Versum Materials and NuMat Technologies announce a global alliance to bring ION-X® sub-atmospheric gas storage and delivery system solutions to our worldwide customers.

**BENEFITS**

- New line of products for the safe storage and delivery of toxic dopant gases, using state-of-the-art MOF (Metal Organic Framework) technology as adsorbent
- Delivers ultrahigh purity dopant gases at sub-atmospheric pressures
- Best true sub-atmospheric solution
- 100% Plug and Play with existing implant machines
- Reduced change-outs and cost-of-ownership
- Favorable desorption and flow characteristics supporting ease of gas extraction
- Superior cylinder construction with the least failure modes

**SPECIFICATIONS**

(Shelf life: 5 years)

- Purity \( \geq 99.9997\% \)
- Carbon Dioxide (CO₂) \( \leq 0.1 \) ppmv
- Carbon Monoxide (CO) \( \leq 0.1 \) ppmv
- Methane (CH₄) \( \leq 0.5 \) ppmv
- Nitrogen (N₂) \( \leq 2.0 \) ppmv
- Oxygen (O₂) \( \leq 1.0 \) ppmv
- Water (H₂O) \( \leq 2.0 \) ppmv

**SAFETY INFORMATION**

<table>
<thead>
<tr>
<th>Formula</th>
<th>PH₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Description</td>
<td>Colorless gas with a fish or garlic-like odor</td>
</tr>
<tr>
<td>CAS Number</td>
<td>7803-51-2</td>
</tr>
<tr>
<td>OSHA PEL</td>
<td>TWA 0.03 ppm (0.42 mg/m³)</td>
</tr>
<tr>
<td>NIOSH PEL</td>
<td>TWA 0.03 ppm</td>
</tr>
<tr>
<td>ACGIH-TLV</td>
<td>0.3 ppm</td>
</tr>
<tr>
<td>NIOSH-IDLH</td>
<td>50 ppm</td>
</tr>
</tbody>
</table>
The information contained herein is offered without charge for use by technically qualified personnel at their discretion and risk. All statements, technical information and recommendations contained herein are based on tests and data which we believe to be reliable, but the accuracy or completeness thereof is not guaranteed and no warranty of any kind is made with respect thereto.

For more information, please contact us at:

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