



Metalworking

Abrasives Breakthrough: 4 Features of Quality Cutting and Grinding Wheels

Matt Morgan | Dec 22, 2023

In the pursuit of optimizing productivity, manufacturing businesses should leave no stone unturned. Or no part uncut.

Abrasives represent a small but key investment for manufacturers looking to boost efficiencies in their operations, as quality products can reduce workers' time spent cutting and grinding.

Matt Garin, portfolio marketing supervisor for 3M's abrasive systems division in the U.S. and Canada, says **3M** tasks its research and development team to improve on existing technologies and to "be prepared for what's next."

"Our goal is to make your workday easier, to make you able to get your job done faster, to make the abrasive last longer," Garin says.

So, what's next for abrasives?

A new line of portable bonded wheels featuring revolutionary technology from 3M illustrates the improvement potential that manufacturers can realize with performance abrasives. Here are four factors that can unlock the potential.

1. Cut Rate and Product Life

In 2009, 3M debuted the first-ever precision-shaped grain product to the market, called 3M™ Cubitron™ II Industrial Abrasives, which was a step change over the original Cubitron™ ceramic crushed grain.

"To be able to produce a perfect pyramid-shaped mineral over and over again—the exact same shape and height—and improve the cut rate and life was such a big jump," Garin says. "We were having situations where products were lasting four times longer and cutting twice as fast."

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3M

Today, 3M™ Cubitron™ 3 Performance Abrasives are another step change. 3M reengineered the ceramic precision-shaped grain and the technology behind binding the resin to the mineral. "That proprietary breakthrough in technology was one of the key improvements to the increased cut rate and extended life," Garin says.

Here are two highlights of the improvements:

- 3M™ Cubitron™ 3 Depressed Center Grinding Wheels deliver up to 50% longer wheel life and 14% faster cutting speed compared with 3M™ Cubitron™ II Wheels.
- 3M™ Cubitron™ 3 Cut-Off Wheels last three times longer and cut 10% faster compared with 3M™ Cubitron™ II Wheels.



3M™ Cubitron™ 3 Performance Abrasives—including Depressed Center Grinding Wheels, Cut and Grind Wheels and Cut-Off Wheels—feature a reengineered precision-shaped ceramic triangular grain to improve cut rate and extend life. (Photo courtesy of 3M)

2. Sustainability

Workers on the floor may not see **sustainability** improvements like they would cutting and grinding speeds, but company managers who have an eye toward green tax credits and incentives will certainly take notice.

3M ships its Cut-Off Wheels in resealable bags, which help to prolong the life of the abrasive—up to 20 percent longer, Garin says—and are made from recycled and/or chemically recyclable material.

Read more: The Delicate Art of Grinding Parts

Beyond the bag, 3M products also carry the SEAM seal—short for Sustainable European Abrasive Manufacturers—which demonstrates the commitment that 3M, one of SEAM's founders, has to environmental practices. Although the SEAM program aligns with Europe's strict sustainability standards, U.S. companies can certainly benefit from choosing products from sustainable suppliers.

"We get questions about sustainability more and more now from our customers. What are we doing to be more environmentally sustainable in our manufacturing process?" Garin says. "If something is stamped with SEAM, it means the company is committed to making their manufacturing process environmentally friendly."

3. Worker Safety

Continually pushing down on a grinder that's spinning—and vibrating—at high speeds can wreak havoc on a worker's hands and arms, potentially leading to reduced sensitivity, strength and dexterity.

Though abrasive products aren't among the top hazards in the workplace, they're still an important consideration for worker safety.

Read more: MSC Safety Services Help Workplaces Reduce Risk

With its latest Cubitron products, 3M has reformulated the wheel composition to provide better balance and smoother action. "We've lowered the vibration ratings on the Cut and Grind Wheels," Garin says. "So that means helping to bring less fatigue on operators, less vibration of their hands. Overall, it's a better grinding and cutting experience for them."

4. Price

Quality products should equate to longer life and greater efficiency. Stepping up in quality often comes at an increased cost to the user, with companies having to weigh the benefits and deciding whether it's worth paying more for an upgrade.

The decision to upgrade is easier with 3M Cubitron 3 Performance Abrasives. Thanks to innovations and efficiencies in its own manufacturing processes, 3M is offering its line of Cubitron 3 portable bonded wheels at the same published list price as the previous product line, Garin says.

Garin recalls the reactions to this news when the 3M Cubitron 3 brand debuted at FABTECH in September 2023. "We had a lot of welders and grinders come up to us saying how much they've enjoyed using our 3M Cubitron II wheels," he says. "We said Cubitron 3 is going to be that much better, and you're going to get it at the same price. It was very well received."

What would your company be able to do if new portable bonded wheels could help your workers cut

and grind faster? Let us know in the comments below.

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