



3M Science.
Applied to Life.™

3M™ Abrasives For Orthopedic Implant and Surgical Instrument Manufacturing

Surgical Precision

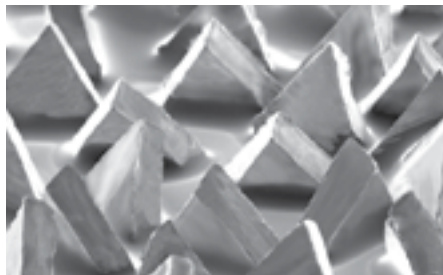
Get more control,
more productivity
at each finishing step

3M™ abrasive technologies.

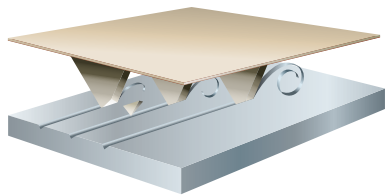
Supplying today's needs for precision medical instruments and orthopedic implants is a fiercely competitive business. As the baby boom population ages, demand for implants and surgical procedures of all types is expected to grow exponentially. But so has the demand for better-controlled surface finishes and tolerances, faster turnaround, smaller production runs and reduced costs.

That's where we can help, and **it all starts with better science.**

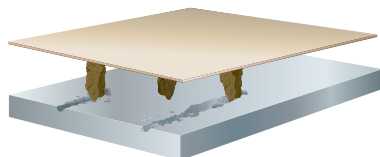
The science of speed



3M™ Cubitron™ II Abrasives are comprised of precisely-shaped, uniformly-sized and vertically-oriented triangles of ceramic aluminum oxide. These self-sharpening triangles are designed to fracture as they wear, continuously forming new, super-sharp points and edges that slice cleanly through the metal like a knife, instead of gouging or plowing. This prevents heat from building up in the workpiece – reducing heat-related stress cracks and discoloration. And, because the abrasive itself stays cooler and sharper, it lasts up to four times as long as conventional ceramic grain belts!



As the triangular shaped grain wears, it continuously fractures to form sharp points and edges that result in faster, cooler cutting action.



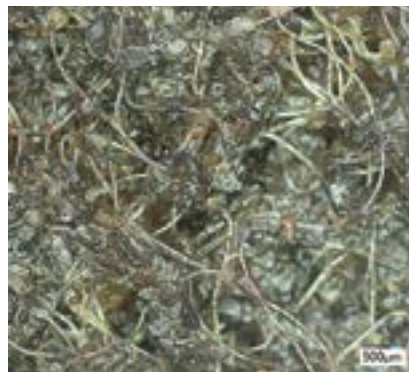
In contrast, conventional ceramic abrasive grain is irregular and blocky in shape. Instead of a clean, machining action, the grain tends to "plow" through the metal, causing heat to build up in the workpiece and the abrasive – resulting in a slower cut, shorter belt life and undesirable effects, such as burnishing.

The science of smooth

Scotch-Brite™ Abrasive Products

The Scotch-Brite line of surface conditioning products includes a variety of non-woven synthetic fiber webs and molded wheels impregnated with abrasive minerals. These products are well-suited for cleaning, blending, deburring, finishing and polishing, and improve surfaces without significantly changing the shape or dimension of the workpiece.

Scotch-Brite abrasives run cool, and resist loading due to their open web construction. This reduces the risk of part discoloration and warping, while extending the life of the wheel.



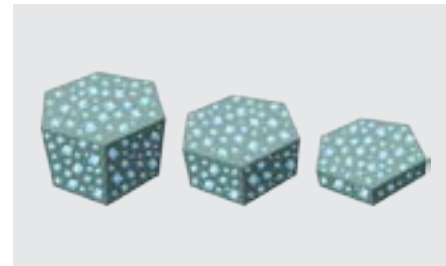
Scotch-Brite Weave, magnified xX

The science of consistent finishes.

3M™ Trizact™ Abrasives

Derived from patented 3M microreplication technology, Trizact abrasives consist of very small, precisely-shaped three-dimensional structures distributed uniformly over the substrate. Unlike conventional abrasives, which are constructed from randomly spaced and irregular-shaped minerals, the uniform configuration of Trizact abrasives helps deliver more consistent finishes with higher cut rates, and cooler grinding and finishing temperatures.

The fast, fine, consistent finishes made possible with Trizact abrasives help reduce reject rates and improve worker productivity. In addition, Trizact abrasive belts can last up to five times longer than conventional belts.



Heavy Stock Removal and Rough Dimensioning

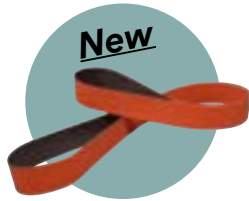
3M Abrasives are ideal for both robotic and off-hand removal of mill scale, rough dimensioning, parting lines, gates and flashing. The consistent high-performance and cutting efficiency of 3M abrasives makes it easier for you to meet customer cost and delivery targets – even on exotic, difficult-to-process alloys and ceramic coatings. Designed to be “user friendly,” these advanced, long-lasting abrasives help ensure predictable, quality results with less reliance on operator skill.



3M™ Cubitron™ II Abrasive Belt 984F

Your go to belt for **cobalt chrome**

- Excellent in medium/high pressure stainless and carbon steels and cobalt chrome
- Long belt life, producing more parts per belt with fewer belt changes
- Durable polyester cloth backing
- Available in grades 36+, 50+, 60+, 80+ and 120+.



