



Belmont
M E T A L S I N C .

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DATA SHEET

LM-RT

BELMONT LOW MELTING ALLOYS FOR RADIATION THERAPY

Bismuth based low melting point alloys have been used for a number of years to replace lead as shielding in radiation therapy. Due to the low melting point, these alloys are easier and safer to work with and make more accurate shields.

Since fine grain and dense structure are important in shielding, Belmont Metals has developed a method of improving these properties in low melting alloys. These improved alloys are designated RT (radiation therapy) alloys.

Most commonly used are the 2505RT (158°F) and the Cadmium Free 2531 RT (203°) alloys. Properties of these alloys are shown below:

CHEMICAL COMPOSITION (%)

	<u>2505RT</u>	<u>2531RT</u>
Bismuth	50.0	52.5
Lead	26.7	32.0
Tin	13.3	15.5
Cadmium	10.0	----

TYPICAL PHYSICAL PROPERTIES

	<u>2505RT</u>	<u>2531RT</u>
Melting Temperature	158°F (70°C)	203°F (95°C)
Freezing Range	158-158°F (70-70°C)	203-203°F (95-95°C)
Density (lbs/in ²)	0.339	0.350
Specific Gravity @ 20°C	9.4	9.7
*Thermal Conductivity (solid cal/cm ² /C/sec)	0.045	0.045
*Electrical Conductivity (% C.A.C.S. @ 68°F)	4.17	3.35
*Specific Heat (Solid)	0.04	0.04
*Latent-Heat-Fusion Btu/lb	14.0	12.0
*Coefficient of Thermal Expansion	0.00022/c°	0.0002/c°
% Volume Change (liquid to solid)	-1.7	-1.5
* % Volume Change (linear growth after solidification)	0.6	0.5

* APPROXIMATE VALUES

- See Reverse -

Belmont: The Non Ferrous Specialists

For maximum variety in non ferrous metals, alloys, formulations and shapes.

Custom shapes and compositions available.

GROWTH CHARACTERISTICS (I)

<u>TIME AFTER CASTING</u>	<u>2505RT</u>	<u>2531RT</u>
2 Minutes	+0.0025	-----
6 Minutes	+0.0027	-----
30 Minutes	+0.0045	-----
1 Hour	+0.0051	*+0.0055
2 Hours	+0.0051	*+0.0055
5 Hours	+0.0051	*+0.0055(4 Hours)
7 Hours	+0.0051	-----
10 Hours	+0.0051	*+0.0056
24 Hours	+0.0051	*+0.0057(20 Hours)
50 Hours	-----	*+0.0058
96 Hours	+0.0053	*+0.0059(100 Hours)
200 Hours	+0.0055	*+0.0060
300 Hours	-----	*+0.0060
500 Hours	+0.0057	*+0.0061
1000 Hours	-----	*+0.0062

* Approximate Values

- (1) Figures indicated are in inches per inch as determined from cumulative growth measured as difference in length between mold and test bar dimensions in a test bar 1/2" x 1/2" x 12".

Low melting alloys with other melting points and characteristics including Cadmium Free and/or Lead Free alloys are available upon request. Low melting alloys are normally provided in 2 to 2 1/2 lb. circular cakes. Other forms and shapes are available upon request.

NOTE:

The information contained in this data sheet is the most accurate in our possession at the time of publication, and is based on our effort to meet accepted industry references, standards, and specifications. However, Belmont cannot assume responsibility for in-service performance of these products due to our lack of control over, or supervision of, their use.