

Shaking Co₂ Incubator

Managing, Optimal Environmental for Cell Growth

LuxMed® Shaking Co₂ incubators are specialized laboratory equipment combining precise atmospheric control (temperature, Co₂, humidity) with orbital shaking to support cell growth, nutrient distribution, and oxygen transfer in suspension cultures. They are essential in pharmaceutical production, stem cell research, and antibody development, particularly for mammalian, insect, and tumour cell cultures.

LuxMed® shaking Co₂ incubator design concept integrates precise environmental control (Co₂, temperature, humidity) with an internal, corrosion-resistant orbital shaker for suspension cell culture. Key design features include a polished, seamless stainless-steel chamber, 6-side direct heating for uniformity, magnetic induction drive for reliable agitation, and stackable, compact housing to maximize laboratory space.

Applications of Shaking Co₂ Incubators

- **Suspension Cell Culture:** Ideal for cultivating cells, which require constant agitation to maintain, preventing the formation of nutrient concentration gradients.
- **Microbial Fermentation:** Used for culturing bacteria, yeast, or fungi, allowing for enhanced oxygen supply and nutrient uptake, preventing aggregation, and encouraging uniform, high-density growth.
- **Biopharmaceutical Production:** Crucial in the production of proteins, monoclonal antibodies, and viral vectors in bioreactor-like conditions.
- **Tissue Engineering:** Used in tissue culture to provide consistent, low-shear agitation for cell growth and extracellular matrix production.
- **Hybridization and Molecular Biology:** Used in laboratories to improve the efficiency of hybridization techniques in molecular diagnostics.

Key Features and Benefits

- **Optimal Gas Exchange:** The shaking motion eliminates dissolved oxygen concentration gradients, increasing oxygen transfer rates to the cells.
- **Constant Environment:** Maintains high humidity and Co₂ levels (usually 0 to 20%) to keep pH stable, often with HEPA filtration to minimize contamination.
- **Flexibility:** Often used with Erlenmeyer flasks, tubes, or deep well blocks, with some models featuring removable shakers.
- **Space Optimization:** Many systems are designed to be stackable, allowing for multiple units to be stacked on top of each other, reducing the lab's footprint.



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Why Shaking is Necessary

1. **Oxygen Transfer:** Continuous movement increases the surface area of the media, allowing for significantly higher levels of dissolved oxygen to reach the cells.
2. **Nutrient Distribution:** Agitation ensures that nutrients and growth factors are distributed evenly, preventing the formation of concentration gradients.
3. **Preventing Aggregation:** The mechanical motion keeps cells from clumping together or settling at the bottom of the flask, which can lead to cell death or inconsistent experimental results.
4. **Metabolic Waste Removal:** Mixing helps move metabolic byproducts away from the cells, preventing localized toxicity.

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