nanoShear R3 PVAc Brushes
for reduced brush break-in

FEoL ● MoL ● BEoL

Description
Rippey nanoShear R3 brushes were designed to meet stringent post-CMP defect requirements for ≤10nm logic devices, NAND flash technology, and emerging memory products. nanoShear R3 brushes provide the lowest level of releasable and trace metal contamination on the market. Ultra-pure nS R3 PVAc brushes result in shorter break-in times and improved CMP tool utilization.

Features

- **Ultra-Purity**
  nanoShear R3 brushes undergo a chemically and physically enhanced multi-step cleaning process. This process improves hydrolysis and metal chelation of process-related PVAc contaminants. nanoShear R3 brushes are processed exclusively on Rippey’s proprietary Cyclone™ flow-through cleaning systems.

- **Enhanced Quality**
  All nanoShear R3 brushes are scrutinized to the most demanding specifications. Effluent Liquid Particle Count (LPC) monitoring (>50nm) and trace metal contamination by ICP-MS is standard. nanoShear R3 brushes are vacuum sealed in low MTR/OTR transmission packaging to minimize transportation and storage-related quality issues.
Applications

Rippey nanoShear R3 brushes are compatible with all major CMP OEMs. Mandrels and tool interfaces are designed for quick and simple exchange.

To prevent bacterial growth and ensure long shelf-life, brushes come preserved in H₂O₂ or NH₄OH, or can be e-beam sterilized.

Depending on the application and cleaning requirements, nanoShear R3 brushes can be customized with various nodule formats.

<table>
<thead>
<tr>
<th>OEM</th>
<th>Applied Materials</th>
<th>Ebara</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Reflexion® LK, LK Prime™</td>
<td>FLEX 3005(2)</td>
</tr>
<tr>
<td>PN</td>
<td><em>3F</em>N-70-31NM-0317</td>
<td><em>3F</em>N-38-18NM-0310</td>
</tr>
</tbody>
</table>

NOTE: nanoShear brushes are only available in 300mm

Preservation

* 3 F N

PVAc Formulation

(3) Symmetry
(2) F2
(E) Eclipse
(C) Eclipse HCS

Quality

Quality is crucial, that is why Rippey nanoShear R3 brushes are tested and conform to the most demanding specifications. PVAc brush releasable and trace metal contamination are the lowest available.

<table>
<thead>
<tr>
<th>Metric</th>
<th>unit</th>
<th>Method</th>
<th>nS</th>
<th>nS R2</th>
<th>nS R3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final LPC</td>
<td>-</td>
<td>Effluent</td>
<td>≤1000</td>
<td>≤2000</td>
<td>≤2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sum&gt;0.2μm</td>
<td></td>
<td>Sum&gt;0.1μm</td>
<td>Sum&gt;0.05μm</td>
</tr>
<tr>
<td>Ion Contamination</td>
<td>ppm</td>
<td>Effluent, IC</td>
<td>≤0.10¹</td>
<td>≤0.10¹</td>
<td>≤0.10¹</td>
</tr>
<tr>
<td></td>
<td></td>
<td>≤1.00²</td>
<td></td>
<td>≤1.00²</td>
<td>≤1.00²</td>
</tr>
<tr>
<td>TM Contamination³</td>
<td>ppb</td>
<td>Acid Extract, ICP-MS</td>
<td>NA</td>
<td>NA</td>
<td>≤50</td>
</tr>
</tbody>
</table>

¹ Br, NO₂⁻, NO₃⁻, PO₄³⁻, Ca²⁺, Mg²⁺, K⁺, Na⁺
² Cl, SO₄²⁻
³ Na, Mg, Al, K, Ca, Ti, Cr, Mn, Fe, Co, Ni, Cu, Zn

Rippey (a division of ITW Contamination Control)
5000 Hillsdale Circle ● El Dorado Hills ● California ● 95762
916.939.4332 ● customer.service@rippey.com