



# TECHNICAL DATA SHEET

CATEGORY: **FUSIBLE ALLOY COMPARISON**

## DESCRIPTION

AIM fusible alloys are low melting temperature alloys that contain bismuth, lead, tin, cadmium or indium. AIM's fusible alloys are utilized in a broad variety of tool & die applications, including casting, tube bending, machining parts for soft metal dies, fixturing, anchoring parts, toggle dies and supporting castings and interrupted cuts.

These alloys are normally used in gravity casting but also can be used in other casting methods.

Two key criteria when selecting an appropriate fusible alloy for a particular application are shrinkage upon cooling and hardness. Following is a comparison of these features of the AIM 141, AIM 140Ag and AIM 47 fusible alloys.

### Shrinkage Upon Cooling

AIM has developed a test to determine shrinkage upon cooling. A 0.875 inch rod is cast at the open end, which is the last place to solidify. The depth of the cooling cavity is then measured. This mold is temperature controlled to  $25^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$ . The alloy is then heated to  $20^{\circ}\text{C}$  above its melting point. After the rod is removed from the mold the depth of the shrink cavity is measured. The results of this testing are as follow:

AIM 47	0.75 inches
AIM 141	0.4375 inches
AIM 140Ag	0.375 inches

### Hardness Testing

The hardness of these alloys was determined using a modified test related to the Brinell Hardness test. The ball size was increased and load weight was decreased during this testing. The results of this testing are as follow:

AIM 47	23 / 24
AIM 141	20 / 21
AIM 140Ag	21 / 22

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