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Technical Data | March 2025

3M™ Trizact™ Diamond Tile 677XA

3M™ Trizact™ Diamond Tile 677XA is a structured, fixed abrasive composite pad consisting of an inorganic abrasive (vitreous diamond agglomerates) in an organic binder (cross-linked polymer) capable of lapping a multitude of substrates on varied equipment and processes.

Trizact diamond tile abrasive pads not only remove material faster than some coarse slurries or fixed pellets, but they also do it with fine diamond grades that help limit damage to substrates. The result is dramatically reduced polishing time. 3M in-plant studies found that the 3M lapping process can help reduce overall process time by up to 60% for improved throughput.

Without the messy residue of slurry lapping, the process, equipment, and manufacturing environment should be cleaner. Manufacturers can virtually eliminate the hassle of slurry disposal, simplifying their waste management. 3M's proprietary abrasives can make lapping less costly.

For use in either single or double-sided lapping, the pads mount to existing machine plates with a pressure-sensitive adhesive (PSA). Production of silicon wafers and fabrication of metal, electronic, and optical products are among the applications for electronic lapping.

Key Features

- Eliminates messy slurries
- Helps manufacturers produces excellent surface finish to slurry
- Helps manufacturers reduce their overall process time
- Helps manufacturers reduces their waste disposal costs
- Helps eliminate lap plate replacement

Grades and Sizes

- Available in 3, 6, and 9 micron grades and includes pressure sensitive adhesive (PSA) backing.
- Manufactured to virtually any shape, with many hole sizes and hole configurations.
- For discs or sheets greater than 47 inches, the pads will be shipped in multiple pieces.

Grade Selection

Grade selection is based on material type and process requirements. The smallest micron grade that will give a stable cut rate for given material is recommended. Using the smallest possible micron grade should result in a finer rough lap finish, reducing polish time by up to 50%.

Equipment

The Trizact diamond tile 677XA works with double and single sided lapping machines and can be directly mounted on most plate material types or geometry.

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Directions for Use

Reference the following Technical Application Bulletins for detailed information on the use of Trizact diamond tile 677XA:

- Machine Prep and Pad Mounting Instructions, bulletin p/n 60-5002-0022-9
- Lubricant Use and Filtering Instructions, bulletin p/n 60-5002-0023-7
- Pad Conditioning Instructions, bulletin p/n 60-5002-0021-1
- Frequently Asked Questions, bulletin p/n 60-5002-0024-5

Typical Performance Characteristics

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Average Material Removal and Finish

Grade	Borofloat™ Glass	Pyrex® Glass	BK7 Glass	Fused Quartz	Window Glass
3 micron	58 µm/min *Ra = 1575 Å* *Rt = 1.408 µm*	55 µm/min *Ra = 1625 Å* *Rt = 1.545 µm*	22 µm/min *Ra = 1629 Å* *Rt = 1.455 µm*	58 µm/min *Ra = 657 Å* *Rt = 0.6437 µm*	n/a
6 micron	105 µm/min *Ra = 2352 Å* *Rt = 2.169 µm*	115 µm/min *Ra = 2495 Å* *Rt = 2.316 µm*	76 µm/min *Ra = 2531 Å* *Rt = 2.284 µm*	69 µm/min *Ra = 951 Å* *Rt = 0.9865 µm*	43 µm/min** *Ra = 2814 Å* *Rt = 2.503 µm*
9 micron	181 µm/min *Ra = 3035 Å* *Rt = 2.580 µm*	165 µm/min *Ra = 3152 Å* *Rt = 2.827 µm*	105 µm/min *Ra = 3842 Å* *Rt = 3.429 µm*	89 µm/min *Ra = 1336 Å* *Rt = 1.0792 µm*	72 µm/min** *Ra = 3499 Å* *Rt = 3.061 µm*

Double sided lapping on Peter Wolters AC 500 machine

2 psi, 96 rpm, 200 ml/min flow rate, 5% Sabrelube® 9016 in water

5 minute cycles, ten 65mm substrates

* Data is an average of four 1.1mm scans with a 0.25 µm tip radius and 250 µm cut off.

** 10% Sabrelube® 9016 in water

Storage and Shelf Life

The shelf life of 3M™ Trizact™ 677XA is 12 months from the date of manufacture when stored in the original packaging materials and stored at 21°C (70°F) and 50% relative humidity.

Certificate of Analysis (COA)

The 3M Certificate of Analysis (COA) for this product is established when the product is manufactured and is deemed commercially available from 3M. The COA contains the 3M specifications, test methods and test results for the products performance attributes that the product will be supplied against. Contact your local 3M representative for this product's COA.

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Safety Data Sheet: Consult Safety Data Sheet before use.

Regulatory: For regulatory information about this product, contact your 3M representative.

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