

Partitions for COVID-19 Separations

Background

Facility owners are inquiring about the use of partitions to provide separations or barriers as a precaution against COVID-19 spread. Certain types of materials used in partitions increase the fire safety risk, specifically:

- Plastic materials
- Fabric materials

Plastic materials

Plastics come in three physical forms:

- Rigid or solid
- Foam
- Flexible (films, sheets, fabrics, etc.)

Fabric materials

Many modern fabrics contain large amounts of plastics. If the fabric uses synthetic materials (polyester, rayon, nylon, etc.) they are made partly or entirely from plastics. Fabrics made entirely of natural materials – like cotton, wool, silk, or linen – are somewhat rare in modern fabrics.

Rigid or solid plastics

Rigid or solid plastic materials are the most difficult to ignite; it typically takes a significant amount of heat to cause these plastic materials to burn but once they catch fire they burn very hot and give off some very toxic smoke and gases. Common examples of rigid plastic materials include Acrylic (Polymethyl Methacrylate or PMMA), Polycarbonate, and Polyvinyl Chloride (PVC).

Foam plastics

Foam plastics are often used as insulation materials. They are fairly easy to ignite – even with a small heat source. Once ignited they burn very rapidly and give off extremely toxic smoke and gases. Common examples in Polyurethane and Polystyrene (Dow Chemical's "Styrofoam" is a type of Polystyrene).

Flexible plastics

Flexible plastics come in a wide range of products from synthetic fabrics to garbage bags. Flexible plastics are easy to ignite with a small heat source and spread rapidly especially in a vertical position. Common flexible plastics include Polyethylene and Polypropylene although PVC can be made flexible with the addition of a plasticizer during the manufacturing process.



Minnesota Department of Public Safety State Fire Marshal Division

Fire and life safety concerns

Plastics are often a petroleum-based product and can burn very fast and hot. When exposed to heat these materials can also melt and drip causing burns to people. The same is true for fabrics manufactured with large amounts of plastics in them.

Fire and building code requirements for partitions and hangings

Plastic materials and fabrics are required to meet certain fire performance tests and reports of those tests should be furnished. Here are the three performance test options:

- National Fire Protection Association (NFPA) Standard 701 – Test Method 1 (used for thin fabric materials – 21 oz. per sq. yard or less)
- NFPA 701 – Test Method 2 (used for thicker fabrics – greater than 21 oz. per sq. yard and all plastic films)
- NFPA 289 – Using a 20 kilowatt (kW) ignition source with a maximum rate of heat release of 100 kilowatts (kW)

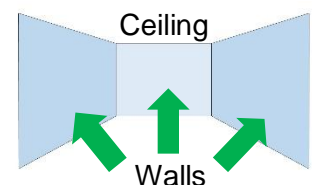
Quantity of plastic and fabric partitions and hanging allowed

The following are the quantity limits of plastic and fabric partitions and hangings allowed if they have passed one of the tests outlined above:

- Assembly auditoriums with sprinkler protection: 75% of the wall area
- Assembly auditoriums without sprinkler protection: 20% of the wall area
- Existing assembly occupancies (such as restaurants, bars, places of worship, museums, libraries, recreation buildings): no limit when they comply with one of the tests above
- Fabric partitions (but not plastic materials) in assembly, business, office, educational, retail and mercantile occupancies: no limit when they comply with one of the tests above
- Materials used for window coverings and treatments (draperies, fabrics, hangings, valances, etc.): no limit when they comply with one of the tests above

How is this measured?

Wall surface area is shown in the diagram in blue. You then measure the wall or ceiling area that the partition or hanging is attached to and multiply it by the surface area allowed above (75%, 20%, etc.). Note: the fourth wall is not shown in the diagram.



What does this mean for purchasing plastic and fabrics for partitions?

Look for materials that are “fire retardant” or that comply with one of the NFPA test methods outlined above (NFPA 701 Test Method 1 for thinner fabrics, NFPA 701 Test Method 2 for plastic films and thicker fabrics, or NFPA 289).

Installing partitions

When installing these fabric or plastic partitions in buildings with a fire sprinkler system, keep these materials at least 18 inches below the sprinklers so that the sprinklers can be effective.

