3M™ Abrasives for Orthopedic Implant and Surgical Instrument Manufacturing

Surgical Precision

Get more control, more productivity at each finishing step

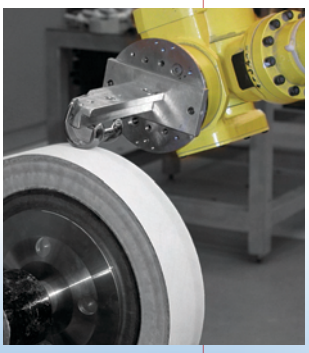
3M

The start of a better finish

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. 3M offers a portfolio of engineered products designed to meet critical market requirements and demand, reduce rejects and improve productivity – advantages that can help you stay ahead of the competitors.



3M abrasive products are supported by highly trained and knowledgeable sales, technical and customer service resources around the world. And we go one step further, with industry-leading support from our Customer Abrasive Methods (CAM) Center.

Located at 3M's St. Paul, Minnesota, headquarters, the CAM Center was established to help customers identify the most cost-effective combination of abrasives, equipment and techniques for their particular applications. At the CAM Center, evaluations are carried out under controlled, repeatable conditions using a wide array of production-scale grinding, polishing and finishing equipment, as well as in our on-site research and testing laboratories.

The services of the 3M CAM Center include applications development, process optimization, operator training and other technical support. Contact your local 3M representative for more information.

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.

NEW! 3M™ Cubitron™ II Abrasive Belts 984F

• Stainless Steel • Cobalt Chrome • Nickel Alloys

Revolutionary shaped abrasive grain delivers 30% faster cutting on hard-to-grind metals than the next-best competitive belt. Cubitron II belts cut cooler by diverting heat from the workpiece and belt to the swarf, to help eliminate burnishing and heat stress. Lasts up to 4 times as long as conventional ceramic aluminum oxide belts. Available in grades 36+.

3M™ Coated Abrasive Cloth Belt 977F

• Stainless Steel • Cobalt Chrome • Titanium • Zirconium

Designed for moderate to high-pressure applications. Performs well wet or dry. Features ceramic aluminum oxide blend abrasive grain mineral coated on a durable YF polyester backing. Contains a grinding aid that reduces heat, for cooler cutting, less part burning. Available in grades 24 to 120.

3M™ Cloth Belt 967F

• Stainless Steel • Titanium • Nickel & Cobalt Alloys

Designed to deliver long lasting and excellent cutting for dry off-hand and pressure-assisted degating, and dry blending of high nickel and heat sensitive alloys. Ceramic aluminum oxide blend abrasive grain on a heavy duty YF-weight cloth. Contains grinding aid to reduce heat buildup. Available in grades 24 to 80.

3M™ Cloth Belt 947D

• Stainless Steel • Titanium • Cobalt Chrome • Nickel Alloys

Flexible cloth backing for conformable dry grinding on contoured parts. Ideal for moderate to high pressure applications, including refining, dimensioning, stock removal, scale removal, stroke sanding and weld leveling. Contains ceramic aluminum oxide blend abrasive grain on a X-weight cloth backing plus a grinding aid for cooler running. Available in grades 60 to P120.

3M™ Superabrasive Wheels – Vitrified Bond

Diamond Abrasive: • Ceramics • PCD
CBN Abrasive: • Stainless Steel • Cobalt Chrome • Nickel Alloys

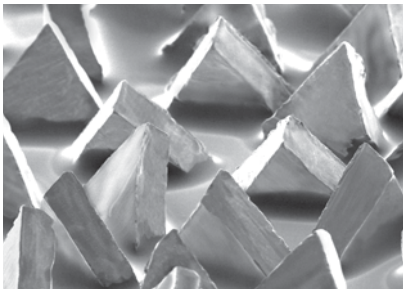
Vitrified superabrasive wheels feature a ceramic bond designed to be more free cutting than metal bond wheels. They are thermally stable and suitable for in-process dressing. Their dressability makes them particularly well-suited for form grinding applications, especially on CNC grinders and other automatic equipment. Available in grades 40 mesh - 2 micron.

