VERSATEX®
TRIMBOARD

TRIM SMARTER.

C. Moulding and Millwork

Technical Bulletin C-4

Keys to Successful Moulding or Milling of Cellular PVC

Moulder

RPM's of Spindles

Varies with moulder. We recommend spindle speeds of 8,000 RPM's or greater. We have found that the higher the spindle RPM the smoother the surface of the milled VERSATEX board. Moulders with an RPM of 6,000 which is satisfactory but not optimum.

Feed Rate

Weinig specifies a feed rate of approximately 45 FPM (15m/min). We recommend feed rates between 40 and 60 FPM depending on material thickness, profile being cut and tooling wear. Too fast a feed rate could lead to surface chatter.

Hold Down

It is important the board be held in place during moulding to prevent or minimize material vibration. Vibration will lead to chatter lines across the face of the moulding profile.

Tooling Wear

It is important to maintain sharp tooling. Worn tooling or tooling with nicks on the insert will create a ripping or chatter look in the core of the cellular PVC board. This can also lead to softening or tearing of the core during the moulding process.

Tooling

Most mill shops use high speed tool steel inserts on their moulders. However, carbide steel inserts work best on cellular PVC. Be sure all cutter head inserts are properly aligned. Misalignment will lead to a rough finish.

Dust Extraction

One of the most critical components associated with the proper milling and moulding of VERSATEX. It is very important that all milling and moulding equipment have an optimum dust extraction and collection system. If you allow the dust and small PVC chips to build up around the tooling inserts, they will generate excessive heat thus softening or tearting the PVC core.

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Moulder (cont'd)

The rake angle other OEM's use when working with VERSATEX is 25 degrees. Steeper angles in the range of 10 to 15 degrees have been tried but typically produce a more coarse surface finish. Using a steep rake angle on the insert is much like using a dull blade when placed in contact with the product being milled. This is because the sharpest part of the tool is not in contact with the PVC piece being milled. As a result, if the angle is too steep you are basically cutting with a dull knife which can lead to tearing and ripping at the core of the product. This tearing and ripping created through the use of a dull knife will also generate excessive frictional heat which can cause softening of the PVC core.

Milling (CNC)

Use a single edge up cut spiral bit made for plastic. Use the biggest cutter your CNC can carry. The mass of a larger cutter will help dissipate frictional heat build-up, preventing "weld-back". Consider an O-flute cutter design. The idea is to create a true chip rather than dust off the cutter. Use a bit that pulls the shavings out rather than down. This removes the shavings from the cut, reducing heat buildup at the point of the cut, which reduces or eliminates tearout in the core. Carbide steel should be used instead of high speed tool steel for all CNC cutters. The Vortex Tool Company recommends a 5600 series cutter with a single edge up cut spiral. Good results will be achieved at a chip load of 0.016" to 0.018". Run your CNC cutters at 12,000 to 18,000 RPMs. Feed rates should be between 250 and 300 in./min. or 20 to 25 ft./min, depending upon material thickness and profile.