

The Cleanroom Theory

This guide is intended to outline the basics of cleanroom constructions and how Titan partitions can be used as a part of a complete cleanroom solutions.

What is a Cleanroom?

Cleanrooms typically create controlled environments that restrict the level of pollutants such as dust, chemical vapours and other airborne substances. Typical uses tend to be in manufacturing, scientific facilities or any process that requires a certain level of cleanliness.

What Are Cleanroom Requirements?

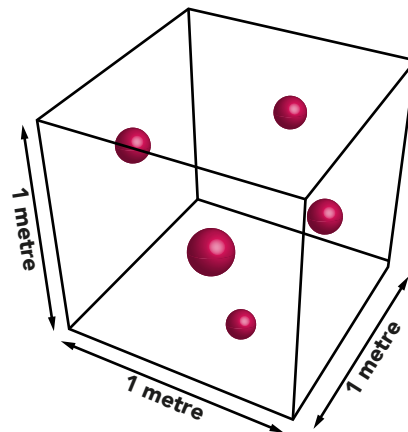
The key component that is required in all cleanrooms is a High Efficiency Particulate Air (HEPA) filter which is used to remove any particles that are of sizes 0.3 microns or larger.

Dependant on the type of cleanroom further processes are used such as an Ultra Low Particulate Air (ULPA) filter which removes even smaller particles.

How Are Cleanrooms Classified?

Cleanrooms are classified to internationally recognised classes. The levels are determined by how clean the air is, this translates to the number of particles which are found in the volume of air.

There are a total of 9 different levels cleanrooms are classified into, ISO 1 - 9. Class 1 is the cleanest standard with a maximum of just 12 particles at sizes 0.2 microns or smaller per cubic metre. Class 9 is the dirtiest at a maximum of around 35,000,000 particles per cubic metre at a diameter of 0.5 microns or larger, which is the equivalent of normal room air.



This information of the different classifications of cleanrooms is shown in the table below.

Class	Maximum Particles / Metre ³					
	≥ 0.1µm	≥ 0.2µm	≥ 0.3µm	≥ 0.5µm	≥ 1µm	≥ 5µm
ISO 1	10	2	-	-	-	-
ISO 2	100	24	10	4	-	-
ISO 3	1,000	237	102	35	8	-
ISO 4	10,000	2,370	1,020	352	83	-
ISO 5	100,000	23,700	10,200	3,520	832	29
ISO 6	1,000,000	237,000	102,000	35,200	8,320	293
ISO 7	-	-	-	352,000	83,200	2,930
ISO 8	-	-	-	3,520,000	832,000	29,300
ISO 9	-	-	-	35,200,000	8,320,000	294,000

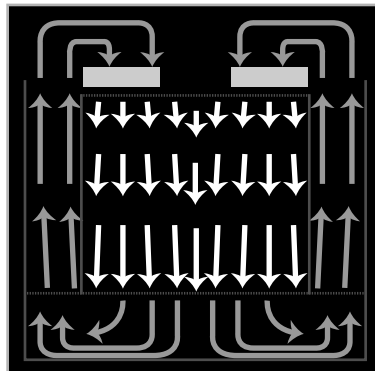


Cleanroom Airflow Principles

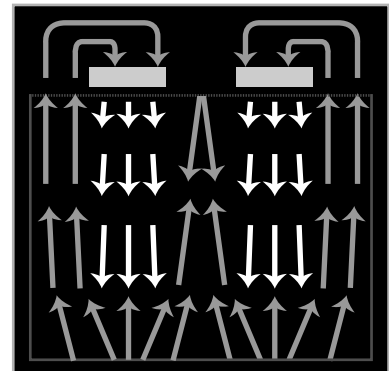
There are two types of airflows regarding cleanrooms, Laminar and Non-laminar.

Laminar can also be known as unidirectional airflow as it is a constant flow of air acting in one direction. This airflow type is generally used in cleanrooms classed ISO 1- 4.

Non-laminar airflow can have irregular flow, this is commonly used in cleanrooms classed ISO 5 - 9.



Laminar Airflow



Non-laminar Airflow

Double Skin Partitioning high quality and hygienic.

Titan partitioning has been designed specifically for cleanroom applications. Its flush design makes it ideal for creating class ISO 5 cleanroom environments.

