3M Science. Applied to Life.™

3M™ Lapping and Polishing Films for Precision Processing and Finishing

The science of smooth.

Engineered to deliver faster, more consistent fine finishes on a wide range of substrates.

A new level of consistency and control.

In the electronics industry, and wherever delicate processing of specialty materials is required, generating a high quality finish on flat or cylindrical surfaces using traditional methods such as honing stones, bonded wheels or slurries can be messy and time consuming. Now, with advanced film-backed abrasive technology from 3M, you can achieve consistent, predictable finish tolerances faster and easier – to help increase your productivity and reduce your costs.

3M™ Lapping and Polishing Films give you unmatched consistency and control for finishing and polishing hard-to-grind materials such as carbide, ceramics, hardened metals, exotic alloys and composites. They are engineered to help you achieve target finishes in fewer passes, so you can increase production without the need to invest in new machines or add shifts. And they provide a cleaner and faster alternative to diamond slurries or stones in many applications.

3M Lapping and Polishing Films are designed to meet the rigid standards of highly technical electronic or related specialty finishing applications. Precision manufacturing or coating produces consistent, fine finishes.

3M™ Lapping and Polishing Film Products: Diamond, Aluminum, Oxide, Silicon Carbide, Silicon Dioxide, Cerium Oxide

Achieve target finishes faster – first time, every time

- More consistent, predictable, repeatable finishes
- Remove up to 50% faster than conventional abrasive methods
- Eliminates traverse and chatter marks – helps reduce rejects and reworks
- Change grades in less than a minute – saves downtime on multiple grade sequences
- Achieve finer finishes

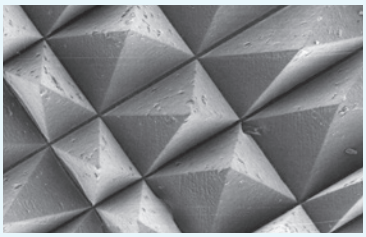
3M™ Trizact™ Lapping and Polishing Film Products designated by an XA

Precise and consistent abrasive surface

3M™ Trizact™ Abrasives feature an engineered surface of patterned three-dimensional structures. As the abrasive is used, the tops of the structures wear away, continually exposing fresh abrasive. This ensures a consistent cut rate and finish throughout the long life of the 3M™ Trizact™ abrasive.

3M™ Trizact™ Abrasives deliver results

- Saves time – in some cases, the desired finish can be achieved in half the time of other methods
- Long abrasive life – up to 10 times longer than other abrasives
- More effective surface levelling – flatter finish, faster planarizing



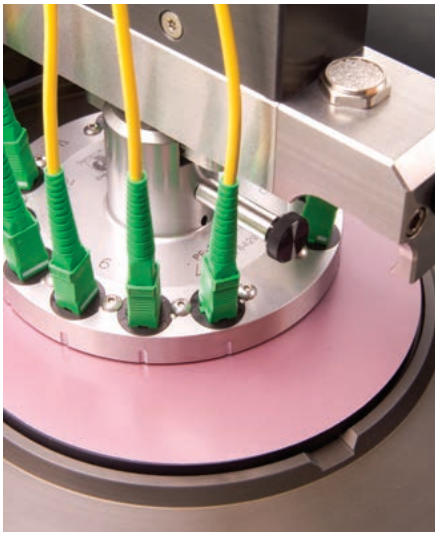
3M™ Trizact™ Abrasive surface, 50x magnification

Fresh abrasive continually exposed

Electronic Components

3M™ Lapping and Polishing Films are used for microfinishing and polishing whenever close tolerances are required.

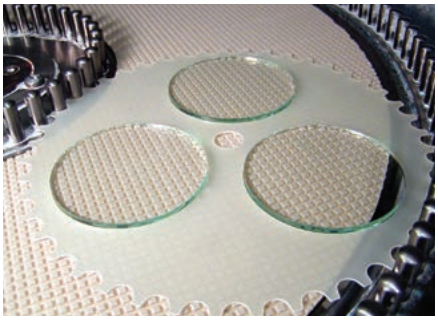
Substrates	Applications
▸ Brittle materials: Glass, sapphire, SiC, zirconia, etc. ▸ Metal ▸ Plastic	▸ Electronic components ▸ Fiber optic connectors ▸ Precision instruments ▸ Medical devices ▸ Hard disk drive ▸ Waveguides ▸ Micromotors ▸ Displays ▸ Mobile handheld case finishing and repair ▸ Glass cleaning and repair ▸ Glass edge polish



Flat Lapping

3M Lapping and Polishing Films offer repeatable, precision finishes on hard materials such as glass, silicon carbide, sapphire, ceramic, and other hard and brittle surfaces. They provide a cleaner, more consistent alternative to messy compounds or slurries.

