



5656 S. Pennsylvania Avenue  
Cudahy, WI 53110

Telephone: (414) 769-6000  
FAX: (414) 769-1093  
www.lucasmilhaupt.com



**OSE**  
**Orthodontic Supply & Equipment Co., Inc.**  
7851 Airpark Rd. #202 Gaithersburg, MD 20879  
800-638-4003 · 800-634-7727  
Fax:301-869-3800 [www.osecompany.com](http://www.osecompany.com)

## **BRAZE™ 505** (Silver Solder 0151-000, 0151-200)

### ***NOMINAL COMPOSITION***

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Silver	50.0% ± 1.0%
Copper	20.0% ± 1.0%
Zinc	28.0% ± 2.0%
Nickel	2.0% ± 0.5%
Other Elements (Total)	0.15% max.

### ***PHYSICAL PROPERTIES***

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Color	Yellow White
Solidus (Melting Point)	1220°F (660°C)
Liquidus (Flow Point)	1305°F (705°C)
Specific Gravity	9.17
Density (Troy oz./cu.in.)	4.83
Electrical Conductivity (% IACS)	15.00
Electrical Resistivity (Microhm-cm)	11.95

### ***USES***

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Braze 505 readily wets nickel and iron base alloys. It is recommended for joining 300 Series stainless steel and will retard interface corrosion in most exposures for which the base metals are suitable. However, for joints on cupro-nickel exposed to salt water at elevated temperatures, zinc-free alloys such as Braze 559, 603, or 630 should be used to avoid joint failure by dezincification.

Because this alloy is cadmium-free, it can be safely used on food handling equipment and hospital utensils.

The presence of nickel in Braze 505 aids in the joining of small tungsten carbide inserts in cutting tools. In addition, it offsets joint interface brittleness caused by diffusion of aluminum into the brazing alloy, when joining aluminum-bronze to steel.

### ***BRAZING CHARACTERISTICS***

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Braze 505 is very fluid at its flow point and will quickly fill long, narrow joints. Because it has the tendency to liquate (i.e., separate into low and high melting constituents) when heated slowly, this alloy should be heated quickly through its melting range.

Its low flow point will minimize oxidation of the stainless steel during brazing. Handy Flux® is normally used with Braze 505, but Handy Flux® Type B-1 may be used where slightly better fluxing action is needed.

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***PROPERTIES OF BRAZED JOINTS***

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In tests at room temperature, torch brazed, “wiped” butt joints yielded the following average results:

	Tensile Strength (lbs./sq.in.)	Elongation (% in 2")
Stainless Steel (18-8 annealed)	69,500-88,000	1-9
1029 Steel (cold rolled)	66,000-73,300	15-25

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***CORROSION RESISTANCE***

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Braze 505 showed the same order of resistance to interface corrosion as Easy-Flo® 3 when joints of 304 stainless steel were exposed to running tap water for 17 days. For the same period in parallel tests with 430 stainless, Braze 505 showed appreciable interface corrosion whereas Easy-Flo® 3 showed only incipient corrosion at the feather edges of the fillet.

When stainless steels are brazed with flux, it appears that chromium is selectively removed from the surface by oxidation and subsequent solution of the chromic oxide in the molten flux. This leaves a thin layer of chromium-free iron, which is attacked by aerated water particularly when chlorides are present. However, some of the small amount of nickel contained in Braze 505 apparently concentrates at the braze interface increasing the resistance to corrosion of the vulnerable area, and for most applications of 300 Series steels this suffices. For the 400 Series, the corrosion is retarded but not stopped by the Braze 505.

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***SPECIFICATIONS***

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This filler metal conforms to the following specification:

AWS A5.8	BAG-24
SAE	AMS 4788

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***AVAILABLE FORMS***

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Strip, wire, powder and preforms to specification.

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***REFERENCES***

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For a comprehensive discussion of “Interface Corrosion in Brazed Joints in Stainless Steel” see our Brazing Technical Bulletin No. T-9.

For a brazing alloy suited for applications involving exposure to compounds containing chlorine (salt water at normal ambient temperatures, chlorinated water, bleaching solutions, etc.) See our Data Sheet D-2 on Easy-Flo® 3.

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***WARRANTY CLAUSE***

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