PROETCTION FROM WOOD DUST

Look around your shop. How much dust do you see settled on all your tools. Wood dust becomes a potential health problem when particles from processes such as sanding and cutting become airborne. Breathing these particles may cause health issues.

The body can expel dust particles larger than 10 microns; expelled as mucus. Smaller than 10 microns, the particles remain in your lungs forever. To be suspended in the air for any length of time, a particle must be less than 5 microns, much smaller than what we can see with our naked eye. That means the stuff coating the walls of your shop are the dangerous stuff.

A human hair is about 70 to 120 microns thick.

Saw dust is classified by the CC as a category 1 carcinogen, the same category as asbestos.

Prolonged exposure to fine dust particles can lead to:

Sneezing

Allergies, including building up an allergy to wood species you have worked with.

Respiratory issues later in life

Sinus, nose, and lung cancer

FIRST LINE OF DEFENSE - CAPTURE DUST AT THE SOURCE

Dedicated dust collection system

Overhead dust collector

Downdraft sanding table

Cross ventilation

Box fan with a furnace filter

Sand outside

Shop vac (HEPA filter/dust bag). High Efficiency particle air. Filters out particles > 0.3 microns.

I use a pleated HEPA filter and dust bag as well as an Oneida cyclone filter (show)

SECOND LINE OF DEFENSE – cover nose and mouth with good dust mask or respirator

Dust mask vs respirator – respirator has replaceable filters?

Dust masks/respirators must meet three criteria to be useful:

- ✓ Comfortable.
- ✓ Must fit your face snugly. Correct size (getting the correct size mask can be a trials-and-error event)
- ✓ Efficient at removing dust particles

NIOSH RATTING (a letter followed by a number)

Disposable dust masks won't come with NIOSH approval. A respirator should be NIOSH approved. It will also have a filter rating that indicates efficiency.

National Institute of Occupational Safety and Health (NIOSH) created a simple system for telling us how effect a mask is at filtering out fine dust particles. They test and certify masks and respirators. You need to pay attention to the letter and number printed on the mask (show example). This indicates the level of filter efficiency:

Letter and number printed on mask – Letter N or P followed by a number, usually 95, 99 or 100.

N or P

N = Non-oil (breaks down in presence of oil aerosols); paints,

R = petroleum resistant

P = petroleum proof.

Number – usually a N95, N99 or N100 – how effective the mask is at filtering out airborne particles 0.3 microns or larger.

95% - 95% efficiency at trapping particles 0.3 microns or larger.

100% means 99.7% efficiency at trapping particles 0.3 microns or larger.

GETTING THE CORRECT SIZE DUST MASK TO FIT YOU FACE IS CRITICAL TO HOW EFFECT THE MASK IS A PROTECTING YOU FROM DUST

Can be trial and error

Some manufactures use body weight: 125-215 lbs, medium/large size

Some manufacturers use measurements. Measure from bridge of nose (just below your eye line) to the tip of your chin. Based on this measurement, they have a fitting guide.

I think most users are probably in the medium to large range-your mileage may vary

THREE GENERAL CATEGORIES OF DUST MASKS

Three general categories of dust protection: Disposable, reusable respirator, and powered respirators.

1. **DIPOSABLE DUST MASKS.** White disposable dust mask – count the straps

One strap – not suitable, doesn't pull mask tight on the face

One layer of thin layer of filter material

Nuisance mask – no protection

Not NIOSH approved

Two straps – 3M - N95 NIOSH approved (nose clip and exhalations valve)

Multiple layers of filter material

One-way exhalation valve (some do and some don't have valve)

Keeps exhaled air from creeping up and fogging safety glasses.

Examples: Milwaukie and Rockler sell mask with a silicon type gasket around the outer perimeter of the mask. May help with seal.

2. Reusable respirator

May be NIOSH approved

Soft and flexible – usually made from some sort of silicone, neoprene or some sort of mesh material

Usually has one or two pleated filters

Exhalation valve

Have reusable outer parts and replaceable or washable inner filter

Other types of filters to protect you from harmful vapors

If properly fitted, dose a good job of dust protection

May not filter out organic vapor, depends on filter insert. You may be able to use different interchangeable cartridges to provide protection from various materials like organic vapors.

