

A particle counter is used for monitoring and diagnosing particle contamination within specific clean media, such as air, water and chemicals.

Particle Counters have the ability to count and size particles by separating them into different size channels and can be used for room classification, room monitoring or contamination diagnosis.

When choosing an aerosol particle counter, you need to take several factors into account, these include but are not limited to the following:



1. Are you using the particle counter for classification, monitoring or contamination diagnosis?
2. Do you need to meet EU GMP or ISO14644-1 or -2?
3. What grade room or classification status will you be using the instrument in?
4. What particle size is of interest?
5. What industry is the particle counter going to be used in?
6. Cost, size, weight, calibration & warranty are also factors that need consideration.

Particle counters can count a range of particle sizes from 0.1µm up to 25.0µm and can have flow rates from 2.83lpm to 100lpm, can be handheld, portable or part of a fixed system. So, choosing the right particle counter for your application can be difficult.

Firstly, you need to decide if you are using the instrument for classification or monitoring.

For classification to GMP a cubic metre of air needs to be sampled, so using a 28.3lpm instrument will need 35 minutes to sample one location, whereas using a 100lpm will sample a cubic metre in 10 minutes, so to minimize labour costs and time, a 100lpm instrument would be preferential.

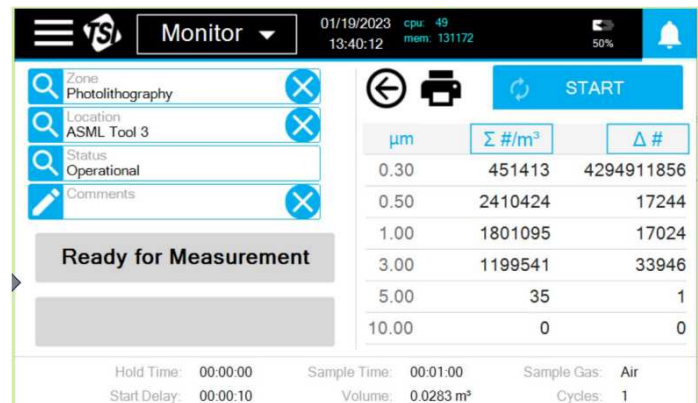
If you are monitoring, then a 28.3lpm or a 2.83lpm instrument will be preferable depending on what industry you are in, as it is likely to run 24/7 as part of a monitoring system. This can be a remote particle counter a remote with pump or a portable particle counter which can all communicate continuously with environmental monitoring software allowing you to set warning and alarm limits if your counts go out of specification.

You need to decide what classification level you need to meet. ISO14644:2015 is the accepted standard to follow and sets out the particle limits as follows:

ISO Class number	Maximum allowable concentrations (particles/m ³) for particles equal to and greater than the considered sizes, shown below					
	0,1 µm	0,2 µm	0,3 µm	0,5 µm	1 µm	5 µm
1	10					
2	100	24	10			
3	1000	237	102	35		
4	10000	2370	1020	352	83	
5	100000	23700	10200	3520	832	
6	1000000	237000	102000	35200	8320	293
7				352000	83200	2930
8				3520000	832000	29300
9				35200000	8320000	293000

The important factor from the above table is the particle size of interest to qualify or monitor the room.

Most Pharmaceutical applications, such as sterile manufacturing will look at 0.5µm as the smallest particle of interest whereas some semiconductor facilities will require to monitor down to 0.1µm, and most automotive applications such as spray booths or component assembly will concentrate on the larger particles such as 5.0µm and 10.0µm.



Different particle counter models can display different size particle channels, so it is important that the instrument of choice, displays the particles of interest. Some particle counters allow you to change the particle sizes that are displayed to allow you to monitor specific particle ranges.

Looking at the more commercial aspects, cost, size, calibration, and warranty are also factors. Having an instrument that can be calibrated without sending the instrument across the world is an important factor, as this increases the risk of damage, but also massively increases the turn around time from shipping to receiving the instrument back, which can impact on the production or routine testing. The instrument also needs to comply with ISO21501-4 for calibration purposes.

Size and weight can also be a factor if you are buying a portable or handheld particle counter, you are expecting for this to be carried around, so a large heavy instrument can be a health & safety issue.

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