Cleanroom Specifications

The Nanofabrication Facility includes a 3300 square foot cleanroom with 1800 square feet of Class 100 space and 600 square feet of Class 10 space.

Cleanrooms are classified by the level of airborne particles present. The classification was established in Federal Standard 209E. This standard was officially canceled in 2001 but is still commonly used to describe cleanrooms:

<table>
<thead>
<tr>
<th>Class</th>
<th>Particles per Cubic Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Particle Size:</td>
</tr>
<tr>
<td></td>
<td>?0.1?m</td>
</tr>
<tr>
<td></td>
<td>?0.2?m</td>
</tr>
<tr>
<td></td>
<td>?0.3?m</td>
</tr>
<tr>
<td></td>
<td>?0.5?m</td>
</tr>
<tr>
<td>10</td>
<td>350</td>
</tr>
<tr>
<td>100</td>
<td>NA</td>
</tr>
<tr>
<td>1000</td>
<td>NA</td>
</tr>
</tbody>
</table>

ISO standard 14544-1 replaced the old standard but the classes are functionally equivalent

<table>
<thead>
<tr>
<th>209E Standard</th>
<th>Functional Equivalent for ISO 14544-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 10</td>
<td>ISO Class 4</td>
</tr>
<tr>
<td>Class 100</td>
<td>ISO Class 5</td>
</tr>
<tr>
<td>Class 1000</td>
<td>ISO Class 6</td>
</tr>
</tbody>
</table>

ISO 14544-1 classes, note that particle count limits are in cubic meters

<table>
<thead>
<tr>
<th>Class</th>
<th>Particles per Cubic Meter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Particle Size:</td>
</tr>
<tr>
<td></td>
<td>?0.1 ?m</td>
</tr>
<tr>
<td></td>
<td>?0.2 ?m</td>
</tr>
<tr>
<td></td>
<td>?0.3 ?m</td>
</tr>
<tr>
<td></td>
<td>?0.5 ?m</td>
</tr>
<tr>
<td></td>
<td>?1.0 ?m</td>
</tr>
<tr>
<td></td>
<td>?5.0 ?m</td>
</tr>
<tr>
<td>4</td>
<td>10,000</td>
</tr>
<tr>
<td>5</td>
<td>100,000</td>
</tr>
<tr>
<td>6</td>
<td>1,000,000</td>
</tr>
</tbody>
</table>

Under the ISO standard a cleanroom is designated by:

- Class number
- Particle sizes being monitored
- The occupancy state of the cleanroom

We monitor during cleanroom operating hours and we monitor particle sizes 0.3?m, 0.5 ?m and 5.0 ?m.