Ceramic Wear Surfaces

There is only one overwhelming factor to consider in felt wear strip applications: thermal shock. It occurs so often that only the most shock-resistant ceramic, silicon nitride, can provide any real protection against thermal shock-induced cracking and piano-keying.

Our felt strips are made of Kadant’s Ultrawear SN™ silicon nitride. Developed by a leading ceramics supplier, Ultrawear SN combines an especially smooth surface to reduce fabric wear and drive loads, optimum wear and chemical corrosion resistance, and outstanding fracture toughness to minimize cracking.

**Overview**

**Features**
- 316 stainless steel construction

**Benefits**
- Longevity—up to twelve times the life of poly strips
- Dovetail blade design eliminates cracking from thermal expansion
- Reduces surface abrasiveness, and helps felts last longer
- Lowest coefficient of friction of any available surface material for less drag load on drives
- Fully interchangeable with most poly wear strips
**All Ceramic Materials Are Not the Same**

**Alumina Ultrawear Al™ Ceramic Wear Surfaces**  
**Advantages:** Low cost; good wear and corrosion resistance; moderate machine drag.  
**Disadvantages:** Low thermal shock resistance; can cause high fabric wear.  
**Applications:** Fourdrinier, except on flatboxes when calcium carbonate is used.

**Silicon Nitride Ultrawear SN™ Ceramic Wear Surfaces**  
**Advantages:** High thermal shock resistance; low fabric wear, low drive load; best all-around combination of wear, chip, and corrosion resistance.  
**Disadvantages:** Cost  
**Applications:** High stress applications, like suction boxes and felt strips; all applications where calcium carbonate is used.

**Silicon Carbide Ultrawear SC™ Ceramic Wear Surfaces**  
**Advantages:** The hardest, most wear resistant ceramic; moderately high thermal shock resistance.  
**Disadvantages:** High cost; susceptible to chipping; lower thermal shock than Silicon Nitride; higher thermal stress than Silicon Nitride.  
**Applications:** All applications where severe ceramic wear is present.

<table>
<thead>
<tr>
<th>Property</th>
<th>Alumina</th>
<th>Silicon Nitride</th>
<th>Silicon Carbide</th>
<th>Zirconia*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Density</td>
<td>3.8</td>
<td>3.2</td>
<td>3.2</td>
<td>5.7</td>
</tr>
<tr>
<td>Flexural Strength (kg/m)</td>
<td>31</td>
<td>60</td>
<td>55</td>
<td>65</td>
</tr>
<tr>
<td>Vickers Hardness (kg/mm²)</td>
<td>1650</td>
<td>1400</td>
<td>2000</td>
<td>1250</td>
</tr>
<tr>
<td>Thermal Expansion (10⁶/Cº)</td>
<td>7.1</td>
<td>2.6</td>
<td>4.0</td>
<td>11.1¹</td>
</tr>
<tr>
<td>Fracture Toughness (MN/m 3/2)</td>
<td>3.5</td>
<td>5.7</td>
<td>5.6</td>
<td>9</td>
</tr>
<tr>
<td>Thermal Shock Resistance (∆T Cº)</td>
<td>200</td>
<td>550</td>
<td>400</td>
<td>300¹</td>
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<tr>
<td>Thermal Conductivity (cal/cm. sec. Cº)</td>
<td>0.06</td>
<td>0.05</td>
<td>0.15</td>
<td>0.0009</td>
</tr>
<tr>
<td>Coefficient of Friction</td>
<td>High</td>
<td>Very Low</td>
<td>Moderate</td>
<td>Low</td>
</tr>
</tbody>
</table>

* Note: Kadant does not recommend Zirconia for use in any wear surface application.  
¹ Note: Characteristics that lead to Zirconia cracking.

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