

CLEANROOM GUIDE

Cleanroom Lighting

EXTREME ENVIRONMENT



WHAT MAKES A CLEANROOM A CLEANROOM?

Nowhere in today's technological manufacturing environment is contamination control more important than in a cleanroom. It has to be. The work done in cleanrooms is sensitive to even invisible airborne particles. While standard air filters will eliminate the airborne particles you can see, these only represent about three percent. The remaining 97% are the particles upon which cleanrooms are based.

In the typical manufacturing environment the air is literally full of sub-micron particles. A mere cubic foot of air can contain from 200,000 to 10 million particles, most of which are generated by workers and objects within the environment.

In a cleanroom, a single sub-micron particle can damage or contaminate delicate work. Whether a cleanroom has to do with wafer fabs, electronics, pharmaceutical, medical, aerospace, photographic, optical, or data processing, this danger is real and ever-present.

The conclusion is inescapable. Allow sub-micron particles to float harmfully about and production yields and product reliability are at risk.

Achieving cleanliness in the demanding standards of a cleanroom is no easy task. It depends on a room design that restricts the entry of contaminants and is easy to clean; it depends on precautions taken against contaminants generated by worker and objects within the room; and depends on air filtration adequate to remove any contaminants so generated.

DESIGN AND ENGINEERING HAVE MADE COLUMBIA LIGHTING FLUORESCENT LUMINAIRES THE PROPER CHOICE FOR ANY CLASS OF CLEANROOM.

Columbia CRS luminaires have been used in the most demanding Class 1 cleanrooms, so they are therefore suitable for all classes. The class is defined by Federal Standard 209 and is the maximum number of 0.5 micron particles in a cubic foot of air sampled from the cleanroom with people, processes, and all components of the cleanroom system in place.

For less demanding applications, Columbia's CRC series offers a more economical alternative. The CRC provides cleanroom protection in environments rated Class 1000 or greater.

Cleaning a cleanroom fixture is never a problem. Smooth surfaces prevent dirt from accumulating, making cleanroom fixtures easy to wash down. The smooth side of the lens is exposed to the work space.

All fixtures provide excellent photometrics, so fewer are required to light a given area.

All cleanroom fixtures have heavy-duty, 20 gauge steel housings. All have long-lasting, non-flaking, baked polyester powder coat finishes, which are post-painted after luminaire housings are formed. Light reflecting surfaces have a 92% minimum reflectance for optimum light control and photometric performance.

There are no universally recognized third party certifications for cleanroom luminaires – but if there were, our fixtures would carry the label. Sealed units are UL listed for wet locations. Premium EPDM and silicone gaskets help ensure the tight seal, and are standard.

CLEANROOM CLASS	MEASURED PARTICLE SIZE (MICROMETERS)				
	0.1	0.2	0.3	0.5	5.0
1	35	7.5	3	1	N/A
10	350	75	30	10	N/A
100	N/A	750	300	100	N/A
1000	N/A	N/A	N/A	1000	7
10000	N/A	N/A	N/A	10000	70
100000	N/A	N/A	N/A	100000	700