carbitex

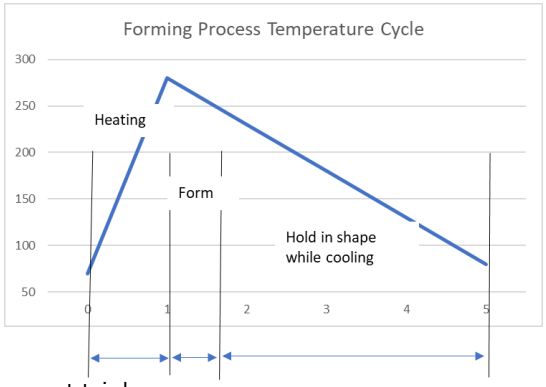
# AFX & DFX CUTTING AND FORMING GUIDELINES

## CUTTING

AFX and DFX using the following methods:

- WATER JET: *(Preferred method.)*
  - Cut material higher rigidity side up. Email designsupport@carbitex.com for additional details.
  - Most parts can be cut with water only.
  - Edge quality improvement may improve by:
    - Using abrasive with water
    - Reducing orifice size and cutting speed
  - Sample settings: 5MIL orifice, 50 IPM, 40K PSI settings with no abrasive.
- CNC ROUTER:
  - Edges may require minor sanding.
  - Sample settings: Chip load per tooth (0.06" mm/tooth), Cutting speed (160 sq. meters/min.); 2000 mm/min. Cutting tool: 3.175 (1/8") 2 flute end mill (down cut), 16000 RPM
- DIE CUT:
  - Most standard versions using woven fibers (<2.35 mm thick) may be die cut.
  - Die cut from the lower rigidity side. Email designsupport@carbitex.com for additional details.
  - Important to keep die sharp as it will wear more quickly due to the nature of the materials.
  - Not recommended for unidirectional fibers.

## FORMING




- The forming process stages are:
  - HEAT MATERIAL:
    - Heated press, oven or IR lamps.
    - Keep temperature under 325°F (163°C).
  - FORM UNDER PRESSURE:
    - Matched metal non-heated tool recommended.
    - Hand form over soft tooling can be done for development trials.
    - 10 PSI recommended.
  - COOLING:
    - Hold in shape during cooling (until <150°F).
- FORMING EXAMPLE: Release paper or non-stick sheeting (i.e. PTFE) is recommended to prevent polymer materials from sticking to press or tool.
  - Heat:
    - Option 1: Heated platen press: 10 PSI, 280° – 300°F for 200 seconds.
    - Option 2: Heat under IR lamps (time varies based on output, distance from lamp etc.).
    - Option 3: Heat in oven 300°F for 200 seconds.
  - Form/Cool:
    - Quickly remove from heating process and form on non-heated tool.
    - Hold in desired shape until cool.

NOTE: Trials to develop a process specific to the desired application will be required. Temperatures, times, and pressure may vary and will depend on specific equipment and tooling used. Geometry changes are easier if limited to toe to heel configuration. For further technical guidance email designsupport@carbitex.com.