The Chemical Safety Mechanism
University of Wisconsin-Madison
Office of Chemical Safety

Lab Coat Considerations

Lab coats are a common sight in laboratories on campus. They protect your skin and personal clothing and are a removable barrier in the event of a spill or splash. However, while common, they still tend to be under-utilized – and in some instances the wrong type of lab coat is used. When choosing a lab coat you need to ask yourself a question – What am I trying to protect myself against? Am I protecting against a flammability hazard, exposure to a toxic substance, a chemical splash, a biological exposure, or am I simply trying to keep my street clothes clean? The type of protection you need will dictate which lab coat you choose.

Flammability Hazards

When working with pyrophoric liquids, flammable liquids or solids, open flames, electric arcs, or molten substances you will want to make sure that your lab coat is made of the proper material. Here are some considerations:

- Nomex® is one of the best fabrics when fire hazards are your primary concern. The fire resistance is inherent to the fibers. It retards fire by trapping air within its fibers and therefore conducts heat slowly. It is highly recommended when working with pyrophoric liquids.
- Some excellent fire-resistant lab coats made with 100% cotton are also available. To make them fire resistant the manufacturer the fabric with a chemical retardant. Laundering can remove the coating so make sure you follow the manufacturer's recommendations. These are appropriate for working with flammable liquid, electric arcs, or near high heat sources.
- Avoid synthetic fibers (like nylon or polyester) or cotton blends! These can ignite, melt, and stick to your skin resulting in severe burns.
- What's worn underneath your lab coat is also very important. Natural fibers are recommended for work with flammable materials. Synthetic fabrics under you lab coat can melt – even if it doesn't ignite – causing severe burns.

Other Hazards Chemicals

Laboratory coats do offer some level of protection against chemical hazards, however, unlike with gloves, it is more difficult to find specific information on chemical compatibility. Also, claimed resistance is often for the fabric itself and any personnel protection depends not only on the fabric but the weave or manufacturing process. Here are a few basic points:

- Nomex® coats are claimed to have resistance to most solvents and to acids and bases. However Nomex decomposes if exposed to chlorine bleach;

- Tyvek® labcoats are commonly used for protection against particulates and is particularly useful for work involving very fine particles. Tychem® is a coated version of Tyvek® which provides increased resistance towards many chemicals.
- Some lab coats are treated to add an impervious layer; however, the treatment may make it inappropriate for flame hazards.
- For applications where the risk of a splash hazard is high consider using a chemical-resistant apron – such as those made from rubber, neoprene or PVC (depending on compatibility). Newer aprons such as those constructed of Norfoil®, a multi-layer laminate, offer a very broad range of chemical protection. Chemical-resistant sleeves can provide additional protection.
- Remember that, at best, all lab coats should be considered as providing protection against incidental contact. If you come into contact with a chemical that can potentially penetrate the coat (such as most liquids) then remove the lab coat and wash any area of your skin that has been affected for 15 minutes.

Final Thoughts

Below are a few additional guidelines and considerations:

- Wear your lab coat at all times in laboratories to prevent incidental and unexpected chemical exposures to your skin and clothing. A lab coat that is hanging up provides no protection.
- Keep the coat buttoned and the sleeves rolled down.
- Make sure you know what applications your lab coat is suitable for. It is likely that you may need more than one type of coat for different actitivities.
- Lab coats should be kept in your work area. Wearing the coats outside the lab or work can spread the contamination.
- Make sure you know how to decontaminate and launder your lab coat.

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