



FROM OUNCES TO TONS
NO JOB TOO BIG OR TOO SMALL

23 Chapple Street, Hamilton, Ontario, L8L 8K7

Toll free 866 979 7911 Phone 905 297 7911 Fax 905 385 2614

E-mail info@alchemyextrusions.com

Low Temp Alloys (Fusible Alloys)

Alloys and Industry Equivalents

Alloy Name	Part #	Industry Equivalents				
		AIM	AsarcoLo	Cerro	Indalloy	Ostalloy
Lead Rich Alloys						
LOW 158	BIPB27SN13CD10	70	158	CerroBEND	158	158
LOW 158-190	BIPB38SN11CD9	70	158	CerroBEND	158	158
LOW 203	BIPB32SN15.5	Bi46		CerroSHIELD	42	
LOW 217-440	BIPB29CD15SB9		217-440	CerroMATRIX	217-440	
LOW 255	BIPB44.5	124	255	CerroBASE	255	255
Lead-Free Alloys						
LOW 281	BISN42	138	281	CerroTRU	281	281
LOW 281-338	BISN40	138/170		CerroCAST		281338

Alloys and Their Uses

LOW 158	Typical End Use	Melt Temp: 158°F (70°C)
Bismuth 50% Lead 26.7% Tin 13.3% Cadmium 10%	<ul style="list-style-type: none"> Anchor bushings in drill jigs Internal or external support of delicate parts for machining Cores for spinning Fusible mandrels in filament winding. Fiberglas lamination Drop hammer and embossing dies Tube bending filler (up to 1-3/4" diameter) Heat transfer medium in processing plastics, chemicals, etc. (up to 255°F) Shielding Blocks for Nuclear Medicine 	
INDUSTRY EQUIVALENTS: AIM 70, AsarcoLo 158, CerroBEND, Indalloy 158, Ostalloy 158		

LOW 158-190	Typical End Use	Melt Temp: 158-190°F (70-88°C)
Bismuth 42.5% Lead 37.7% Tin 11.3% Cadmium 8.5%	<ul style="list-style-type: none"> Toy soldier casting Proof casting cavities (threads, dies, moulds, blind holes) Duplicate patterns in foundry match-plate making Supporting work pieces while machining Spray coating wood patterns Masks for electroplating and spray-painting. 	
INDUSTRY EQUIVALENTS: AIM 70/88, AsarcoLo 158-190, CerroSAFE		



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LOW 203	Typical End Use	Melt Temp: 203°F (95°C)
Bismuth 52.5% Lead 32% Tin 15.5%	<ul style="list-style-type: none"> • Cadmium Free alternative for LOW 158 for Nuclear Medicine. 	
INDUSTRY EQUIVALENTS: AIM Bi46, CerroSHIELD, Indalloy 42		

LOW 217-440	Typical End Use	Melt Temp: 217-440°F (103-227°C)
Bismuth 48% Lead 28.5% Cadmium 14.5% Antimony 9%	<ul style="list-style-type: none"> • Originated by GE for anchoring punches in dies • Anchor non-moving parts in machinery; hold down bolts in concrete floors, locator parts in tooling docks • Split jaw chucks, jigs, fixtures • Metal forming dies, form blocks, joggle jaws • Repairing broken dies • Filling blowholes in castings. 	
INDUSTRY EQUIVALENTS: AsarcoLo 217-440, CerroMATRIX, Indalloy 217-440		

LOW 255	Typical End Use	Melt Temp: 255°F (124°C)
Bismuth 55.5% Lead 44.5%	<ul style="list-style-type: none"> • Anchor cutlery handles, inserts in wood, metal parts in glass (Tuflex doors) • Make fusible spinning chucks • Mandrel for electroforms • Drop hammer dies, stretch form blocks • Moulds for plaster, plastics • Tube bending filler (over 1-3/4" diameter) • Hydrodynamic forming, seamless fittings • Duplicate patterns in pottery and foundry • Liquid metal in autoclaves, heat-treating • Heat transfer (Up to 327 °F) • Shielding Blocks for Nuclear Medicine 	
INDUSTRY EQUIVALENTS: AIM 124, AsarcoLo 255, CerroBASE, Indalloy 255, Ostalloy 255		



