



FILTRATION CONCENTRATION: AN INTRODUCTION TO PAINT BOOTH FILTERS & MAINTENANCE

Issue date: October 07, 2016

Choosing the correct filter for your paint booth can be a daunting task. The choices you make have a direct impact on everything from the efficiency of your booth and the quality of the end product to booth maintenance costs and the safety of technicians. This guide will introduce you to and give insight into the different types of filters found throughout your booth, as well as maintenance tips to keep your booth running efficiently.

AIR MAKE-UP FILTERS



Air make-up bag filter

Depending on your paint booth setup, your first line of filtration defense may be air make-up filters.

Located in the Air Make-Up Unit (AMU), these filters trap large particles before air reaches the AMU, which provides pressurized air to the booth. In addition to providing filtration for the AMU itself, the filters play an important role in extending the life of more expensive filtration down the road. Air make-up filters come in multiple varieties, including pad filters, panel filters, cleanable aluminum filters and pocket and bag filters.

When troubleshooting airflow issues, air make-up filters are a good place to start. If you have insufficient airflow, the filters may be dirty or clogged, and if you are getting too much airflow, check to ensure the filters are correctly in place. Also, keep in mind that with air make-up filters in many units, a burner or cooling coil is located directly behind the filter frame system, so care must be taken to ensure filters do not come in contact with the burner or coil.

INTAKE FILTERS

Particulates of only 10 microns can cause a defect on your paint job. This is the importance of intake filters; they provide clean, filtered air to the booth, so your coating operation is free of foreign particles.

The type of booth also affects the type of filter required. For crossdraft booths, the filters are often internally supported polyester panel filters or linked panel filters, which are typically designed to be installed without the aid of clips or other mounting hardware, while creating a leak-free static fit when inserted into the frame. A common type of filter used in downdraft booths is a diffusion-type media pad. This type of filter allows the airflow to spread uniformly throughout the booth, ensuring optimal conditions for applying coating.



Because each type of booth uses different filters, the efficiency of the filters also differs. The polyester panel filters or linked panel filters for a crossdraft booth varies from a MERV 6-8, with GFS providing MERV 7 products for crossdraft booths. The diffusion-type media pad found in a downdraft booth is much more efficient, with a MERV 10 or higher. This rating ensures an internal cleanroom atmosphere that removes more than 99 percent of all particulates 10 microns or larger from the air entering the booth.

EXHAUST FILTERS

Where intake filters ensure that you are working with clean air from the start, exhaust filters make sure the air leaving your paint booth is safe for the environment, while also keeping potentially dangerous chemicals from remaining in the airflow of the booth. Exhaust filters capture solid and liquid aerosols that painters can be exposed to through inhalation or dermal adsorption. The filters also keep those highly toxic materials from being released into the environment after passing through the booth.



Exhaust filters on wall

Another main goal of exhaust filtration is to protect your paint booth's fans, stack and plenum from the buildup of overspray contamination. Exhaust filters must be able to hold enough paint to avoid constantly replacing the filters, while also providing a minimal pressure drop within the booth to ensure particulates don't harden and end up on the painted surface.

Most paint booths typically use single-stage filters. The type of exhaust filter used is the same for crossdraft and downdraft booths, but the location and frame configuration differ. In crossdraft booths, there are plenum or wall filters, whereas in downdraft booths, exhaust pit filters are used.



Exhaust roll media for pit

The filters themselves are generally made of multi-layered polyester and/or fiberglass. Differences in fiber configuration, density and composition impact how any exhaust filter will perform.

GFS WAVE

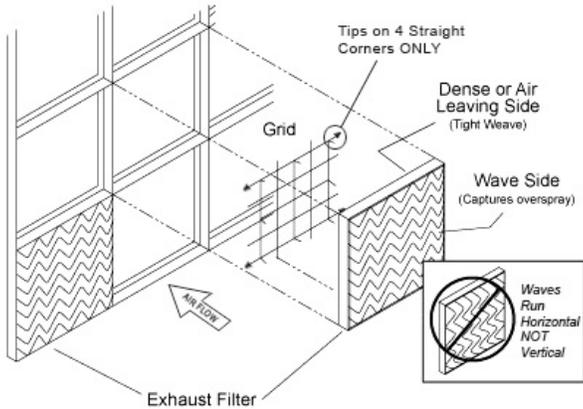
GFS Wave filters are extremely versatile single-stage filtration media for use as exhaust filters. They are included in all GFS paint booths, accommodating all paints and a wide array of spray applications, from clear coats to high solids. The patented wave pattern of the filter provides 2.3 times more surface area for every square foot of face area in an existing frame system.



GFS Wave is a nonwoven polyester media comprised of coarse and fine, standard and low-melt fibers

chosen for performance in overspray collection applications. The fiber blend, along with the wave pattern, enable paint-laden air to be captured across the surface and within the depth of the media, extending filter service life and reducing operating costs.

The filters provide 99.94 percent particulate removal efficiency and a holding capacity of 4.4 pounds. GFS Wave filters meet NESHAP requirements. The material also complies with NFPA 33, OSHA and UL 900 standards.



FILTER MAINTENANCE

Just as important as deciding which filters to use is establishing a regular schedule for changing intake and exhaust filters. Clogged or overloaded filters hinder proper airflow, causing dust or overspray to recirculate through the paint booth and affecting the finish of your paint job. In more severe situations, clogged filters may create flammable or explosive conditions within your booth.



With so many different styles and brands, filters reach their target reading and require replacement at varying rates. These rates also depend upon the paint type, booth design, fan speed, temperature and spray equipment.

One way to establish a changeout schedule for exhaust filters is to compare readings from a manometer or magnehelic pressure gauge with your booth manufacturer's specifications. Without a pressure gauge, it is best to establish a strict maintenance schedule based on the volume of spraying taking place on a day-to-day basis.

