**SPECIALTY ALLOYS**

**AIM specialty alloys** consist of, but are not limited to, Indium, Bismuth, Cadmium, Gold and Gallium. The term "specialty" is used to describe solders that do not meet the standard tin-lead temperature range. AIM has developed solder products that meet customer needs on either side of 183°C.

**Indium alloys** are a good choice to solder gold surfaces when the gold has to remain intact. These alloys show excellent fatigue resistance when thermal mismatches are encountered. Indium alloys have a range of melting points, the lowest being the indium/tin alloy 118°C eutectic. These alloys perform very well when operating temperatures do not exceed 120°C. Indium is a unique, low-melting, ductile metal that will weld to itself under relatively low pressure and will wet metallic and non-metallic surfaces.

**Bismuth alloys** are the least expensive of the low temperature alloys, and bismuth is considered to be a less toxic metal. Bismuth/tin alloys are considered to be safe for potable water systems. These alloys do not wet as well and have lower peel strength as compared to tin/lead alloys.

**Cadmium alloys** are typically used for EMF shielding when cadmium content is in the 70% range. Cadmium alloys are an excellent choice for low temperature soldering when a mechanical joint is needed on aluminum or other difficult-to-solder materials.

**Gold alloys** are the best choice when soldering to gold-based materials. They are considered to be high reliability alloys, with excellent thermal and mechanical characteristics. Gold alloys are excellent for corrosion resistance when hermetic seals need to be formed.

**Fusible alloys** containing Bismuth/Indium/Tin have a wide range of fusible applications. Due to the low temperature and expansion characteristics of these alloys, they can be used in lens fixturing, radiation shielding, sprinkler head assembly, proof casting, turbine blade machining, and tube bending.

**Gallium alloys** are low temperature alloys that can be liquid at room temperature. These alloys can be used to replace Hg in applications such as motion switches and thermostats. Gallium/Indium alloys are also used for thermal management applications.

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