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LOW 281	Typical End Use	Melt Temp: 281°F (138°C)
Bismuth 58% Tin 42%	<ul style="list-style-type: none"> • Anchor shafts in permanent magnet rotors, locator members in aircraft assembly fixtures, metal parts in glass, magnets in fixtures • Make nests for parts in jigs and dial feed stations • Cores for electroforming • Embossing dies, form blocks • Joggle jaws • Lost wax pattern dies • Duplicate foundry patterns • Tracer models in profiling • Moulds for plastics, sheet plastics, plastic teeth, prosthetic development • Potting electronic components • Laps for rifle barrels. 	
INDUSTRY EQUIVALENTS: AIM 138, AsarcoLo 281, CerroTRU, Indalloy 281, Ostalloy 281		

LOW 281-338	Typical End Use	Melt Temp: 281-338°F (138-170°C)
Bismuth 60% Tin 40%	<ul style="list-style-type: none"> • Parallels LOW 281 in its end uses • Electroforming mandrels, lost wax pattern dies due to greater dimensional accuracy • Holding jet turbine engine blades for machining. 	
INDUSTRY EQUIVALENTS: AIM 138/170, CerroCAST, Ostalloy 281338		



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Properties	Eutectics			Non-Eutectics		
	Low 158	Low 255	Low 281	Low 158-190	Low 217-440	Low 281-338
Melting Temperature (F)	158	255	281	165	240	302
Range F	158-158	255-255	281-281	158-190	217-440	281-338
Yield Temp	158	255	281	162.5	240	302
Tensile Strength Lbs/In ²	5990	6400	8000	5400	13000	8000
%Elongation in slow Loading	200	60-70	200	220	<1%	200
Brinell Hardness No.	9.2	10.2	22	9	19	22
*Specific Heat - Liquid	.040	.042	.045	.040	.040	.047
*Specific Heat - Solid	.040	.03+	.045	.040	.045	.047
*Latent Heat - Fusion Btu/Lb.	14	7.2	20	10	-	22
Conductivity (Electrical) Compared with Pure Copper	4%	3%	4.5%	4%	3.2%	4.6%
*Maximum Load - 30 Seconds Lbs/In ²	10000	8000	15000	9000	16000	15000
*Maximum Load - 5 Minutes Lbs/In ²	4000	4000	9000	3800	10000	9500
*Safe Load Sustained - Lbs/In ²	300	300	500	300	300	50

*Approximate

Growth/Shrinkage Time after Casting	Eutectics			Non Eutectics		
	Low 158	Low 255	Low 281	Low 158-190	Low 217-440	Low 281-338
2 Minutes	+0.0025	-0.0008	+0.0007	-0.0004	+0.0008	-0.0001
6 Minutes	+0.0027	-0.0011	+0.0007	-0.0007	+0.0014	-0.0001
30 Minutes	+0.0045	-0.0010	+0.0006	-0.0009	+0.0047	-0.0001
1 Hour	+0.0051	-0.0008	+0.0006	.0000	+0.0048	-0.0001
2 Hours	+0.0051	-0.0004	+0.0006	+0.0016	+0.0048	-0.0001
5 Hours	+0.0051	.0000	+0.0005	+0.0018	+0.0049	-0.0001
7 Hours	+0.0051	+0.0001	+0.0005	+0.0019	+0.0050	-0.0001
10 Hours	+0.0051	+0.0003	+0.0005	+0.0019	+0.0050	-0.0001
1 Day	+0.0051	+0.0008	+0.0005	+0.0022	+0.0051	-0.0001
4 Days	+0.0051	+0.0015	+0.0005	+0.0025	+0.0055	-0.0001
8 Days	+0.0051	+0.0019	+0.0005	+0.0025	+0.0058	-0.0001
21 Days	+0.0051	+0.0022	+0.0005	+0.0025	+0.0061	-0.0001

Cumulative Growth and Shrinkage, Inch per Inch Compared to Cold Mold Dimensions.

Test Bar 2" x 2" x 10".