

Decoding Coated Abrasives: A Guide to Selecting the Ideal Sandpaper for Your Needs – Part 2



Part 2: Understanding Your Application and Making Selections

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Introduction

When it comes to navigating the world of coated abrasives, there are many variables to consider, and it can be complicated to identify the best solution to meet your needs. In **part 1** of this two-part series, we covered an overview of the technical aspects of abrasives, from grain types, grit and coatings, to sandpaper formats, such as discs and belts, and backings like paper, film and cloth – all this to give you a primer of what the world of abrasives has to offer. If you haven't looked that over, or you are unfamiliar with these aspects of coated abrasives, you'll want to read that prior to moving forward. In this second part, we cover a framework for how to apply the technical aspects to choose products that will work best for your particular needs. This article also includes a matrix of a sampling of popular applications and recommendations for them.

Let's dive in.

Part 2: Understanding your application

Once we understand all the technical components of abrasives, the next step is to consider the particular application. The following are some specific topics to address in the selection process:

The material and qualities of your workpiece – *such as hard or soft wood, MDF or metal and the characteristics, such as flat, profile or curved;*

The specific sanding application– *such as rough sanding, shaping vs finish sanding;*

The techniques you'll be using – *such as wide belt sanding, hand sanding with an orbital sander or otherwise;*

The possible issues you could face – *such as static, chatter, swirls or torn discs;*

Your values/priorities in product selection and sanding – *such as your budget vs time vs finish quality and type*



What type of material are you sanding?

One of the most important factors to consider when choosing the proper coated abrasive product for your needs is the material that you will be sanding. This is because every material – whether a species of wood, type of metal, or even solid surface, stone or fiberglass – has different physical properties that will influence factors such as tendency to load faster, the need for more or less pressure when sanding, the hardness of the material and how that will influence friability of the grain, the appropriateness for wet sanding and so forth.

In general, the goal with sanding is to produce the least amount of heat possible. Doing so will result in not only a better finish, but also a longer lifespan for your abrasives – and therefore a lower cost for supplies. Knowing the properties of the material will help you optimize this.

Sanding Softer Materials

When we discuss the softness/hardness of a material we are sanding, what we are really discussing is the susceptibility to heat/melting, as the friction from sanding will generate heat. This heat will then cause the resins in woods, or metal, paint/finishing products, and glue to melt and become gummy/sticky and stay on the sandpaper – along with the sanding dust and any other stray particles.

For this reason, when sanding these materials, it can be helpful to choose products that would have a semi-open or open coat, steatation, and the proper grain type for the application/material. However, if you are in the finishing stages, a closed coat will produce the most even scratch, so you may want to consider that, depending on your goals – for instance, if you are painting the surface, the scratch will be less evident than if you are polishing metal or using stain on wood.

When sanding softer materials, as well as lacquers, paint/primer, and fiberglass, aluminum oxide is often a good choice because it requires less pressure and does not need as hard of a surface to crack and become sharp again, whereas both ceramic and zirconia both require a very hard surface to activate the friability – which may cause them to “plow” through the material, rather than produce a nice cut – making them more suitable for rougher sanding applications.

Sanding Harder Materials

On the other hand, when it comes to sanding harder materials, these will require a sharper grain and likely more pressure. Since they have a higher melting point, quick loading will be less of an issue, but there is always some amount of loading when sanding, since you are producing waste material.

When sanding glass, stone or marble, silicon carbide is the only grain that will work on these materials. Silicon carbide will also work well for drywall, MDF and cork.

When doing a lot of rough sanding of metal, stainless steel in particular, choosing zirconia or ceramic may be your best bets for longevity, in spite of a potentially higher initial cost – as the grains are very long lasting. However, these grains may only be available in coarser grits, so if finishing is required, you will have to change to another abrasive – such as silicon carbide for polishing harder metals.

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What type of sanding – machine, hand, etc.?

Sanding comes in many forms – as discussed previously. If you already have your sanding system set up, this will likely be the easiest part of determining what you need – as it will be dictated by the parameters of the machine you use, or whether you are hand sanding. If you are just getting started, or you are looking to make a change in your process, our technicians and sales reps can help you determine what might be a good option for you.

There are many sorts of machine sanders out there. Following is a brief discussion of just a few of those types, but others exist for specialty niches, such as in floor refinishing, moulding sanders, and brush sanders.

Machine Sanding – Belts & Drums

Generally, using belt and drum sanders will be more efficient than hand sanding, however there is obviously a higher upfront investment. This should translate to much more saved time and higher output rate, and balance out in the end. It's best to use this style of sander when you have large, flatter items to sand – for leveling, and sometimes even finishing grits can be run through these machines.

