

Safety Topic – Chemical Hood

General purpose: prevent exposure to toxic, irritating, or noxious chemical vapors and gases. A face velocity of 100 feet per minute (fpm) provides efficient vapor capture while reducing hood turbulence.

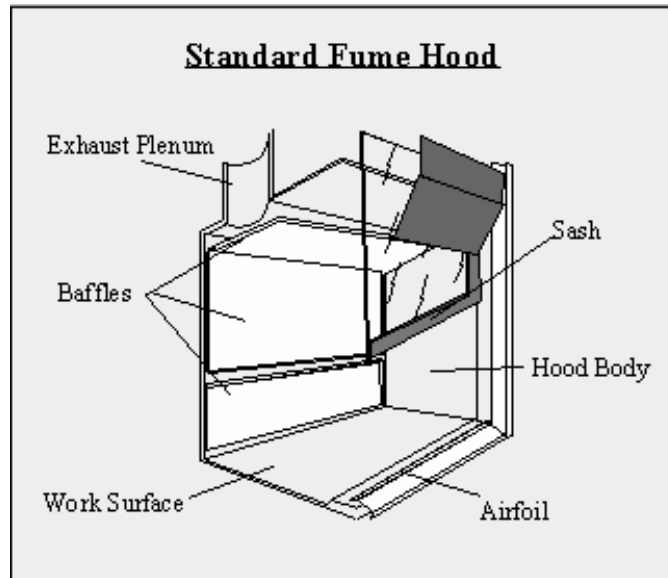


Figure 1 Basic features of a standard fume hood.

- (T) (F) When working with highly hazardous materials, the lower the sash the better.
- (T) (F) A chemical hood can be used for storage of volatile, flammable, or odiferous materials when an appropriate storage cabinet is not available.
- (T) (F) The airfoil on the front of a hood is of minor importance. It can safely be removed if it interferes with my experimental apparatus.

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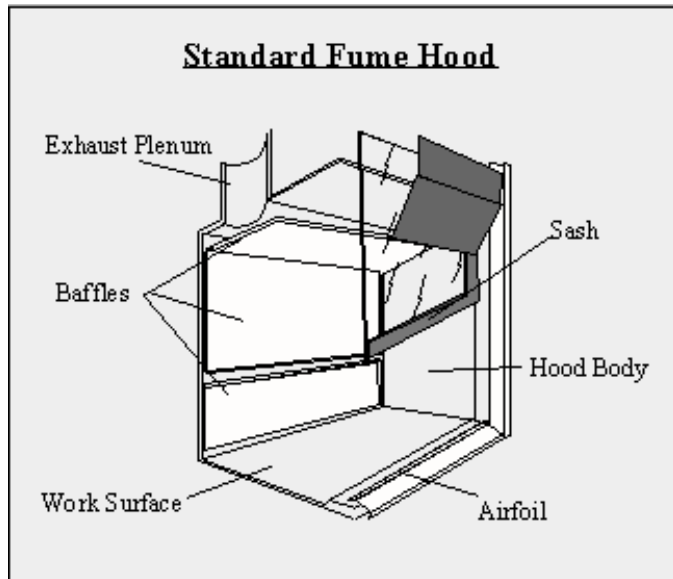


Figure 1 Basic features of a standard fume hood.

Baffles -- keep the airflow uniform across the hood opening, thus eliminating dead spots and optimizing capture efficiency.

Sash -- Airflow across the hood can be adjusted by sash height to the point where capture of contaminants is maximized.

Airfoil -- Preventing the creation of turbulent eddies that can carry vapors out of the hood. The space below the bottom airfoil provides source of room air for the hood to exhaust when the sash is fully closed.

Exhaust plenum -- An important engineering feature, the exhaust plenum helps to distribute airflow evenly across the hood face.

Face -- The imaginary plane running between the bottom of the sash to the work surface. Hood face velocity is measured across this plane.

Common Chemical Hood Misconception

Myth - When working with highly hazardous materials, the higher the face velocity the better.

While it is important to have a face velocity between 100 and 125 fpm, velocities higher than this are actually harmful. When face velocity exceeds 125 fpm eddy currents are created which allow contaminants to be drawn out of the hood, increasing worker exposures.

Myth - A chemical hood can be used for storage of volatile, flammable, or odiferous materials when an appropriate storage cabinet is not available.

Hoods are not designed for permanent chemical storage. Each item placed on the work surface interferes with the directional airflow, causing turbulence and eddy currents that allow contaminants to be drawn out of the hood.

Myth - The airfoil on the front of a hood is of minor importance. It can safely be removed if it interferes with my experimental apparatus.

Airfoils are critical to efficient operation of a chemical hood. With the sash open an airfoil smooths flow over the hood edges. Without an airfoil eddy currents form, causing contaminants to be drawn out of the hood. With the sash closed, the opening beneath the bottom airfoil provides for a source of exhaust air.

Safe Operating Procedure

Constant volume hood – the volume of air exhausted is constant, regardless of sash height

Proper positioning of the sash is vital to maintaining the optimum face velocity (100 or 125 fpm).

Too high: lowers face velocity, allowing contaminants to escape from the hood

Too low: results in very high face velocity, excessive turbulence and loss of containment

- Confirm that the hood is operational: switch 'on', airflow gauge or 'flow check ribbon' hood test data and optimum sash height - yellow label affixed to the hood face
- Maintain operations at least 6" inside the hood face.
- Lower sash to optimum height: maximized airflow without turbulence (100 ft/min)
- Keep head out of hood
- Keep hood storage to an absolute minimum
- Minimize foot traffic around the chemical hood
- Use extreme caution with ignition
- Replace hood components prior to use