

AFX APPLICATION & INTEGRATION GUIDELINES

CUTTING

AFX can be cut using a variety of methods.

General note: Use sharp tools. Securely clamp material during processing to avoid shifting.

- WATER JET: The preferred method for clean edges and speed. AFX can be cut from either side.
- DIE CUT: Can be used for materials under 1.5 mm in thickness as a general guideline. The hard materials may tend to dull the die quickly which can cause the edges of the material to be less clean cut. Die cut is cleaner if cutting into rigid side first.
- CNC ROUTER: This method has been used for lower volume parts; a carbide 2 flute end mill has been used with success. Recommendation is to cut with hard side up and to use multiple passes with the router since the materials cut differently within the laminate. The edges may require minor sanding to remove debris.
- BAND SAW: AFX can be cut to shape using a band saw. Recommendations for this process include a cutting speed of 350 fpm and blade type of 10-14 teeth per inch blade with variable tooth pitch. These may be adjusted based on the equipment being used. The edges may require minor sanding to remove debris.

BONDING AND OVERMOLDING

AFX materials can be overmolded, injection molded, or adhesively bonded. These guidelines are suggestions for a starting point. Each application may vary, and it is recommended to test prior to production.

- ADHESIVE BONDING:
 - Both surfaces should be clean and dry; a light wipe with isopropyl alcohol (IPA) is effective. Avoid aggressive scrubbing and/or more aggressive cleaning agents as they can damage the material. If necessary, a mild abrasive, such as a Scotch-Brite pad, can be used to lightly scratch the surface to improve bonding.

- INJECTION / OVERMOLDING:

- Temperature and time under pressure can affect material characteristics. Maximum continuous processing temperature of 180°C is recommended; however, this can be exceeded for short periods of time. (For example, at 180°C and 5 PSI, processing time should be 25-30 seconds max. If PSI was higher, the processing time would need to be significantly shorter.)
- Because time, temperature, and pressure can vary during the process it is recommended to run trials with specific processing settings. Several conditions are noted below that have been used successfully.

- ▶ EVA COMPRESSION MOLDING

- Foaming agent: Azodicarbonamide
- Pressure inside mold: ~ 500 KPa
- Molding temperature: 140° – 160°C
- Part temperature after cooling: 30° – 40°C
- Cycle time: 13 – 15 Minutes (Heating & Cooling)
- Primers and Adhesives: Mix of Ethyl Acetate, Methyl Ethyl Ketone, Acetone (MEK and Acetone are the volatile, organic solvents.)

- ▶ TPU INJECTION MOLDING

- Injection pressure: ~ 80 MPa
- Holding pressure: ~ 100 MPa
- Molding temperature: 180° – 220°C
- Part temperature after cooling: 50° – 90°C
- Cycle time: 1 minute

NOTE: The conditions stated are a starting point. Actual conditions will vary based on materials, adhesives used and other factors. We strongly recommend the process be tested before production is started.