Machining of Fiber filled Nylons
(Glass Filled Nylon & Hydlar® ZF)

Fiber filled nylons can be machined fairly easily. Fibers can lead to increases in warpage of a product after machining as well as increased tool wear. Tooling must be kept sharp to avoid excessive frictional heat build up which can lead to dimensional instability and melting.

Hydlar® ZF is a Kevlar® (aramid) fiber reinforced nylon. Aramid fibers are ductile and much less abrasive to tooling than glass fiber.

<table>
<thead>
<tr>
<th>Hydlar® ZF Machining</th>
<th>Glass Filled Nylon Machining</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drilling</strong></td>
<td><strong>Drilling</strong></td>
</tr>
<tr>
<td>Use carbide or diamond tipped tooling</td>
<td>Use carbide or diamond tipped tooling</td>
</tr>
<tr>
<td>Speed 2600RPM for 5/32” drill</td>
<td>Speed 2500RPM for 9/64” drill</td>
</tr>
<tr>
<td>Feed: 10’/min</td>
<td>Feed: 5”/min</td>
</tr>
<tr>
<td>Use of coolant will help prevent melting</td>
<td>Use of coolant will help prevent melting</td>
</tr>
<tr>
<td>Point angle 118°</td>
<td>Point angle 118°</td>
</tr>
<tr>
<td><strong>Milling</strong></td>
<td><strong>Milling</strong></td>
</tr>
<tr>
<td>Use carbide or diamond tipped tooling</td>
<td>Use carbide or diamond tipped tooling</td>
</tr>
<tr>
<td>Speed 2600 RPM</td>
<td>Speed 2000 RPM</td>
</tr>
<tr>
<td>Feed 10-15 inch/min</td>
<td>Feed 5-10 inch/min</td>
</tr>
<tr>
<td>Depth of cut up to 0.625” for end mill</td>
<td>Depth of cut up to 0.500” for end mill</td>
</tr>
<tr>
<td>Fly cut depth = 0.01 –0.05”</td>
<td>Fly cut depth = 0.01 –0.05”</td>
</tr>
<tr>
<td>Use standard geometry</td>
<td>Use standard geometry</td>
</tr>
<tr>
<td>30° Helix angle for end mill</td>
<td>30° Helix angle for end mill</td>
</tr>
<tr>
<td><strong>Sawing</strong></td>
<td><strong>Sawing</strong></td>
</tr>
<tr>
<td>Use carbide tipped blade</td>
<td>Use carbide tipped blade</td>
</tr>
<tr>
<td>Speed = 1500 - 2500 fpm</td>
<td>Speed = 1500 fpm</td>
</tr>
<tr>
<td>Moderate feed</td>
<td>Moderate feed</td>
</tr>
<tr>
<td>Use 4 pitch claw tooth blade</td>
<td>Use 4 pitch claw tooth blade</td>
</tr>
</tbody>
</table>

Kevlar® is a registered trademark of the DuPont Company.
Hydlar® ZF is a registered trademark of the A. L. Hyde Company.

We believe this information is the best currently available on the subject. It is subject to revision as additional knowledge and experience is gained. The A. L. Hyde Company makes no guarantee of results and assumes no obligation of liability whatsoever in connection with this information. Anyone intending to use recommendations contained in this publication should first satisfy himself that the recommendations are suitable for his use and meet all appropriate safety and health standards. This publication is not a license to operate under, or intended to suggest infringement of any existing patents. References to products not of A. L. Hyde manufacture do not indicate endorsement of named products or unsuitability of other similar products.

Copyright © 1999 A. L. HYDE Company
Last Modified: November 2, 1999