Training

How to Choose the Right Surface Finishing Product

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Choosing the right product for grinding and surface finishing applications can be daunting. Numerous types of abrasive products can be used for these jobs, and each is available in many different sizes, grains, and styles. While it's good to have many choices, it can also cause confusion.

For example, when you are using a right-angle grinder, the tool choices include grinding wheels, flap discs, and resin-fiber discs, and each has its own advantages and limitations.

Comparing the three types in this article assumes you are using the same grain type and wheel size for each.

- Grinding wheels generally provide the longest product life and greatest durability, but they also produce a relatively slow cut and the roughest finish. Regarding price, grinding wheels fall in the middle of the three options.
- Flap discs provide a fast cut and an adequate life, lasting much longer than a resin-fiber disc but not quite as long as a grinding wheel. A key benefit of flap discs is that they grind and finish at the same time. Also, they grind and finish at a consistent rate for the duration of the disc's life. Flap discs generally have the highest initial purchase price of the three product options.
- Resin-fiber discs are the least durable and have by far the shortest life, but they also have the least expensive initial purchase price. Resin-fiber discs can cut very fast for a short period of time; however, the grains wear and become dull with the very first use, which means the cut rate and surface finish continually degrade as you use the disc.

Also, resin-fiber discs must be paired with a backing pad for support, which adds to the cost. Choosing the appropriate backing pad affects the rigidity and performance of the disc. If you use a resin-fiber disc with a plain arbor hole, the lock nut, which tightens the disc to the backing pad, can cause interference when grinding at low angles of approach or in tight areas.

Once you understand the differences and benefits of the three products, you should answer the following questions before making a selection.

Question 1: Is Surface Finish Important?

If the answer to this question is no, a grinding wheel is a perfectly acceptable option. It offers cost savings over using a flap disc because of its longer life and durability, and it has a less expensive initial purchase price.

If the answer is yes, a flap disc is your best bet because you can use it to blend, leaving a consistent finish in one pass without using separate products for grinding and then finishing.

Resin-fiber discs will grind and finish, but remember, its finish and cut rate results diminish as the disc wears with use.

Finally, you could complete this process using a grinding wheel, but it would require using a secondary tool for the finishing portion because grinding wheels leave a rough finish. While using two tools instead of one can help extend the product life of your finishing tools, it also increases labor time to complete the job.

Question 2: Is Price Important?

If the initial purchase price of the product is your main concern, a resin-fiber disc is the least expensive option. Keep in mind that these discs are best-suited to small jobs. They initially have a quick cut rate, but they wear rapidly compared to a flap disc or grinding wheel.

While resin-fiber discs have a lower initial purchase price, you may need to buy 15 or 20 of them to get the same life as from one flap disc. Remember that using a resin-fiber disc also requires purchasing a backing pad.

Purchasing one flap disc at a higher initial price may provide a greater return on investment. When looking at purchase cost, be sure to also consider how much grinding and finishing needs to be done to ensure the best value.

Question 3: Do I Need Higher Productivity?

If you have a desire to improve productivity or throughput or reduce labor costs, the choice of finishing tool can affect time and cost savings.

If you require a fine finish, flap discs offer the greatest benefits for overall productivity since they grind and finish in one pass, saving you time.

In cases where surface finish is not important, using a grinding wheel can help improve productivity and throughput because of the product's overall cut rate, longer life expectancy, and durability. More jobs can be completed and out the door.

Question 4: Am I Concerned About Damaging My Workpiece?

Grinding wheels typically have a higher potential for damaging the workpiece, especially if you push too hard or if the wheel slips, because they are more rigid than flap discs or resin-fiber discs. When taking the first stroke, especially with a new grinding wheel, pull the wheel toward you rather than push it away to reduce the chance of gouging. Rework from gouging results in added costs for damaged material or lost time spent grinding out that mistake.

In addition, grinding wheels have a greater tendency to retain heat than flap discs or resin-fiber discs. When using a grinding wheel on stainless steel, for example, this heat can lead to "bluing up" the material—where the surface literally turns blue—due to excessive heat. This again can result in added costs for damaged materials or time spent on rework.

Flap discs tend to be more forgiving, and therefore there is less chance of gouging the material if you push too hard or slip. Resin-fiber discs can also be more forgiving, depending on the hardness of the backing pad being used.

For Best Results, Consider Your Options

While you have numerous product choices for grinding and surface finishing, it's important to know the advantages and disadvantages of each product to get the best results and to accomplish what you need for the job. Maybe product longevity is the most important factor, or perhaps you're looking for the fastest cut. Is initial purchase price a key consideration, or are you more interested in increasing productivity and throughput?

While there is no one-size-fits-all solution, knowing your goals and objectives can help you narrow the choices and choose the product that is best-suited for the job.

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