

# What Type of Fume Hood Should I Specify?

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The answer to the question of “What type of fume hood should I specify?” gets more complicated each time a new type of fume hood or ventilated enclosure is introduced to the market.

Today in many laboratories large volumes of toxic chemicals are being replaced by much smaller volumes of less harmful chemicals. The need to safely accommodate a large flask of boiling acid is not a common occurrence in many labs today.

A concern for most laboratories is the amount of tempered air that is lost operating a fume hood. As a lab designer or architect you have the task of selecting the most *energy efficient* laboratory ventilation system available while maintaining a safe laboratory working environment and staying within a budget. Having an energy efficient **Green** building is the goal of many laboratory construction projects.

Lab designers have a large selection of hoods and enclosures from which to choose. The lab



designer has the task of discussing all of the options with their client and together they can prioritize the requirements to find the best hood or enclosure to meet the client's needs.

The ideal laboratory fume hood or ventilated enclosure for each individual client varies greatly and depends on the work that is being done in the lab and the priorities of your client.

- Is your client prepared to initially spend more money for a *High Performance Fume Hood* in order to save on energy bills over the life of

the fume hood or is your client trying to keep construction costs to a minimum and is not as concerned about utility costs?

- Does your client want an inexpensive epoxy-coated steel fume hood or do they want to spend a little more to get a more chemically-resistant, longer lasting fume hood with a fiberglass liner?

By learning about the products that are available and making appropriate recommendations, the lab designer can impact the energy consumption of the lab for many years. For instance, instead of simply specifying three traditional fume hoods for a lab, upon further questioning, the designer might find out the lab is using one hood for weighing particulates, another hood for limited solvent use and the third hood for general chemistry purposes. By specifying a balance enclosure, a ductless fume hood and a traditional fume hood instead of three 4' fume hoods, the lab designer just saved 1,460 CFM of tempered air in one room.

In the next room, the designer might specify one traditional fume hood and two ventilated workstations instead of three 4' traditional fume hoods thus saving 360 CFM of tempered air. To know what type of fume hood or enclosure to specify, you must have a discussion with your client and have the answers to the following questions.

1. What will be done inside the hood?
  - a. What chemicals will be used and in what volumes?
    - i. Are the chemicals being used and the applications likely to change?
    - ii. Can these chemicals be used in a ductless fume hood?
    - iii. Do any of these chemicals require special types of fume hoods or enclosures?
      1. Acids
      2. Perchloric Acid
      3. Radioisotopes
      4. Harmful Particulates
  - b. Is heat involved?
  - c. Is visibility important? Does it need to have glass sides for a classroom environment?
2. What size of hood/enclosure is needed?
  - a. What width of a hood/enclosure does the client need?
  - b. What type of equipment, if any, needs to be enclosed in the hood/enclosure and what are the dimensions of the equipment?
    - i. Is a balance going to be enclosed in this hood/enclosure?
  - c. Is a traditional hood required or would a ventilated workstation be appropriate?
3. How important is energy conservation to the client?
4. Is flexibility important?
5. What service fixtures are needed and are they factory installed or being installed onsite?
  - a. Electrical outlets
  - b. Compressed air
  - c. Laboratory gas
  - d. Vacuum
  - e. Water
6. What accessories are needed? In general fume hoods and enclosures do not include a work surface or base.
  - a. Work surfaces
  - b. Base cabinets
  - c. Casework
  - d. Chemical storage cabinets
    - i. General
    - ii. Acid
    - iii. Solvent
  - e. Ductwork- Who is providing it?
7. What type and how many blowers do I need?

8. What is the duct layout?
  - a. Diameters
  - b. Elbows
  - c. 10' exhaust stack above roof line
  - d. Zero pressure Weathercap

Once *all* these questions are answered you are ready to make a much more informed decision. You can call Labconco at **800-732-0031** and review your answers with a Product Specialist. By considering all the options instead of always specifying generic traditional fume hoods, you can save your client substantial amounts of money on utility bills and have an enclosure that is designed specifically for their application.