When determining what belts or rolls to purchase for your machines, the first obvious factor is the size dictated by the machine. However, additionally, it's important to consider the belt joint style, and how many sanding heads are in the machine. Additionally, the other aspects will be based on the specific applications and removal rate you are looking to achieve – such as grit sequence and backing of the belt. Our article, "[Grit Sequence: Let \(gr\)it do the hard work for you.](#)"

“ can provide some additional guidance on this topic. With regards to the backing, we generally recommend paper belts, unless cloth is needed for heavy duty, very rough sanding or the flexibility of softer cloths for things like mouldings and profiles.

Machine Sanding – (Random) Orbital Sanders

Random orbital sanders are great time-saving tools when you have a lot of finishing work, or you are on the go, such as while working on job sites as a contractor, vs in a stationary woodworking facility. They also offer a great opportunity in automotive refinishing, where sanding can take days to get through the grits and various processes.

If you're looking at random orbital sanders, the Ekasand offers a variety of sizes, with and without dust extraction and both electric and pneumatic options. Our article, "**Pneumatic Versus Electric Random Orbital Sanders: 4 Things to Consider When Making the Choice**" provides additional insights about the pros and cons for these styles of sanders.

Using a random orbital sander helps to speed up the process, as opposed to hand sanding. Using a sander like the Ekasand, as opposed to other varieties, which are often much larger and bulkier, allows for less vibration, a more ergonomic design that is easier to handle, and ultimately, a very good finish.

If you'll be sanding larger spaces, using a 6", 3x8" or 3 2/3 x 7" versions will save the most time, whereas if you are sanding in smaller areas, the 3", 5" or 3x4" will be a good fit. If you are sanding inside of areas where there are 90 degree angles, try the rectangular version, as you will be able to sand right to the corner. When using the rectangle Ekasand sanders, we recommend using a pad saver to minimize swirls that result from the vibration and non-random oscillation.

Hand Sanding

While hand sanding will certainly provide a less costly option, since you will not need to purchase machines, it will be more labor intensive, thus, possibly costing more in the end. Furthermore, hand sanding can produce inconsistent results, as you may use more or less pressure or press harder with one finger over another. These things can cause an uneven finish.

Hand sanding can be done with sheets that are cut or folded, or with sponges. When using sheets, it's recommended to apply them to a block of some sort to have a more sturdy and even surface. When using just your fingers. We offer a 3×4" sanding block with a hook and loop face that works with our 3×4 hook and loop sanding sheets, 3×4" interface pads and 3×4" Ekasilk Plus sponges. We also offer several different types of sanding sponges. The specific application will determine which would best suit your needs.

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What is your sanding application?

In addition to the other parameters above, understanding your application is critical for selecting not only the proper grits/grit sequence, but can also influence other factors, such as the grain type, backing and which style of sanding (machine or hand) and so on.

Rough Sanding Applications

Rough sanding applications, such as heavy stock removal, sanding down edges on furniture, deburring or removing rust from metal, etc., will typically require a more heavy-duty product with a more sturdy backing – such as cloth or a heavier weight paper. Film products also offer a durable backing option, however this will not apply if this process is happening in a belt sander. Rough sanding applications will typically require lower grits, 80 and lower, and more aggressive sanding action, such as in a belt sander. As

for the grain selection, choosing a product with aluminum oxide may be a good option if sanding wood, though with raw wood, you might choose zirconia for milling applications. For harder metal, choose zirconia if you are removing burs or paint, and for stainless steel, zirconia or ceramic is the way to go. Silicon carbide in coarser grits can be utilized for removing paint, burrs or rust, as well as in floor refinishing to remove the previous finish.

Medium Sanding Applications

Medium sanding applications would include final shaping and removing of marks from previous sanding applications, as well as preparation for finish. These applications would typically range from about 80-150 grit. Choose a film, paper discs or sheets for your orbital sander or lathe, or a sponge product for hand sanding on finer.

Fine Sanding Applications

Fine sanding includes applications such as sanding between coats of finish and polishing. This includes both wet and dry sanding applications. Generally, fine sanding is in grits 180 and finer. Both aluminum oxide and silicon carbide are used in finishing applications.

If you're looking for a little more of a cut, but your surface has contours, you may want to try a 3x4 sander with an interface pad with our [Filmtek](#). This can give you the cut rate you need, while helping to match the surface and also absorbing some of the vibrations from the sander – preventing damage.

Depending on the circumstances, we generally recommend using a flocked-back foam product – such as our [Ekasilk Plus](#) sponges – on an

orbital sander, as they are long lasting and will speed up the finishing process. It goes without saying, but if you will be wet sanding, make sure the product you are using is waterproof – such as our [Ekawet](#) paper.

A lot of finer sanding is also done by hand, so we have hand sponges, as well as sanding blocks with hook and loop faces that provide a surface onto which you can mount 3×4 sheets of standard coated abrasives, if using a sander isn't for you.

When it comes to sponges, there are different types of foam and different thicknesses, all which can be utilized for various types of projects. Generally, the harder foam is better for flat surfaces and the softer is meant for matching contours. Our [Ekadiamond sponges](#) have a special coating/pattern to help reduce loading, which provide a great option while finishing.

