



Metalworking

3M Refines Scotch-Brite Abrasive Discs to Boost Tool Life, Cutting Speed

James Langford | Nov 12, 2024

One of the factors that makes choosing abrasive discs for machining jobs so complicated is that the task they're built for—finishing workpieces—is complicated too.

There's no uniform standard for judging finishes. What's considered good varies by product, from drawer pulls and faucets to aerospace components, as well as by customer.

That's why metalworking supplier 3M, which recently added *Precision Surface Conditioning Discs* to its line of Scotch-Brite™ industrial abrasives, has developed a lineup broad enough to meet the needs of virtually any buyer.

"Finishes are very, very unique with our customers, and we want to make sure that we can achieve the finish that our customers need," says German Munoz, a surface conditioning portfolio manager for 3M's Abrasives Systems Division.

Effective in industries including aerospace, metal fabrication, food and beverage and collision repair, Scotch-Brite™ Precision Surface Conditioning Discs streamline processes from cleaning to blending, deburring and finishing.

"This is a multipurpose disc that we designed to do it all," Munoz says.

The Precision Surface Conditioning Disc combines two of 3M's flagship technologies: the precision-shaped ceramic grain used in the company's Cubitron II and *Cubitron 3* products and nonwoven fiber, which the company introduced in 1958.

3M's nonwoven web is made with nylon soaked in resin and abrasive materials, the company says. Fibers and particles are bound together to form an open, three-dimensional structure that provides spring-like action to help abrasives conform to workpiece surfaces and bounce back without leaving an uneven finish.

Whether it's deployed on pads, discs, wheels or belts, the nonwoven fiber is consistent all the way through, which exposes new abrasive material as the product is used, extending its life, 3M says. Nonwoven abrasives smooth metal surfaces without gouging, undercutting or damaging them; they're commonly used to achieve a specific surface finish on stainless steel or to prepare surfaces for paint and other coatings.

Precision-shaped grain was introduced in 2009, decades after nonwoven fiber. 3M used it first in coated abrasives, combining it with nonwoven fiber only with the introduction of the Scotch-Brite™ Precision Surface Conditioning Disc line in 2022.

"We didn't just grab our old technology and add precision-shaped grain to it," Munoz explains. "We actually improved all the raw materials that go into this disc: There are newer resins, better fibers and new minerals."

In some laboratory tests, Precision Surface Conditioning Discs have lasted two or three times as long as earlier discs, Munoz says. Finishing performance and cutting speed have improved also.

Some customers accustomed to a two- or three-step finishing process have been able to eliminate one of the steps by using Precision Surface Conditioning Discs, he adds.

In addition to stainless steel, the discs work well on aluminum, carbon steel, Inconel and titanium, some of which are used in the aerospace industry by planemakers seeking tough lighter-weight materials to boost flight efficiency.

Better Finishing Performance, Faster Results

"This has been one of our most successful launches in abrasives for many years," Munoz says, and 3M is already working to expand the line. "Our sales have been growing every day, and many of our customers that were using our surface-conditioning discs are upgrading to our Precision Surface Conditioning Discs."

Precision Surface Conditioning Discs are available in five grades, from very fine to extra-coarse, and color-coded. With the precision line, 3M made the color palette more vivid, both to differentiate its brand and to enable users to identify different grades more easily. Very fine discs are blue, fine discs are green, medium discs are red, coarse discs are brown and extra-coarse discs are black.

3M worked for years on developing the new line, Munoz says, conferring with clients around the world on their needs.

"We tried to get a true voice of the customer," he explains, "so that we could create a product that would bring better performance and help users to achieve their finishing applications faster."

What qualities are most important to your shop when choosing surface conditioning discs? Tell us in the comments below.

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