3M™ Superabrasive Wheels – Brazed

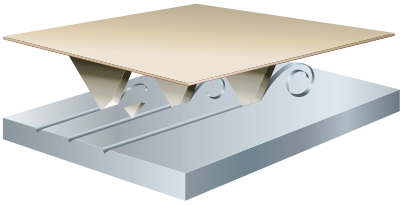
Diamond Abrasive: • Ceramics
CBN Abrasive: • Stainless Steel • Cobalt Chrome • Nickel Alloys

Brazed wheels consist of a single layer of abrasive that is chemically attached to a steel core. This allows grain spacing and placement control. They generally cut more aggressively than bonded wheels and offer longer life than plated wheels. An excellent choice for form grinding and other heavy stock removal applications. No dressing required. Ideal for use on CNC equipment. Available in grades 16-220 mesh.

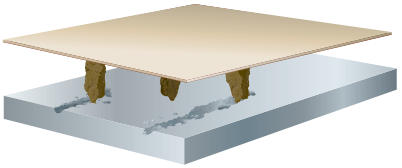
The Science of Speed



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 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.

Conventional abrasives start out sharp, but dull quickly.

The three-dimensional structures of 3M™ Trizact™ Abrasives contain multiple layers of mineral. As these pyramid-like structures wear, fresh, sharp mineral is constantly exposed to the workpiece, resulting in faster, more consistent cutting throughout the life of the belt.

Dimensioning and Scratch Refinement

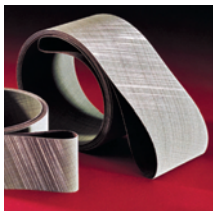
3M offers a variety of solutions designed to reduce abrasive process steps and increase the number of parts produced per belt. The products featured here are used for removing scale, gate witness blending and removing surface imperfections, including light and heavy burrs. Their high efficiency and long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

3M™ Trizact™ Cloth Belt 305EA

• Stainless Steel • Cobalt Chrome • Titanium • Zirconium

Aluminum oxide mineral constructed on a very flexible JE weight backing. Resin bonded for heat resistance. Offers outstanding consistency and long belt life in both robotic and offhand applications. Contains a grinding aid to assist in cutting and keeping the work piece cool. Available in grades A5 and A3.

3M™ Trizact™ Cloth Belt 307EA



• Stainless Steel • Cobalt Chrome • Titanium • Zirconium

Aluminum oxide mineral is resin-bonded to a JE-weight rayon backing for long-lasting performance. Proprietary Trizact abrasive provides a fast, consistent cut and a superior finish. Grinding aid helps keep work piece cooler. Available in grades A100 through A6.

3M™ Trizact™ Abrasive Belt 217EA

• Stainless Steel • Cobalt Chrome • Titanium • Zirconium

Designed for low pressure applications. Constructed from an aluminum oxide mineral on a very flexible J-weight backing. Contains a grinding aid to assist in cutting and keeping the workpiece cool. Available in grades A100 to A6.

3M™ Trizact™ Abrasive Belt 237AA

• Stainless Steel • Cobalt Chrome • Titanium • Zirconium

A robust, semi-flexible belt featuring aluminum oxide mineral on an X-weight backing. Resin bond construction with grinding aids provide heat resistance and extended belt life. Available in grades A160 to A6.

3M™ Trizact™ Abrasive Belt 407EA

• Cobalt Chrome • Titanium • Zirconium

A silicon carbide cloth belt constructed on a JE-weight, flexible rayon cloth backing. Resin bonded for heat resistance. Features a grinding aid for cooler grinding. Available in grades A110 to A20.

