



Welding Unibraze 55 & Unibraze 99 Welding Electrodes

Specifications

Electrode	AWS	ASME	Classification
Unibraze 99	A5.15	SFA 5.15	ENi-CI
Unibraze 55	A5.15	SFA 5.15	ENiFe-CI

General Description

Unibraze 55 and Unibraze 99 Welding Electrodes are designed for general cast iron welding-joining gray iron, ductile iron, malleable iron, and alloy cast irons, to themselves and to each other, and joining cast iron to mild steel, stainless steels, and nickel-base alloys. Unibraze 55 has a core wire of approximately 55 nickel and 45% iron. This composition provides sufficient carbon to promote graphite precipitation and reduce weld shrinkage stresses. Lower shrinkage stresses greatly reduce the possibility of weld- or heat-affected- zone cracking. The electrode is well suited for welding thick cast iron sections. It also has a high tolerance for phosphorus and other contaminants in the base metal, so welds with high strength and good ductility can be made in low-grade cast irons. Unibraze 99 has a core wire of commercially pure nickel, is recommended for welding thin cast iron sections where high dilution can be expected and where the deposit must be readily machinable.

Applications

Typical applications for Unibraze 55 and Unibraze 99 Welding Electrodes include joining cast iron parts to other metals, building up worn sections or machining mistakes, and repairing defective castings.

Weldability

Unibraze 55 and Unibraze 99 can be used in the flat, vertical and overhead positions. AC or DC welding current may be used although DC is preferred. The accompanying table lists amperages for welding in the flat or downhand positions. For overhead welding, reduce downhand currents 5-15 amperes; for vertical welding, reduce downhand currents 10-20 amps. Preheat and postheat treatments are usually not required when welding ductile or gray iron, but preheat may be advantageous in pressure boundary welds, or where there are different thicknesses in the same weld area.

Diameter	Unibraze 99		Unibraze 55	
	AC Amps	DC Amps	AC Amps	DC Amps
3/32" (2.4mm)	50-90	40-80	50-65	40-65
1/8" (3.2mm)	90-120	80-120	80-95	70-95
5/32" (4.0mm)	120-150	100-140	110-135	100-135
3/16" (4.8mm)	130-170	120-170	130-155	120-155

Nominal Chemical Composition % (deposited weld metal*)

	Ni**	C	Mn	Fe	S	Si	Cu
Unibraze 99	95.0	1.0	.20	3.0	.005	.70	.10
Unibraze 55	53.0	1.50	.30	45.0	.005	.50	.10

*Not affected by dilution **includes Co

Mechanical Properties

Unibraze 55 and Unibraze 99 produce welds with a reasonably good color match and good machinability. Single weld beads made with Unibraze 55 will be harder than that deposited by Unibraze 99. The chart below lists mechanical properties for all-weld-metal deposits.

	Condition	Tensile Strength	Yield Strength .2%	Elongation
Unibraze 99	As welded	72,000 psi	56,500 psi	5%
Unibraze 55	As welded	84,000 psi	59,500 psi	8%