



Solder plus Support

FUSIBLE

LOW TEMP ALLOYS



FUSIBLE ALLOYS

A RANGE OF MELT POINTS AVAILABLE FOR

- Turbine blade encapsulation (leaded & lead free options)
- Fusible safety devices
- Fixturing machining components
- Optical lens blocking
- Tube bending
- Mold checking/proof casting
- Radiation shielding

AIM is a leading supplier of fusible alloys, for a broad range of tool and die applications. Whatever your application, AIM has the products and technical support to fulfill your most stringent requirements.

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 silvery white alloys expand only ~3.3% of their volume when changing from liquid to solid form, which makes these alloys ideal for many industrial applications. AIM fusible alloys are rarely consumed in an operation and therefore can be remelted and used multiple times. These alloy compositions are normally used in gravity casting but also can be used in other casting methods.

AIM can recycle all of your used/spent fusible alloy waste, contact AIM for free alloy recycling shipping containers.

ALLOY	APPLICATION INFORMATION	MELTING POINT °C
AIM 47	Low-temperature solder; fixturing delicate parts for machining; lens blocking; proof casting of cavities; dental models; fusible element in safety devices and alarms; radiation blocking for x-rays	47
AIM 58	Lens blocking; proof casting; fusible element in safety devices; anchoring parts for machining; sealing adjustment screws; holding jet engine blades for machining and broaching; filler for supporting castings in interrupted cuts	58
AIM 70	Punch and die in short run sheet metal forming; external and internal support for bending tubing extrusions; holding jet engine blades for machining and broaching; annealing and nitriding seals; nests for feeding stations.	70
AIM 71-88	For many of the same applications as AIM 70 but where less growth is required; mechanical dentistry.	71-88
AIM 124	Fusible element in pressure safety plugs; anchoring metal parts in glass; filler for large diameter tubes for bending; proof casting forging dies; liquid metal in constant temperature and heat treating baths; duplicate patterns in pottery making and foundry; mechanical dentistr	124
AIM 138	Fusible element in safety devices; locator members in aircraft fixtures; holding jet engine blades for machining; joggle dies; foundry patterns; potting molds for electronic encapsulation; low temperature solder; soft metal dies for wax patterns in investment casting	138
AIM 138-170	Closely parallels AIM 138 applications but is normally preferred for fusible mandrels for electroforming; proof casting large dies and molds.	138-170
OTHER	AIM can furnish other fusible alloy compositions to meet your unique requirements	-

Fusible Alloys



AIM offers a broad range of specialty alloys for various applications. See the chart below for specifications & applications information on commonly used AIM fusible alloys. Other alloys are available upon request.

AIM FUSIBLE ALLOY	AIM 47	AIM 58	AIM 70
Composition %			
Bismuth	44.7	49	50
Lead	22.6	18	26.7
Tin	8.3	12	13.3
Cadmium	5.3		10
Indium	19.1	21	
Melting Temperature (°C)	47	58	158
Density (lb/in³)	.32	.31	.339
Brinell Hardness Number	12	14	9.2
Tensile Strength (lb/in²)	5400	6300	5990
% Elongation	1.5	50	200
Conductivity (% of IACS)	4.50	2.43	4.00
CTE In/In PPM/°C	25	23	22
Liquid Specific Heat	.035	.032	.040
Solid Specific Heat	.035	.032	.040
Latent Heat of Fusion BTU/lb	6	8	14
Growth-Shrinkage Time After Casting			
2 Minutes	+0.0005	+0.0003	+0.0025
6 Minutes	+0.0002	+0.0002	+0.0027
30 Minutes	.0000	+0.0001	+0.0045
1 Hour	.0001	-0.0002	+0.0051
5 Hours	-0.0002	-0.0002	+0.0051
24 Hours	-0.0002	-0.0002	+0.0051
500 Hours	-0.0002	-0.0002	+0.0057