Dimensioning and Scratch Refinement

NEW! 3M™ Belt 302D

• Carbon Steel • Titanium • Cobalt Chrome • Stainless Steel

A good value, flexible belt made with quality aluminum oxide mineral on a J-weight backing. Resin bonded for heat resistance. Available in grades 60 to 600.

NEW! 3M™ Belt 332D

• Carbon Steel • Titanium • Cobalt Chrome • Stainless Steel

Similar in construction to 3M™ Belt 302D above, except on a more durable, flexible, X-weight backing. Available in grades 60 to 400.

3M™ Cloth Belt 707E

• Carbon Steel • Cobalt Chrome • Titanium • Stainless Steel

Provides a smooth, cool, fast cut that you can depend on for high quality results. Consists of a ceramic aluminum oxide blend abrasive grain mineral coated on a flexible J-weight cloth with a grinding aid. Designed for light to moderate pressure applications and contoured surfaces demanding flexibility. Available in grades 80 to P240.

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.

Deburring, Finishing and Polishing

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-XP Deburring Wheel

• Stainless Steel • Titanium • High Nickel Alloys

Offers ultimate durability and superior edge retention for tough burrs. Convolute construction means smooth running, superior finishes and maximum consistency. New technology maintains wheel conformability, resists "chunking." Abrasive mineral is fine grade silicon carbide.

Scotch-Brite™ EXL Deburring Wheel

• Metal Alloys • Plastics • Composites

Excellent choice for deburring and polishing. Available with aluminum oxide mineral in fine, medium, coarse and extra coarse grades. Silicon carbide available in fine and very fine grades. A unique resin system helps minimize smearing and reduces heat build-up.

Scotch-Brite™ EX2 Deburring Wheel

• Stainless Steel • Titanium • High Nickel Alloys

A convolute-constructed wheel offering mid-range aggressiveness and hardness for deburring, edge radius, blending, polishing and finishing. Fine and medium grade silicon carbide and medium grade aluminum oxide cutting material. A unique resin system helps minimize smearing and reduces heat build-up.

Scotch-Brite™ EX3 Deburring Wheel

• Stainless Steel • Cobalt Chrome • Titanium • Zirconium

A hard, durable deburring wheel suited for applications where edge retention is a must. These wheels perform best when consistently presented with a sharp edge or metal burrs. Not recommended where conformability and finishing of flat surfaces are required.

Scotch-Brite™ Light Deburring Wheel

• Stainless Steel • High Nickel Alloys • Composites • Plastics

Designed to provide a clean and economical system for removing fine burrs while providing a highly polished finish. Used for fine deburring, polishing and finishing because of their conformability, Scotch-Brite Light Deburring Wheels will maintain critical tolerances while still providing a fine polished finish.

Turn your finishing operation into a profit center – with 3M abrasive technologies

For over 100 years, 3M has been a world leader in the development of advanced abrasives designed to help customers in virtually every industrial sector improve productivity and achieve consistently high-quality finishes.

The bottom line

For today's manufacturer of surgical instruments and orthopedic devices, these issues are more critical than ever before. Although finishing is just one small part of your production process, it can play a critical role in maintaining your reputation for quality and reliability.

A smooth, close-tolerance finish can help a device function better, and can make instruments easier to clean.

But beyond functional considerations, a high-quality finish can be one of your most powerful marketing tools. That's because the appearance of a component or tool sends a strong message about the quality of its construction. A smooth, carefully-finished instrument or part helps inspire greater confidence in the user, implying precision, craftsmanship and high value.

3M product innovation and technical expertise, combined with over a century of practical abrasives application experience, can help you meet today's stringent quality, cost, material and turnaround challenges. Contact your 3M representative or authorized 3M distributor today to learn how 3M abrasive technologies can give you a head start on a harder-working finish.

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Abrasive Systems Division
3M Center, Building 223-6N-02
St. Paul, MN 55144-1000
1-866-279-1235
www.3M.com/abrasives

Please recycle. Printed in USA.
Issued: 6/10 7331HB
61-5002-8129-2