



Trizact™ Diamond Tile 677XA

Frequently Asked Questions

Technical Application Bulletin

September 2003

What preparations need to be made to my lapping machine before using 3M™ Trizact™ Diamond Tile 677XA?

See *3M™ Trizact™ Diamond Tile 677XA — Machine Prep and Pad Mounting Instructions*

How do I mount the Trizact™ Diamond Tile 677XA pad to my machine plate?

See *3M™ Trizact™ Diamond Tile 677XA — Machine Prep and Pad Mounting Instructions*

With what machine conditions should I run Trizact™ Diamond Tile 677XA?

Lapping machines outfitted with Trizact Diamond Tile 677XA can be run at pressures and rpm's higher than traditional slurry lapping processes. This is possible because, unlike slurry, the abrasive grains in Trizact Diamond Tile 677XA are fixed and cannot be forced out of the lapping zone by excessive pressure or centripetal force. Typical machine run conditions for Trizact Diamond Tile 677XA in traditional lapping applications are 1.5 – 3.0 psi with pad surface speeds of 400 – 600 ft/min measured at the pad OD. However, Trizact Diamond Tile 677XA is a versatile product, and can often be used in specialized applications that run at pressures and speeds orders of magnitude higher than traditional lapping processes.

What kind of lubricant should I use with Trizact™ Diamond Tile 677XA?

See *3M™ Trizact™ Diamond Tile 677XA — Lubricant Use and Filtering Instructions*

What lubricant flow rate should I use with Trizact™ Diamond Tile 677XA?

Use the equation: lubricant flow rate = $.393 \times (\text{pad OD}^2 - \text{pad ID}^2)$ with flow rate expressed in ml/min and pad OD/ID in inches.

Can I recycle lubricant with Trizact™ Diamond Tile 677XA and, if so, how do I do it?

See *3M™ Trizact™ Diamond Tile 677XA — Lubricant Use and Filtering Instructions*

Is Trizact™ Diamond Tile 677XA compressible?

Trizact Diamond Tile 677XA pads are a composite construction of resin containing vitrified diamond agglomerate on polyester film that is bonded to an adhesive backed polycarbonate sub pad. The composite nature of this construction results in a product that is “globally” compressible. Pad compressibility must be accounted for when using caliper gauges on double-sided lapping machines by zeroing the gauge under steady state machine pressure. Given the substantial local stiffness of the product, pad compression does not significantly contribute to edge roll-off or surface waviness. In fact, the edges of parts processed with Trizact Diamond Tile 677XA are less prone to chipping, rounding and cracking when compared to parts processed using traditional slurry processes.

Why are stock removal rates with my Trizact™ Diamond Tile 677XA pad unstable and/or lower than quoted?

Stock removal rate is a function of several machine and process variables. The most obvious are machine pressure and velocity. Trizact Diamond Tile 677XA is a fixed abrasive product and, as such, has a pressure and speed operating window much larger than traditional slurry lapping processes. Most processes will attain good, stable stock removal rates with a minimum pressure of 1.5 psi and a minimum speed of 400 ft/min measured at the pad OD. Other common causes of unstable or low stock removal rates, with literature reference, are listed below.

- 1.) Insufficient pad break in.

See *3M™ Trizact™ Diamond Tile 677XA — Pad Conditioning Instructions*

- 2.) Particle contamination.

See *3M™ Trizact™ Diamond Tile 677XA — Lubricant Use and Filtering Instructions*

- 3.) Improper lubricant type or flow rate.

See *3M™ Trizact™ Diamond Tile 677XA — Lubricant Use and Filtering Instructions*

- 4.) Improper selection of product grade (diamond size).

Low removal rates caused by diamond dulling may be observed if too small of a diamond size is used for hard substrates.

How should I store machine mounted Trizact™ Diamond Tile 677XA pads between shifts?

Machine mounted Trizact Diamond Tile 677XA pads should be kept wet, on the lapping machine, when not in use. If the pads are allowed to dry, 10 – 25% reductions in stock removal rate will be observed during the first 1 – 3 batches at start-up. Original stock removal rates are achievable after this short ramp to steady state. During off shifts in productions or short shut downs, the recommended method of pad storage is to first thoroughly rinse the pad(s) with DI water then spray the pad(s) with lubricant and drop the upper plate (if a double sided machine) or cover the wet pad with a sheet of plastic film (if a single sided machine). For long periods of inactivity, it is perfectly acceptable to let the pad completely dry. Understand, however, that it will take a dry pad 1 – 3 batches before stock removal rates reach previous steady state levels. Before allowing any pad to completely dry, always thoroughly rinse the pad with DI water to prevent swarf from drying on the pad surface and contaminating future batches.

How do I remove Trizact™ Diamond Tile 677XA pads from machine plates?

Trizact Diamond Tile 677XA pads are easy to remove. Begin by pulling the pad away from the plate on an outside edge. When enough of the pad has been lifted from the plate to allow it to fold over on itself, begin pulling the pad such that the applied force is parallel to the plate surface. If adhesive residue remains on the plate, use acetone to dissolve. Alternatively, sticky backed tape can be used to pull, or transfer, the adhesive from the plate surface.

FOR ADDITIONAL INFORMATION: To request additional product information or to arrange for sales assistance, call 1-800-251-8634. Address correspondence to: 3M Industrial Business Customer Response Center, Building 21-1W-10, 900 Bush Avenue, St. Paul, MN 55106. Our fax number is 651-733-9175. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

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