Examples:

Dust Bee Gone nuisance dust mask

Nuisance dust mask, woven polyester

Cost: $43

Efficiency: 3 microns

Not NOISH approved.

Washable

Base Camp M Plus Dust Mask (discontinued version; make several other similar models)

Made of nylon and is very comfortable to wear. It has an adjustable nose clip. It has a hanging ear design. It has a one-way exhalation valve which helps reduce fogging of safety glasses.

Cost: $25

Efficiency: 99.6% filtration dust (doesn't specify particle size)

Replacement filters: 18 pack $19

2 exhalation exhaust one-way valves

Activated carbon filters as well as standard dust filter; should last 30 – 40 hours or about 30-days; claims to have an electrostatic charge, The filter is replaceable and the mask is washable.

Adjustable nose clip

Hook and loop strap

Not NIOSH approved (lab tested), still considered an excellent dust mask

RZ Dust Mask

Make a variety of face masks and replacement filters. The M2 is common for wood workers use. This mask is designed to be very comfortable and effective at dust protection. It is made from mesh materials. The filter has two layers. The outer layer of the filter is capable of trapping 99.9% of particles down to .1 microns in size. The inner layer, activated carbon element is effective towards fumes and odors.

It features a single strap hook-and-loop closure. Each filter will last 30-60 hours before needing to be replaced. Has 2 one-way discharge valves.

They have a newer RZM3 mask ($40). Claims to be easier to breath (higher air flow)

Cost: M2 - $25

Efficiency: 99.9% of particles down to 0.1 microns in size

Replacement filters: 12 pack $30 (F1, F2, or F3)

Comfortable

2 exhalation exhaust one-way valves

Not NIOSH approved, lab tested, still considered a good dust mask.

Elipse GVS respirator

The “P100” in the GVS Elipse® P100 Respirator name means this mask protects against all particulates, offering a minimum efficiency of 99.97% or higher at 0.3 microns particle size.

It is made of hypoallergenic polymer materials and has replaceable filters for dust (included with each mask) and nuisance odor (available as replacement filters). Extremely lightweight, the mask fits perfectly to the face without hindrance to the user or his or her selection of eye and hearing protection and comes in two sizes, S/M and M/L to fit most faces. Large fits about 70% of users.

Cost: $37

Efficiency: NIOSH rated 99.97% of 0.3 microns or larger airborne particles.

Replacement filters: $18

¾ face mask

One-way exhaust valve

Flexible material which better fit facial contour

Replaceable filters; easy to change filters. Filters are high-end pleated HEPA filters

Two Size: small/medium and medium/Large

- Mask Construction - Body: TPE (Themo Plastic Elastomer)
- Filter Media: HEPA (High Efficiency Synthetic Particulate Air filter)

PROTECTION AGAINST HAZARDOUS ORGANIC VAPORS

Protect against organic vapors like oil-based paints, epoxies, paint thinners, etc. Usually have activated carbon. Can use a half face mask with various cartridges. You must know what vapor you need protection from and choose the appropriate cartridge.

There are also full-face respirators Create very tight fit around the face. Cartridges changeable. Some filters only organic vapors, but not saw dust. Some cartridges remove both vapor and saw dust.

3. POWERED REPIRATORS

If you have a beard, a powered respirator is the way to go. For wood turners, many of these respirators also include an impact resistant face shield.

They have a battery powered fan that pulls air though a filtration system and blows fresh air over your face. This produces positive pressure inside the helmet.

Trend Airshield pro

Cost: $490

Filter efficiency 98% at removing particles down to 0.6 microns

Twin dust filters (demonstrate)

High impact face shield

The filter, fan and motor are located on top of this respirator, so the weight is well balanced. There are optional ear muffs.

Runs about 8-hours on one battery

Not NIOSH approved.

Triton Powered Respirator (no longer available, but I own one)

In addition to being a respirator, it also provides a full-face shield, a helmet, and ear protection. A belt holds the fan, filter, and battery. These are connected to the helmet via a hose.

Cost: $250

Replacement filters: hard to find

Efficiency: NIOSH rated 99% of 0.3 microns or larger airborne particles.

There are similar models; I like the power source mounted on the belt rather than the helmet.