Gallium Metal

Introduction
Indium Corporation is a leading global supplier of pure gallium and gallium alloys and chemicals. Gallium metal is extracted as a byproduct during the production process for aluminum and zinc. Rigorous quality standards and advanced analytical instrumentation, such as ICP and GDMS, assures consistent product quality from one lot to another.

General Properties and Applications of Commercial-Grade Gallium
Gallium is used in many applications either as pure gallium, or as an alloy.
• Gallium is supplied in the form of alloyed sputtering targets to deposit thin-film layers in photovoltaic cells (such as CIGS)
• Gallium can be used in thermal evaporation equipment for thin-film deposition
• Gallium can be combined with indium, tin, and/or zinc to form alloys that are liquid at room temperature.
• Gallium is also useful because it wets to glass and ceramics.

Atomic Number 31
Boiling Point 2204°C
Melting Point 29.8°C
Density 6.10g/cm³
Atomic Weight 69.7g/mol

Available Physical Forms of Gallium
At room temperature, gallium is already very close to its melting point. Because of this, gallium is only offered in two forms:
• Round shot
• Formless metal
As round shot, gallium must be shipped cold in regulation-approved bottles to prevent heat exposure and melting during shipment.

Gallium is also supplied in combination with other elements as an alloy or chemical form.

Grades Available
• 4N (99.99%)
• 6N (99.9999%)

Oxidation and Shelf Life
Gallium is corrosive to most metals. For this reason, it should be stored in regulation-approved containers. Pure gallium, as it applies to round shot and formless metal, has a shelf life of 1 year when stored at <20°C.

Typical Impurities

<table>
<thead>
<tr>
<th>Impurity</th>
<th>4N</th>
<th>5N</th>
<th>6N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>0.5 max</td>
</tr>
<tr>
<td>Bi</td>
<td>2 max</td>
<td>2 max</td>
<td>0.5 max</td>
</tr>
<tr>
<td>Cd</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>0.25 max</td>
</tr>
<tr>
<td>Cu</td>
<td>10 max</td>
<td>2 max</td>
<td>0.5 max</td>
</tr>
<tr>
<td>Fe</td>
<td>2 max</td>
<td>1 max</td>
<td>0.5 max</td>
</tr>
<tr>
<td>Ni</td>
<td>5 max</td>
<td>1 max</td>
<td>0.5 max</td>
</tr>
<tr>
<td>Pb</td>
<td>15 max</td>
<td>3 max</td>
<td>0.5 max</td>
</tr>
<tr>
<td>Sn</td>
<td>15 max</td>
<td>3 max</td>
<td>0.5 max</td>
</tr>
<tr>
<td>Ti</td>
<td>&lt;1 max</td>
<td>&lt;1 max</td>
<td>0.5 max</td>
</tr>
<tr>
<td>Tl</td>
<td>5 max</td>
<td>2 max</td>
<td>0.5 max</td>
</tr>
<tr>
<td>Zn</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>0.25 max</td>
</tr>
<tr>
<td>Total ppm level</td>
<td>&lt;100</td>
<td>&lt;10</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

Please note that the above ppm levels are calculated averages from past production lots and do not represent the maximum, minimum, or lot-specific levels. The ppm levels in the table should not be used in designing product specifications. Impurities will vary from one lot of gallium to another, but the total impurities will be below the maximum allowed in each grade, ie:

4N grade: total impurities <100ppm
6N grade: total impurities <1ppm

Please let us know if you have specific requirements for one or two elemental impurities and we will do our best to accommodate your specifications for those impurities.

Technical Support
Indium Corporation’s internationally experienced engineers, material scientists, and metallurgists provide in-depth technical assistance to our customers. Thoroughly knowledgeable on all aspects of material science and metallurgy as it pertains to gallium metal, its uses and applications, our technical service staff is available to provide rapid response to all technical inquiries. We believe that our long-standing emphasis on providing our customers with superior technical service clearly differentiates Indium Corporation from our competitors.

Material Safety Data Sheet
The MSDS for this product can be found online at http://www.indium.com/techlibrary/msds.php