AirBio®
ENGINEERING IN FLOW

FUME HOOD

CHEMICAL FUME HOOD

MAKE IN INDIA

MEDICAL DEVICES ISO 13485:2016 QUALITY MANAGEMENT

ISO 9001 2015 CERTIFIED

CDSCO

INTRODUCTION

Introducing AirBio Fume Hoods, crafted for laboratory environments where safety and efficiency are paramount. These hoods function by drawing in air from the room through the front opening, creating a low-pressure environment within the hood. This airflow helps prevent harmful fumes, vapors, or particulate matter generated during chemical reactions from escaping into the laboratory. Contaminated air is then filtered or exhausted through a ventilation system, ensuring a continuous safe working environment.

BASIC WORKING PRINCIPLES:

01. Airflow Containment:

When the sash (the adjustable front barrier) is open, room air is drawn into the fume hood, carrying contaminants with it. This inward flow protects the user by creating a barrier that prevents hazardous substances from escaping.

02. Exhaust System:

The air, along with the fumes or vapors, is channeled through a ventilation duct system, where it may pass through filters (in ductless hoods) or be directly exhausted to the outside in ducted systems. This process ensures that the laboratory air remains free from contaminants.

03. Sash Operation:

The sash can be adjusted vertically or horizontally, depending on the type, allowing for both controlled airflow and physical protection. The sash's position influences the airflow rate, with lower openings requiring less air volume for efficient operation.

04. Interior Baffles:

These are strategically placed panels inside the hood that ensure uniform airflow distribution, minimizing turbulence and promoting efficient fume capture across the workspace.

APPLICATION AREAS:

Chemical Laboratories:

Ideal for handling hazardous chemicals and reactions, providing containment for fumes, vapors, and dust.

Pharmaceutical Research:

Used in drug development and testing, where containment of volatile substances is essential.

Biological Laboratories:

Effective for processes that require protection from harmful or toxic substances without biological containment (separate from biosafety cabinets).

Industrial Settings:

Used in manufacturing and quality control environments where fumes from solvents, acids, and other hazardous materials need containment.

With AirBio Fume Hoods, you can trust that your laboratory will maintain a safe and controlled environment, suitable for a wide range of scientific and industrial applications.

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TYPES OF FUME HOOD

Fume hoods come in various designs to meet the specific needs of different laboratory and industrial applications. Here are the most common types of fume hoods:

01. Ducted Fume Hoods:

Description	Applications	Advantages
These hoods are connected to an external ventilation system that exhausts contaminated air outside the building.	These hoods are connected to an external ventilation system that exhausts contaminated air outside the building.	These hoods are connected to an external ventilation system that exhausts contaminated air outside the building.

02. Ductless Fume Hoods

Description	Applications	Advantages
These hoods filter the air internally and recirculate it back into the room after removing harmful contaminants through a filtration system, such as carbon or HEPA filters.	Suitable for environments with non-toxic chemicals or in locations where ducting is not feasible.	More flexible and mobile, easy to install, and doesn't require external ductwork.

03. By-pass Fume Hoods

Description	Applications	Advantages
Designed for constant air volume (CAV) systems, these hoods allow a continuous airflow even when the sash is closed, using an air by-pass system.	Suitable for processes where constant airflow is critical, even with variable sash positions.	Prevents excessive face velocity as the sash is lowered, maintaining safe air speeds.

04. Variable Air Volume (VAV) Fume Hoods

Description	Applications	Advantages
VAV hoods adjust the amount of air exhausted based on the sash height, ensuring efficient energy use while maintaining containment.	Common in modern labs where energy efficiency is important, and fume hood use is frequent.	Reduced energy costs compared to constant volume systems, with optimal safety performance.

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05. Bench-top Fume Hoods

Description
These hoods are mounted on a countertop or work surface, providing a convenient and accessible workspace for standing operators.

Applications
Suitable for general chemical work and handling processes requiring fume containment at bench height.

Advantages
Easy to install on existing lab furniture, ergonomic for standing use, and can be configured for a variety of applications.

06. Walk-in Fume Hoods

Description
These large, floor-standing hoods provide ample space for large equipment or procedures that require full access to the work area.

Applications
Used in laboratories that handle large apparatus, such as pilot plant setups or large-scale chemical reactions.

Advantages
Allows personnel to enter the hood for working with large equipment, while still providing fume containment.

07. Perchloric Acid Fume Hoods

Description
Specially designed for handling perchloric acid, these hoods have wash-down systems to remove potentially explosive perchlorate residues.

Applications
Used in labs working with perchloric acid or other strong oxidizers.

Advantages
Safe for handling highly reactive or dangerous substances, with self-cleaning capability.

08. Radioisotope Fume Hoods

Description
Designed for handling radioactive materials, these hoods have stainless steel interiors to resist contamination and are often used in conjunction with HEPA filters.