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What issues are you trying to prevent or repair?

No matter what stage you are at with your project, you can encounter predictable problems. Whether that be static, chatter, broken belts, swirls or torn discs, dust, loading, moulder knife marks, all these issues can be either prevented, reduced or repaired with the right selection of products.

Dust, Loading & Static

If your abrasives are loading excessively, there could be a number of issues. Check out our [article about dust and loading](#). Some things to try would be to use a product with an open or semi open coat, wet sanding (in higher grits) or a stearated product.

If static is the problem, try a product with a stearated coating – as this can help reduce the friction.

If dust is the problem, when using a random orbit sander, choose an option that has dust extraction.

Wide Belt Sanding Issues

If using a wide belt sander, check out our articles about wide belt sanding issues, [part 1, about visible defects](#) and [part 2, regarding machine and abrasives maintenance and failure](#), for recommendations on how to deal with static, dust and other issues, such as chatter. Additionally, if you're experiencing chatter or issues with excessive loading on the wide belt sander, the belt joint could be an issue, so check out this [article discussing the various belt joint styles](#) and their advantages and disadvantages to see if you might be better served with another style.

Orbital Sander Issues and Swirls

When it comes to swirls, these are definitely one of the most annoying issues seen with orbital sanding. We have another article [about swirls](#), that can help – but, a quick tip if you need to mask them, is to use our maroon Uneelon non-woven pads on a 3×4 orbital sander for heavier swirl marks, or our grey Uneelon non-woven pads for lighter swirl marks. On the other hand, it's not recommended to try this application with the 5" non-woven discs for this application, as the random orbit on the disc sander can cause more swirls, therefore the 3 x 4 must be used to get rid of swirls effectively. These will mask them enough that they are no longer seen in the finish.

Moulder Marks

Our Ekasilk sanding sponges can be used to remove light moulder marks. If they are deep, we recommend trying a 3×4 sander with interface pad and Filmtek.

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What are your values/goals for the project?

A fundamental issue to consider when determining what process to follow in sanding and what products to use is to determine your priorities for the project. What I mean is, are you looking to get the best finish, or spend less time or money on the project? What is the budget?

These are important questions, because, if your goal is to save money, you might do that by choosing less expensive products – or you might see value in using more expensive products because they will last longer – i.e. you won't have to throw them out so quickly, thereby saving money. Additionally, using certain products and techniques may be more efficient, saving on labor and other costs, but may have a higher upfront investment.

If you're looking for the best finish, it's often best to utilize machine sanding, as that will typically provide a more consistent scratch, leading to a better finish. Additionally, if the best finish is more important, using products designed for finishing at the right stage, will also be helpful, rather than simply getting a finer grit of the regular coated abrasive. Using Ekasilk Plus, for example, which is designed for finishing, will help save time and help avoid problems like cut-through.

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Putting This Together: Specific Applications and Recommendations

Putting all these things together can be overwhelming, for sure. Below is a small matrix with several specific applications and the recommendations our sales technicians would make for them, based on the technical aspects of the abrasives, as well as what technique would be recommended. Hopefully this helps provide a more specific understanding of how to apply these concepts.

APPLICATION	MACHINERY	BACKING	GRIT RANGE	GRAIN	COMMENTS
Sanding Glued Up Panels	Wide Belt	Y wt. cloth	36 – 80	A/O or Zirconia	
Sanding 5 piece doors	Wide Belt	X wt. cloth or F wt. Paper	80 – 220	A/O & S/C	If joints have offsets, use cloth on first grit used, then go to paper on all subsequent grits
Sanding 5 piece doors	5" ROS Sander	C wt. paper or Film	80 – 220	A/O	

APPLICATION	MACHINERY	BACKING	GRIT RANGE	GRAIN	COMMENTS
Sanding Seal Coat on Stain	By Hand	1/2" or 3/16" sponge	Super Fine	A/O or S/C	
Sanding Seal Coat on Stain	3 x 4 Sander	5mm or 10mm Ekasilk Plus	Very Fine or Super Fine	A/O	5mm on regular doors, 10mm on shaker doors

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Conclusion

We get it – sanding is usually the least interesting part of the project – however, it can often be the most time consuming and potentially frustrating. When you have the right product for the job, however, it can make the process more efficient and produce better results.

Deciding to upgrade your sanding process can definitely feel overwhelming, with all the options out there. Hopefully this article helped you better understand some of the variables to consider when shopping for coated abrasives – such as the technical aspects of the products, like the different grains, coatings and backings – and how you can think about your applications in order to make selections that work for you.

If you have questions about our products, our technical reps will be happy to help. Reach out to sales@uneeda.com. If you're interested in purchasing our products, you can browse our online store at <http://shop.uneeda.com>. If you don't see what you're looking for there, simply reach out to our reps.

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