GALVANIC COMPATIBILITY FOR
BAL SEAL®
SPRING ENERGIZER MATERIALS

Technical Report
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(100-78-1)
To reduce potential galvanic corrosion, corrosion between dissimilar metals, Bal Seal Engineering Company can plate spring gaskets with a galvanically compatible material. Typical plating materials include gold, silver, tin, nickel, and zinc. Other types of plating are available upon request. Silver plating is the most widely accepted plating because it is compatible with most materials. Tin is a low cost alternative for contact with aluminum, a common shielding material, and stainless steel parts. Table 1 groups galvanically compatible materials together for easy reference.

It is possible to use materials from adjacent groups in normal environments (temperature/humidity controlled environments, office environments, warehouses, and some non-temperature/humidity controlled environments). For harsh environments (in the presence of fair to good ionic conductors, high humidity, or salt air), dissimilar metals should belong to the same material grouping.

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<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>Group 5</th>
<th>Group 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>Gold Alloys</td>
<td>Platinum</td>
<td>Platinum</td>
<td>Alloys</td>
<td>Titanium</td>
</tr>
<tr>
<td>Rhodium</td>
<td>Graphite</td>
<td>Palladium</td>
<td>Silver</td>
<td>Silver Alloys</td>
<td>Nickel</td>
</tr>
<tr>
<td>*AISI 300</td>
<td>Monel</td>
<td>Cobalt Alloys</td>
<td>*AISI 451, 440, AM</td>
<td>A286 Steel</td>
<td>*AISI Series 451, 440, AM</td>
</tr>
</tbody>
</table>

*Standard spring materials
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Table 1

To use this chart, locate the metals being considered for the housing and spring. Both materials should fall within the same group in harsh environments or adjacent groups in controlled environments. If the spring material is not compatible, select a plating material that is compatible with the housing. For example, with a 7000 series aluminum (Group 4), 300 series stainless steel spring material would be compatible in all environments. However, if the more conductive beryllium copper (Group 3) spring material is required in a harsh environment, the spring should be plated with a material in the same group as the aluminum, such as tin.

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