

COATED ABRASIVES OPEN VS. CLOSED COAT

Often when discussing or reading about coated abrasives you will hear the terms “open coat” and “closed coat”. I’ve had several instances when speaking with customers where they will specifically request an open coat material. When I’ve asked them if they know what that means, a surprising number of them have said no. The open/closed coat decision is one that can have significant repercussions on the life and finishing properties of your abrasive materials, so it’s one you need to understand well. Let’s start with a definition of each.

CLOSED COAT

The term “closed coat” means that whatever the backing of your belt, sheet or disc is....100% of that backing is covered in abrasive grain. Thinking about that statement in a logical fashion, two things can be deduced from it:

- 1.) Closed coat products would be the most aggressive
- 2.) Closed coat products will provide the finest finishes

They would be the most aggressive because every possible space that could be dedicated to a cutting grain IS dedicated to a cutting grain.

They would provide the best finishes because as there are no gaps in the grain coverage. Whatever grit you are sanding at should provide the full benefit of the work that grain is capable of doing.

SEMI OPEN / OPEN COAT

The terms semi-open and open coat mean that, to different degrees, the amount of abrasive grain on the backing of your belt, sheet or disc has been modified (lessened). Semi-open coat usually refers to a 30% reduction in the amount of grain on the backing while open coat usually means 50% has been withheld. Thinking about these statements logically, two things can be deduced from them:

- 1.) Semi-open and open coat products will cut less aggressively
- 2.) Semi-open and open coat products will finish coarser per grit than closed coat products.

Semi-open and Open coat products have less grain on the backing, which results in less cutting power per grit designation.

Semi-open and Open coat products have gaps in their grain coverage, so the finishes they provide will not be as even and will fall to the coarse end of the designated grit’s finishing parameters.

So why would you use one over the other?

You should never go off closed coat material unless there is a reason for you to do so. The main reason to do so would be that the material you are sanding or grinding is soft or gummy by nature. Examples of soft/gummy materials could include soft woods (Pine, Fir, Spruce, Larch, Cedar, Cypress, Redwood, Tamarack, and Yew) or soft metals (Some Aluminium’s, Brass, Bronze, Copper, Magnesium, Titanium, Zinc, and Zirconium) or non-phenolic plastics/rubber. When you attempt to sand these types of materials with abrasives using closed coat grain coverage, after sanding for a short while the areas between your grain tips will load up with sanding refuse.

Eventually it will load up to the point it's taller than the grain tops and will completely cover them. If you continue to sand with an abrasive in this state, you will burn both the belt and most likely the work piece. This is where semi-open and open coat materials come into play.

By spacing out the grains on the backing, you create room between individual grains which will help to reduce the amount of sanding refuse trapped between grains. You can then use compressed air or simply the movement/vibration of the running abrasive to help dislodge what has become attached. This will enable you to sand soft materials for longer periods of time with better results for both life of abrasive and result on work piece. It is true that you will finish coarser per grit and if all things were otherwise equal, for a shorter period of time overall, but for the soft materials semi-open and open coats will optimize both your sanding time and results.

I often come across folks using open coat/anti-static belts on their wide belt machines for sanding cherry, oak, ash or other hardwoods. They don't really have any "problems" per se, but I do try to inform them of the benefits of using closed coat materials for hardwoods and open coat materials for soft woods only. They are sacrificing life and quality on their bare wood finish for no reason. KLINGSPOR ordinarily charges no more for open than closed coat, so it's a shame for them to give up a finer finish and longer belt life for nothing.

By the same token we occasionally get calls from customers regularly using our open coat materials on their soft woods with excellent results, who at some point try to use it on cherry or oak and call to complain about burning. Well, you have only 50-70% of the grain trying to do 100% of the work and you have made no adjustment to the grit sequence. All of these factors are going to be conducive to burning not only of the abrasive but often on the work piece as well. You are in essence, overworking the open coated belt, and the excess heat results in burning.

The best solution is to use the right tool for the job. Use closed coats on hard materials and use open coats on soft materials. Open coat materials will have an "OC" on the back ordinarily, so they aren't hard to keep separated and are readily identifiable to shop employees.

Knowing what these two terms mean and how they affect everything from the longevity of your abrasives to the finishing quality of work pieces can greatly benefit both your bottom line and customer satisfaction.

**There are usually going to be open coat materials made available that have washable backings. Belt washing can be extremely simple and inexpensive or more complex and fairly expensive. Everything from solutions to soak belts in at your shop to steam cleaning machines is available. If you feel like belt cleaning is something that would be worthwhile for your operation, research it online for a wide variety of methods and price ranges. As semi-open and open coats help reduce loading, not eliminate it completely, washing can be a good way to get even more life out of your abrasives.