Applications
Nuclear research, medical labs, and environments where radioactive isotopes are handled.

Advantages
Offers protection against radiological contamination with highly specialized filtration.

09. Explosion-proof Fume Hoods

Description
Built with explosion-proof electrical components to safely handle flammable or explosive substances.

Applications
Laboratories that work with volatile or explosive chemicals, such as solvents and gases.

Advantages
Ensures safety by preventing ignition of flammable vapors or substances.

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The AirBio Ethics

At AirBio, we are committed to delivering precision-engineered solutions that redefine safety and efficiency in your workspace. Our BioSafety Cabinets, Fume Hoods, and Laminar Flows are designed to meet the highest standards, ensuring your team and research are always protected. Built with cutting-edge technology and unmatched reliability, our products empower you to focus on innovation without compromise. With AirBio, you're choosing a partner dedicated to safeguarding your success and advancing your mission.

Statistics

100%
Equipment Quality

40+
Years Team Experience

6+
Industries Served

54+
Country Reach

Trusted by

JIVISHA ADVANCED MEDICAL CENTRE

METRO GROUP OF HOSPITALS
HEALTHCARE • EDUCATION

Sir Ganga Ram CITY hospital
(A Unit of Conner Institute of Health Care & Research Center Pvt. Ltd.)

MASSH
MINIMAL ACCESS SMART SURGERY HOSPITAL

ASSAM CANCER CARE FOUNDATION
A Government of Assam and Tata Trusts Initiative

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Pibco Limited R&D Centre

MAX Healthcare

Kailash

YASHODA MEDICITY

Chikkamagaluru Institute Of Medical Sciences
Government of Karnataka

AMRITA HOSPITAL

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SELECTION GUIDE

CONFIGURATION - BENCH HOOD

Bench hoods are designed to provide a functional workspace at a comfortable standing height, typically set on a worksurface around 36 inches from the floor. This setup allows for an ergonomic working environment for individuals who perform tasks while standing. With a minimum of 42 inches of interior working height, these hoods provide sufficient vertical space for handling equipment or processes that require clear airflow and containment, such as chemical handling or lab work. This design ensures both safety and convenience for users.

AIR VOLUME — OPEN BY-PASS

Open by-pass fume hoods are a type of laboratory fume hood designed specifically for use with constant air volume (CAV) exhaust systems. In these hoods, the air by-pass mechanism ensures that when the sash (the glass window that can be raised or lowered) is closed, an alternate path is available for air to enter the hood. This helps maintain a consistent airflow and exhaust function.

The by-pass is sized carefully to regulate airflow. As the sash is closed, the air velocity inside the hood naturally increases, but the by-pass ensures that this velocity does not exceed more than three and a half times the velocity when the sash is fully open. This balance helps maintain safe operating conditions, ensuring that hazardous fumes are effectively captured and exhausted without excessive turbulence or high face velocities, which could compromise containment or safety.

SASH TYPE — VERTICAL SASH

Vertical sash hoods offer optimal access to the interior of the hood, both horizontally and vertically, making them highly versatile for various laboratory tasks. However, they come with a trade-off: higher exhaust requirements due to the large opening when the sash is raised. The increased open area allows more air to be pulled through the hood, requiring higher exhaust rates to maintain safe face velocities and proper fume containment.

To mitigate these high exhaust demands, gravity sash stops can be installed. These stops limit how high the sash can be raised, thereby reducing the open area and lowering the exhaust requirements. However, this also restricts the vertical access to the work area, which can limit flexibility for larger equipment or operations requiring a fully open sash.

For applications that require access to multiple work zones, split sash hoods can be a practical solution. These hoods feature divided sections, allowing for two distinct work areas, each with its own sash, providing greater control over airflow and reducing exhaust needs for one area while the other remains open for work.

SELECTION GUIDE

HOOD USE — GENERAL PURPOSE

General purpose hoods are built to safely contain and exhaust fumes generated during a wide variety of chemical reactions, making them suitable for general laboratory use. They are versatile and designed with various liner material options to accommodate different chemical environments and corrosive exposures:

01. Fiberglass Reinforced Polyester (Kemglass):

This material offers good resistance to a wide range of chemicals and is durable, making it a cost-effective option for general-purpose labs.

02. Phenolic Resin:

Known for its high chemical resistance, phenolic resin is ideal for environments where corrosive chemicals are used frequently, as it can withstand acids and other aggressive substances.

03. Type 304 Stainless Steel:

Known for its high chemical resistance, phenolic resin is ideal for environments where corrosive chemicals are used frequently, as it can withstand acids and other aggressive substances.

The choice of liner material depends on the specific requirements of the lab, ensuring the fume hood provides adequate protection against the chemicals being used.

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