



Belmont
M E T A L S I N C

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DATA SHEET

L-1019

Cd: BELMONT ELEMENTAL CADMIUM

Typical End Uses

Belmont Elemental Cadmium is a silver-gray crystalline solid suitable for use in corrosion protection applications such as steel electroplating or the mechanical plating of fasteners and other parts. It can also be used in the production of low-melting alloys, brazing alloys, and bearing alloys, and as an alloying ingredient to copper to improve hardness. In addition, it may be used in the manufacture of nickel-cadmium batteries, nuclear control rods, pigments, stabilizers for plastics, phosphors, and semiconductor compounds.

Chemical Composition

Belmont Elemental Cadmium has a typical analysis of cadmium, 99.99+%(99.95% min); copper, 0.001%; lead, 0.005%; iron, 0.0002% max; silver, 0.001% max; thallium, 0.0005%; arsenic, antimony, bismuth, tin, zinc not detected.

Forms and Sizes Available

Belmont Elemental Cadmium is available in various sizes as anodes (ball, flat, cast rectangular, oval, round, stick), mossy, pellets and sticks for vacuum deposition, powder, rolled sheet, slab, shot, and wire.

BELMONT CADMIUM ALLOYS

Belmont offers a variety of standard and custom cadmium alloys for plating, vacuum plating, alloying, and additions applications. Standard and special compositions, including combinations, are available for:

Cadmium-Bismuth
Cadmium-Copper

Cadmium-Indium
Cadmium-Lead

Cadmium-Tin
Cadmium-Zinc

Forms and Sizes Available

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BELMONT CADMIUM OXIDE

Belmont offers 99.7% cadmium oxide suitable for plating, additions, and chemical uses. It is available in powder form.

- See Reverse -

Belmont: The Non Ferrous Specialists

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

Custom shapes and compositions available.

Cd: Belmont Elemental Cadmium

Mechanical Properties

Tensile strength: 71 MPa; 10,300 p.s.i. (725 kg/cm²)
Hardness: 16 to 23 HB; Brinell, 21-23; Brinell 500 kg = 22
Elongation: 50% in 1"
Modulus of elasticity: 8,000,000 p.s.i. (558,139 kg/cm²)
Elastic modulus: tension, 55 GPa; shear, 19.2 GPa
Liquid surface tension:

<u>°C</u>	
321	630 dynes/cm
330	0.564 N/m
450	0.611 N/m

Solidification shrinkage: 4.74%

Physical Properties

Melting point: 610°F (321°C)
Boiling point: 1413°F (767°C)
Density:

<u>°F</u>	<u>°C</u>	<u>g/cc</u>
68	20	8.65
77	25	8.62
626	330	8.020
752	400	7.930
1112	600	7.720
1292	700	7.56
1328	720	7.54
1382	750	7.51

Linear coefficient of thermal expansion: 31.3 μm/m·K at 20°C (32°F)

Specific heat: 0.055 cal/g(230 J/kg·K) at 20°C(68°F)
264 J/kg ·K at 321-700°C (610-1292°F)

Latent heat of fusion: 13.2 cal/g; 55 kJ/kg

Latent heat of vaporization: 286.4 cal/g; 887 kJ/kg

Thermal conductivity: 0.22 cgs at 20°C (68°F); 98 W/m·K at 0°C (32°F); 22.2% Ag

Electrical conductivity: 24.38% Ag; volumetric, 25% IACS at 20°C (68°F)

Electrical resistivity: 6.83 microhm-cm at 0°C (32°F); 72.7 nΩ·m at 22°C (72°F);
341 nΩ·m at 400°C(752°F); 348 nΩ·m at 600°C (1112°F);
358 nΩ·m at 700°C(1292°F)

Color: silver-gray

Corrosion Resistance

As a properly prepared and applied protective coating on steel and cast iron parts, Belmont Elemental Cadmium offers corrosion protection in marine atmospheres, under alkaline conditions, and in damp indoor applications. Cadmium-plated steel fasteners resist galvanic attack when used with aluminum parts.

Safety Considerations

Care must be taken to avoid creating toxic dust or fume. Melting or handling conditions that do create dust or fume require capture at the source by an exhaust ventilation system. When capture of dust or fume is not feasible, approved NIOSH respiratory protective equipment must be worn. Maximum threshold limit value for cadmium dust is 0.2 mg/m³; for cadmium oxide fume, 0.1 mg/m³.

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.