliminary studies have shown that cells can change morphology as a result of changes in cellular cycle, culture conditions, and cell health. As you learn the expected volume and diameter range of your cultures, it is possible that the Scepter cell counter can be used to differentiate between healthy and less healthy cultures by examining shifts and changes in the histogram from culture to culture.

What cells have been tested?

For a comprehensive, up-to-date list of cells tested for performance with Scepter counting, visit www.millipore.com/Scepter and click on the Performance Data tab.

Which diluent should I use to prepare a sample for Scepter counting?

The diluent used should not cause changes in cell size and should have sufficient conductivity to enable operation of the instrument. Use diluent at room temperature. Recommended diluents include phosphate-buffered saline (PBS, with or without calcium and magnesium), such as EmbryoMax[®] 1X PBS (Millipore, Cat. No. BSS-1006-A).

Other compatible diluents that were confirmed by application testing (confirming unchanged cell size and sufficient conductivity): DMEM with or without 10% fetal bovine serum, Isoton[®] II (Beckman), HyQ[®] HBSS.

Incompatible diluents include: water, hypotonic solutions and hypertonic solutions.

Experiments with diluted PBS indicated that a minimum of 100 mM NaCl is required for proper performance of the Scepter cell counter.

Components that will interfere with the operation of Scepter: 10% DMSO (1% DMSO is fine), and detergents (SDS confirmed incompatible by application testing).

How many histograms can be stored on the Scepter cell counter?

You can store up to 72 histograms. After performing your 72nd count, the warning "Disk now full" will appear. In addition, before performing your next count, another reminder will appear that your disk is full and you should delete histograms or upload data to your PC. If you receive this error message, you will still be allowed to perform a count but the generated data are not retrievable afterwards.

How do I upload my files from the Scepter unit to a PC?

You can upload your data from the Scepter cell counter with the Scepter software and view histograms on the computer screen. To date, the software is not Macintosh[™]-compatible. Data can be exported as Microsoft Excel[®] files, with counts in bins, by size allowing further analysis.

How long will the Scepter cell counter's battery last?

The battery will function without charging for at least 72 counts. When the battery charge is nearly depleted, the "Low Battery" warning will show on the screen. Do not perform cell counts while the Scepter cell counter is being charged via the USB cable.

Can I sterilize or autoclave my Scepter cell counter or Scepter tips?

You can use a low-lint laboratory wipe (such as a Kimwipe[®]) sprayed with ethanol to wipe down your Scepter cell counter for use within the hood. Neither the tips nor the instrument can be autoclaved or sterilized with ultraviolet (UV) light.

Does the Scepter cell counter require periodic calibration?

No, the Scepter cell counter maintains its settings and does not drift. If you are concerned about the operation of your instrument, use test beads (Millipore, Cat. No. PHCCBEADS) to ensure that the concentration and size measurements are accurate. If deviations occur, please contact Millipore Technical Service.