3M™ Cubitron™ II Abrasive Belt 967F

Your go to belt for **titanium**

- Long lasting, excellent cutting for dry grinding and blending applications
- Heat-resistant grinding aid enables rough grinding on heat-sensitive alloys
- Heavy duty YF-weight cloth backing stands up to high pressure applications
- Available in grades 24+ and 80+



3M™ Cubitron™ II Abrasive Belt 784F

- Witness removal, medium pressure, finer grades
- Strong value for medium pressure grinding and dimensioning
- Polyester waterproof backing
- Available in grades 36+ to 180+

How cool is this?

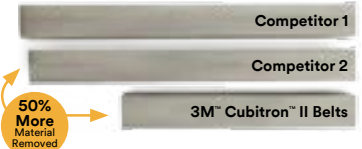
3M™ Cubitron II™ Belts are engineered to run cooler eliminating metal discoloration/oxidation and reducing the chances of heat-related stress cracks.



This photo shows four identical 304 stainless steel bars after nine grinding cycles of ten seconds each. While the three bars were ground using conventional ceramic abrasive belts show varying degrees of oxidation, the bar ground with a Cubitron II belt is free of burnishing.

No contest.

Cubitron™ II vs. Conventional Grain Competitors



This photo shows three identical 304 stainless steel bars after nine grinding cycles of ten seconds per cycle using equal pressure. In that time, the Cubitron II belt removed 50% more metal than the so-called “next generation” ceramic grain abrasive.

Surface Refinement, Finishing and Polishing

3M offers a variety of solutions designed to reduce abrasive process steps and increase the number of parts produced per belt. The products featured here are used for removing scale, gate witness blending and removing surface imperfections, including light and heavy burs. Their high efficiency and long life not only can help reduce the cost of labor and consumables, but can also speed delivery time.



3M™ Cubitron™ II Abrasive Belt 723D

- Strong value without sacrificing performance
- J-weight backing for flexibility on tight contours
- Available in grades 100+ to 220+



3M™ Trizact™ Abrasive Belt 217EA

- Aluminum oxide mineral on very flexible J-weight backing
- Ideal for lower pressure applications
- Available in grades A100 to A6



3M™ Trizact™ Abrasive Belt 307EA

- Aluminum oxide mineral on very flexible J-weight backing offering long lasting performance
- Available in grades A100 to A6

Lower is finer

The unique construction of Trizact™ abrasives requires a different grading system. Grade is defined by the average particle size in microns and begins with an “A.” Trizact abrasive belts are available in grades A5 through A160 in widths up to 26 inches. The Table below shows the Trizact abrasive grade comparison to conventional abrasive grades. As you can see, the lower the A-grade, the finer the grade

3M™ Trizact™ Abrasive Grading	
Trizact Abrasive Grade	FEPA (P-Grade)
A5	P3000
A6	P2000
A10	P1500
A16	
A20	P1200
A30	
A35	P600
A45	P400
	P320
A60	
A65	
	P240
A80	
A90	P220
A100	
A110	P180
A130	P150
A160	P120

Deburring

3M Offers a variety of advanced abrasive technologies for deburring, finishing and polishing. Designed to save time and steps, 3M abrasives are suited to today's difficult-to-process alloys and other advanced materials, making it easier for you to deliver the surface finishes and tolerances your customers demand – on-time and on-budget.



Scotch-Brite™ EXL Deburring Wheel

- Excellent choice for deburring and creating a radius
- Conformable and smooth running
- A unique resin system reduces heat build-up
- Available with aluminum oxide mineral in medium grades
- Silicon carbide available in fine and medium grades.



Scotch-Brite™ EXL Pro Deburring Wheel

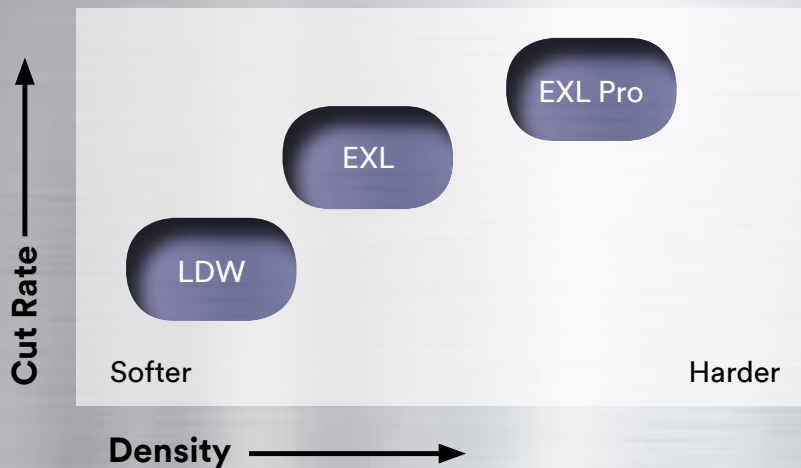
- Excellent choice for deburring and polishing.
- A unique resin system helps minimize smearing
- Ideal for heavier deburring of edges
- Durable wheel
- Fast cutting



Scotch-Brite™ Light Deburring Wheel

- Designed to provide a clean and economical system for removing fine burrs while providing a highly polished finish for surgical instruments.
- Silicon carbide available in fine grades.

Scotch-Brite Convolute Deburring Wheels Comparison



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