BB-3.1

data sheet

Belmont

Everdur Silicon Bronze
Product 4951

With its pleasant color (and ability to accept a range of patinas) combined with good fluidity, low drossing, and a reasonable solidification range, Everdur Silicon Bronze is widely used in both industrial and creative applications. Everdur's balance of mechanical properties and corrosion resistance has led to its use in valve and pump parts, impellers, bells and a variety of other engineering applications. More recently, Everdur's excellent casting characteristics have resulted in it being the preferred Bronze for sculpture casting and in its wide acceptance for the jewelry caster as well.

Nominal Chemical Composition

Copper	95%
Silicon	4%
Manganese	1%

Typical Physical Properties

Unless otherwise stated, measured at room temperature, 68°F (20°C).

Property	U.S.	Metric
Melting Range (solidus/liquidus)	1550°F–1780°F	840°C–971°C
Pouring Range	1900°F–2250°F	1010°C–1235°C
Density	0.302 lbs/cu. in.	8.36 g/cu. cm.
Specific Gravity	8.36	8.36
Thermal Conductivity	16.4 Btu/ft./hr./sq. ft./°F	28 W/m/°K
Electrical Conductivity	6% IACS	6% IACS

Typical Mechanical Properties (test bar values – C80100)

Unless otherwise stated, measured at room temperature, 68°F (20°C).

Property	U.S.	Metric
Tensile Strength	55000 lbs/sq. in.	379 MPa
Yield Strength	25000 lbs/ sq. in.	172 MPa
Elongation in 2 in. (50 mm)	30%	30%
Brinell Hardness (500 kg. wt.)	85	85
Shear Strength	28000 lbs/sq. in.	190 MPa
Impact Strength Izod	33 ft. lbs	45 Joules

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Casting Technique

Belmont Everdur Silicon Bronze has good fluidity and feeding characteristics, so normal gating and risering practices can be used. As with all alloys, mold turbulence should be avoided. Non-turbulent gating systems work best.

Melting

Belmont Everdur Silicon Bronze should be melted rapidly and poured as soon as it reaches casting temperature. In a fuel-fired furnace, a slightly oxidizing atmosphere should be maintained. Overheating should be avoided to prevent gas pickup; however, Belmont Everdur Silicon Bronze will not fume since it contains no zinc, aluminum, or other fume-producing elements. Deoxidizers are usually unnecessary.

Casting Characteristics

Pattern Maker's Shrinkage	1/4 in./ft.	Gassing	Medium
Effect of Section Size on Soundness & Mechanical Properties	Medium	Fluidity	High
		Shrinkage	Medium
Drossing	Low	Casting Yield	Medium

Joining

Belmont Everdur Silicon Bronze can be soldered using an active acid base flux, but other joining methods are usually recommended. It can be brazed with silver solder, but for a good color match, welding with Everdur #1010 welding rod is preferable. Oxyacetylene welding often gives the best results; however, MIG and TIG welding are also used.

Fabrication Properties

Property	U.S.	Metric
Stress Relieving 1 hr./in. of Section Thickness	500°F	260°C
Machinability Rating (free cutting Brass=100)	40	40

Forms/Shapes Available

2-20 ingot, 2-5 ingot, 2" sheared pieces (cut bar) polished and unpolished, 1/2" sheared pieces (cubes) polished and unpolished, 1/2" and down shot (grain) polished and unpolished.

Patination

While Belmont Everdur Silicon Bronze takes a wide range of patinas, it will tarnish. It should be coated with Incralac or other clear transparent lacquer; or it can be waxed or oiled to preserve the patina.

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