Substrates	Applications
▸ Carbides ▸ Technical ceramics ▸ High-hardness metals ▸ Optical substrates ▸ Tungsten carbide ▸ Ceramic ▸ Graphite ▸ Sapphire ▸ High alumina ▸ Quartz	▸ Lenses ▸ Prisms ▸ Specialty ceramics ▸ CD/DVD mastering ▸ Metallurgical specimen prep, sample processing for failure analysis



Edge Finishing

With 3M Lapping and Polishing Films, you gain benefits including slurriless processing (only water-based coolant), better shape control, improved strength and faster processing including CNC/robotic polishing. Further improvements for edge finishing include reduced damage from fine grinding and improved results for matte or gloss finishes.

Substrates	Applications
▸ Glass ▸ Silicon ▸ Sapphire ▸ Silicon Carbide ▸ Zirconia ▸ Alumina ▸ Quartz ▸ Other hard-brittle materials	▸ Edge polishing of cover glass for handheld electronics ▸ Surface and edge polishing on housing, covers and lenses for wearable devices ▸ Wafer substrates edge polishing (Si, SiC, glass, sapphire, ceramic glass) ▸ CNC machining center polishing of glass and ceramics. ▸ LCD/LED display edge polishing

Versatile abrasive technology – for a new world of precision and productivity

For decades, customers around the world have been using 3M™ Lapping and Polishing Films on a wide range of substrates, and in a growing number of demanding applications. Following are just a few examples of how these high-performance abrasives can open up a new world of precision and productivity for you.

Product Construction

Product	Construction	Available Grades (µm)	Converted Forms*	Notes
3M™ Diamond Lapping Film 661X	Micron-grade diamond abrasive on polyester film backing	0.1 – 30	Sheets & discs Maximum width 12"	Improved consistency for finishing and polishing hard materials such as carbide, ceramics, hardened metals, exotic alloys and composites. Used for fiber optic connector polishing, flat lapping, superfinishing.
3M™ Aluminum Oxide Lapping Film 261X	Aluminum oxide abrasive on 3 mil polyester film backing	0.05 - 30um and available as 264X for 30-60um**	Sheets, discs & rolls Maximum width 26"	Used for fiber optic connector polishing, flat lapping, superfinishing
3M™ Silicon Carbide Lapping Film 461X	Silicon carbide abrasive on 3 mil polyester film backing	5, 9, 15, 30	Sheets, discs & rolls Maximum width 26"	Used for fiber optic connector polishing, flat lapping, superfinishing
3M™ Cerium Oxide Lapping Film 562x	Cerium oxide abrasive on a polyester film backing	0.5	Sheets, discs & rolls Maximum width 26"	Primarily used in glass device polishing
3M™ Diamond Lapping Film 662X and 676XY	Diamond, beaded abrasives on a 5 mil polyester film backing	0.25, 1, 1.5, 3	Disc 12" and 16" with PSA	Hard disk drive head finishing, waveguides
3M™ Lapping Film 061X	Chromium oxide mineral on a 3 mil polyester film backing	0.5	Sheets, discs & rolls Maximum width 26"	Ideal for final finishing of magnetic heads for computers, audio and video devices

3M™ Trizact™ Edge Finishing and Flat Lapping Portfolio

3M Product Number	Mineral	Applications	Sizes*	Competitive Advantage
678XA	Diamond 1-6um	Refining edges of glass, semiconductor, and ceramic components.	9" x 12" sheets with PSA	Higher cut rates, controlled removal, conformable to edge shape, cleaner process than slurry, ability to run in CNC machine
578XA	Cerium Oxide (size confidential)	Polishing of cover glass edges and glass components. Glass and silicon wafers.	9" x 12" sheets with PSA	Higher cut rates, controlled removal, conformable to edge shape, cleaner process than slurry, ability to run in CNC machine
677XA	Diamond 3-45um	Flat lapping, planer lens finishing, single or double side lapping	3-100" diameter lapping pads.	Flat parts, consistent removal rates, lower SSD

* Also available in custom forms
** Finer grades may be available. Check with local support.

Got a tough finishing challenge?

3M's global network of Abrasive Technical Service Centers and regional business centers are at your service! Our experienced staff of abrasive specialists can help you determine the optimal combination of high performance abrasives, equipment and process steps for your specific application. For contact information, visit us at **www.3M.com/electronics** and go to the "Abrasives for Electronics Finishing" section.

Product Use: Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application. Further, user is solely responsible for following all applicable environmental laws and regulations when using the product.

Warranty, Limited Remedy, and Disclaimer: Unless an additional warranty is specifically stated on the applicable 3M product packaging or product literature, 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. If the 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability: Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.

Electronics Materials Solutions Division
3M Electronics
3M Center, Building 225-3S-06
St. Paul, MN 55144-1000 USA
1-866-599-4227 phone
3M.com/electronics

3M and Trizact are trademarks of 3M Company.
Used under license by 3M subsidiaries and affiliates
Please recycle. Printed in USA. ©3M 2021. All rights reserved.
Issued: 7/21 16839HB 60-5002-0433-8