Tungsten Hexafluoride (WF$_6$)

Description
A colorless, toxic, nonflammable, liquefied, compressed gas shipped at its vapor pressure of 2.4 psig (16 kPa) at 70°F.

Applications
Low pressure or plasma-enhanced CVD of tungsten and tungsten silicides.

Materials Compatibility

<table>
<thead>
<tr>
<th>Grade</th>
<th>Purity</th>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td>99.999%%</td>
<td>Acidity as HF</td>
<td>1 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Carbon Dioxide</td>
<td>0.5 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Carbon Monoxide</td>
<td>0.5 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Carbon Tetrafluoride</td>
<td>0.5 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nitrogen</td>
<td>0.5 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oxygen + Argon</td>
<td>0.5 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sulfur Hexafluoride</td>
<td>0.5 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chromium</td>
<td>5 ppb/w</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sodium</td>
<td>5 ppb/w</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thorium</td>
<td>0.1 ppb/w</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Potassium</td>
<td>5 ppb/w</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Uranium</td>
<td>0.05 ppb/w</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Metals*</td>
<td>100 ppb/w</td>
</tr>
</tbody>
</table>

*Total metals is the sum of the above specified plus Ag, Al, As, Au, B, Ba, Be, Bi, Br, Ca, Cd, Co, Cs, Cu, Ga, Ge, Hf, Hg, I, In, Ir, La, Li, Mg, Mn, Mo, Ni, Os, Pb, Pd, Pt, Rb, Rh, Ru, Sb, Se, Sn, Sr, Te, Ti, V, Y, Zn.

Molecular Weight
297.84

Specific Gravity (Air=1)
10.8

Specific Volume
1.24 ft$^3$/lb
0.077 m$^3$/kg

Critical Temp
338.0°F
170.0°C

Critical Pressure
619.0 psia
4,270 kPa

MSDS Reference
P-4855

EPA Hazard Categories
Immediate Health Hazard
Delayed Health Hazard
Fire Hazard
Reactive Hazard

TLV-TWA
None Established

IDLH (ppm)
30

Flammable Range
Nonflammable

Odor
None

DOT Name
Tungsten Hexafluoride

DOT Class
2.3 (Poison Gas)

DOT Label
Poison Gas, Corrosive

DOT ID
UN 2196

CAS Registry No.
7783-82-6
Gas Cabinet Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>GC402</td>
<td>2 Cylinder</td>
<td>74” (188 cm)</td>
<td>25” (63.5 cm)</td>
<td>19.18” (49 cm)</td>
</tr>
<tr>
<td>GC403</td>
<td>3 Cylinder</td>
<td>74” (188 cm)</td>
<td>37.25” (95 cm)</td>
<td>19.18” (49 cm)</td>
</tr>
</tbody>
</table>

Cabinet Configurations

- Wall-mounted process and purge panels with no cabinet shell (inert gases)
- Two-cylinder cabinet
  - Two process cylinders connected to remote purge source
    - Two UP6 automatic process panels; two UP100 controllers (automatic switchover capability)
    - Two WP5M manual process panels with two SM/SW8100 controllers
  - One process/one purge
    - one UP6 with UP100 controller, one UP2 manual purge panel
    - one WP5M manual process with SM8100 controller, UP2 manual purge panel
- Three-cylinder cabinet
  - Two process cylinders/one purge cylinder (alongside process cylinders)
    - two UP6 Automatic Process Panels
    - one UP2 Manual Purge Panel
    - two UP100 Controllers (automatic switchover capability)
  - Two WP5M manual process panels
    - UP2 manual purge panel

Praxair’s two-cylinder and three-cylinder gas cabinets are reliable, easy to use, and are designed with safety as a priority.