

KITCHEN VENTILATION REPORT

Why should you use 6 UVC tubes and not 1 UVC tube in exhaust ventilators

ASHRAE testing for grease production with different types of cooking equipment has provided detailed information on the volume of grease produced, the particulate sizes and quantities produced as well as the amount of vapor (gas) produced.

As shown in chart A: a sample from the tests show that, heavy duty equipment produces up to 54 lbs. of grease for every 1000 lbs. of product cooked. Medium duty equipment produces 12 lbs. and light duty equipment produces less than 4 lbs.

On average 38% of the total weight of grease, is vapor as shown in chart B and 90% of the remaining particulate is smaller than 10 microns. As shown in Fig. 16 this particulate size in kitchen exhaust is very small and is actually a pollutant as shown in figure 14.

UVC tubes produce the light energy that breaks the bonded grease molecules into non-bonded chain molecules. This material still will collect and condense on the hood, duct and fan surfaces. The ozone produced from the tubes oxidizes these molecules producing CO₂, H₂O and microscopic dust.

The testing completed with UVC has shown that a minimum of four tubes are required over heavy duty equipment producing 25 lbs. or more of particulate and 3 tubes are needed over medium duty equipment producing 12 lbs. to 25 lbs. Light duty equipment producing 6 lbs. or less of particulate can use 1 – 2 tubes in the hood system.

Manufacturers now use 6 tube configurations in their UVC systems to cover heavy, medium and light duty applications. It is not cost effective to produce 6 (heavy duty), 4 (medium duty) or 2 (light duty) tube systems to cover each type of cooking application. The tubes are the lowest cost item in the system but maintaining their efficiency means the difference between a successful, working, CLEAN exhaust system and grease, accumulating exhaust system.

Six tube cassettes will allow the systems to maintain 100% efficiency even if the tubes get dirty, a bulb fails or ballast shuts down. They are used throughout the exhaust hood package to allow for future equipment changes (from light duty to heavy or medium duty for example). Six tube cassette systems produce more than enough UVC light energy and they also produce the volume of ozone (O₃) required to oxidize all of the grease produced which a single tube system cannot do.

Applications such as:

- Military bases
- Food courts
- Steak houses
- Chinese or Hamburger Restaurants
- Hospitals
- Nursing homes
- Universities
- Casinos
- Convention centers
- Pollution control equipment applications

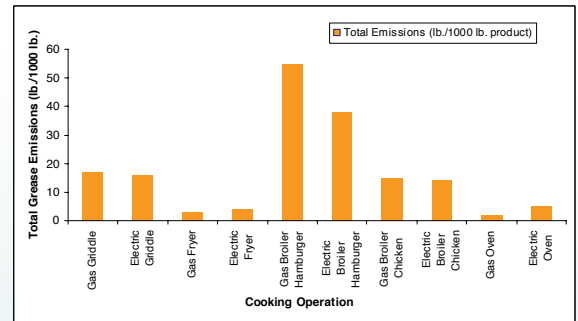


CHART A

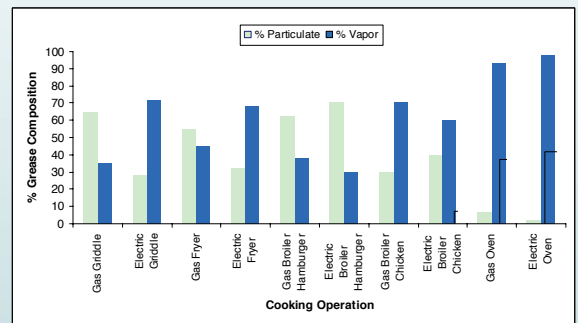


CHART B

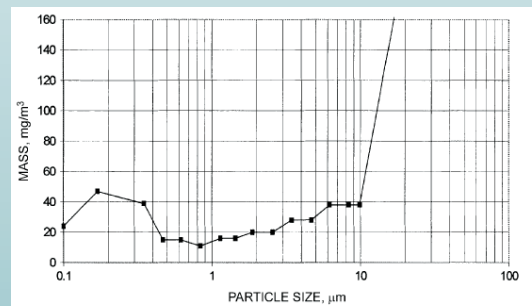


Fig. 16 Gas Charbroiler Mass Emission Versus Particle Size (Kuehn et al. 1999)

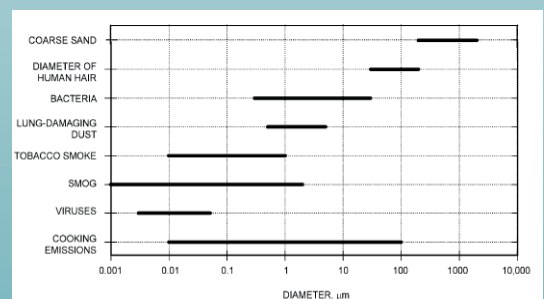


Fig. 14 Size Distribution of Common Particles