Plastic Sheets used in many applications, critical environments need flame resistance. UL 94-V0 and FM-4910 are two stringent Plastic certifications.

(Newswire.net -- January 24, 2014) Anaheim, CA -- If you have been following our articles, you most likely know that there are many different plastics on the market. Each one of these plastics has different qualities and physical properties that make each one unique.

Fire Retardant Plastic Materials

One of the physical properties is the rate of a material to burn, or not burn at all. Most materials burn when exposed to a hot enough flame or for a long enough time. The quality we look for is the ability to self-extinguish, and resist fire. By resisting flames, plastics can avoid acting as a fuel source. You may have experienced this interesting quality of polymers before. PVC, or rigid vinyl, is a naturally a fire resistant plastic. It will not continue to burn once a fire source is removed. On the other hand, acrylic will burn, and continue to burn after the flame is removed. So how do we know what plastics are rated the safest against fire? There are a few ratings and certifications in place that will help you to decide if a certain plastic will burn, and if so, for how long. These tests even go into further detail than just burning. Will the plastic give off smoke, or will the plastic drip flaming pieces, are just a few of the details such tests can tell you.

What are these tests?

There have been multiple tests done on each type of plastic to figure out what flammability properties it has. The most popular testing is the UL 94 small-flame test. The UL 94 small-flame test is a hands-on approach. They burn the plastic horizontally. If the piece of plastic burns horizontally, it earns a UL 94-HB rating which means it catches fire and burns horizontally, the least flame retardant. The next test is to attempt to burn the piece vertically, to see if the plastic will catch on fire, off put smoke, or continue to burn once the flame is removed, and if it drips. There are three variations to this vertical test, UL 94-V2, UL 94-V1 and **UL 94-V0**. The best version of this test is the UL 94-V0 which indicates the material does not burn, is self extinguishing and does not allow for drips of flaming material. These tests are carried out on 5 samples to ensure accuracy.

The ASTM E 84 Steiner Tunnel measures flame spread and smoke developed from burning materials. Both of these tests help to determine the flammability properties of each material, and in turn make each material safer to use.

What are some Fire Safe Plastics?

We mentioned PVC, which is one of the only naturally flame resistant plastic, since it contains more than 50% of chlorine. When PVC is burned, hydrogen chloride gas is released which slows down combustion by starving the surface from oxygen. This is partly why PVC has such widespread use. Another fire-resistant plastic, though not naturally, is Polycarbonate. Polycarbonate is a transparent plastic that is very impact resistant, and is naturally good at withstanding heat. The Polycarbonate can be enhanced with fire retardant additives to get it to the UL 94-V0 flame rating. **PEEK carries a UL 94-V0 flame rating**, which means burning stops on a vertical specimen, also known as self extinguishing.
For many years, the UL 94-V0 was the best fire rating. Then, Factory Mutual Insurance got involved after a major fire overseas. This resulted in a new higher standard, the **FM-4910** certification. It starts with materials that are at least UL 94-V0 and then insures that this material is very low to zero smoke, and very low to zero toxic fumes. This is the new standard for electronic chip manufacturers in their work stations and wet benches. Very few materials can meet the stringent testing involved, currently there are versions of Polypropylene, PVC and Kynar are available to meet this specification. There are only two main American factories producing these **FM-4910 plastic sheets**, Vycom Plastics and Laminations (now a division of Simona America).

**Improving fire resistance**

One of the many wonderful things about plastic is you can modify it to suit your needs, and fireproof or fire retardant plastics are needed, from skyscrapers and airplane cabins to military use and beyond. Many plastics that are not inherently fire-resistant and the resins need to be modified to achieve the UL certification. Additives for flame retardant can vary in type and style, and these additives can be blended into the polymer to make them flame-resistant. There are six main additives that are used in this treatment; Boron, aluminum, phosphorus, antimony, chlorine, and bromine. Another type of additive that can be used is called ‘reactive’ flame retardants. Reactive flame retardants are compounds that are chemically built into the polymer; for example, binding hydrogen or chlorine into the polymer. Both of these methods are common in improving the flammability in a plastic.

Fire-resistant plastics help make everyone’s life safer. Whether the Polypropylene sheet for a chemical tank or the ABS/PVC that makes up some of the insides of airplanes, fire-resistant plastics are in use there. They are the silent protectors, the ones that look out for us when we are not watching. Thanks to them we can feel safer while we conduct our day to day business, or drive in a car or fly in an airplane, and they do it all without having to wear a mask.

**Industrial Plastic Supply, Inc**

2240 S. Dupont Drive  
Anaheim, CA 92806  
United States  
7149783520  
info@iplasticsupply.com  
http://www.iplasticsupply.com  
Source: [http://newswire.net/newsroom/pr/00079829-fm4910-ul94v0-fire-flame-resistant-plastic-sheet.html](http://newswire.net/newsroom/pr/00079829-fm4910-ul94v0-fire-flame-resistant-plastic-sheet.html)