Popular science:

cast iron electrode introduction

Carbon content more than 2.1% iron-carbon alloy, which contains rich in the world, low cost, castability, machinability and seismic performance are the reasons, characteristics for cast iron steel widely adopted and applied to different industrial fields. It is divided into grey cast iron and white cast iron. There are Nodular cast iron and vermicular cast iron of grey cast iron.

Common types of cast iron divided by the carbon form of existence.

CAST IRON

GREY CAST IRON

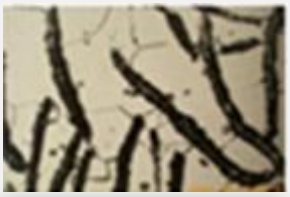
Graphite is flaky, wide application and main base metal to weld.

Spheroidization

NODULAR CASTIRON

Graphite is spherical afford dynamic loading with mechanical properties.

Vermiculization



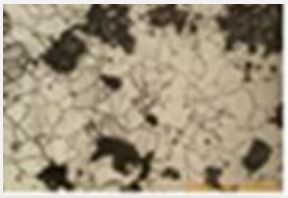
VERMICULAR CAST IRON

Graphite is worm-like with mechanical properties similar to ductile iron.

WHITE CAST IRON

Carbon exist in the form of carburization. Hard and poor weldability.

Annealing



MALLEABLE CAST IRON

Graphite is flocculence with plasticity, toughness

The advantages and weldability of cast iron

1.	Rich contains in the world, low costs and widely applied to machinery and manufactory.
2.	Castability, machinability, abrasion resistance and seismic performance are the advantages.
3.	Poor weldability, strength, plasticity, bleaching, worm-whole, weld crack are the disadvantages of cast iron compared to steel.
4.	Weld demands of cast iron electrodes.
	① Repair the casting, which is defective performance.
	② Repair the casting, which is damaged in use.
	③ Parts manufacturing and repairing.

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cast iron electrode introduction

Carbon in Grey cast iron is flake distribution with better weldability and best choice for repairing machine tool, agricultural machinery, automobile mould, etc. MMA is the most popular welding method. Cracks occurred in casting, repair by welding can help. Cast iron welding is wildly applied from 70s in 20 century, and cast-iron welding electrodes also became choices accordingly.

Mid-Large motor, reducer shell, pump case, diesel engine, air-compressor case, frame and sideway, cast iron mould, cast iron gear, cast iron hydraulic cylinder cracks can be adopted.

Popular science:

cast iron electrode introduction

Moulds are numerously adopted in industry manufacturing, such as forging die, trimming die, metal extrusion die, glass moulds also need repairing.

Repairing can postpone service life of tool and reduce maintenance and replacement fees effectively. Cost down, repairs can improve the product utilization and better control of work pieces.

Comparison of conventional and maintenance welding.

Item	Conventional welding	Maintenance welding
Base Metal	Carbon steel, &Alloy Steel	Cast Iron, Mid. & High carbon steel.
Weldability	Good. Simple process, easy operation.	Bad. Process complicated, hard to operate.
Force of constraint/ stress	Less	Higher
Welding state	Post Annealing	Weld at high temp.
PWHT	Fully-developed	Hardly applicable

Sorex made cast iron electrodes.

SN-55	AWS A5.15 ENiFe-CI、GB/T 10044 EZNiFe-1
SN-55A	AWS A5.15 ENiFe-CI-A
Characteristics	High Graphite coating, higher strength and crack resistance than SN-99
Applications	Room temp. or 200°C preheating at grey cast iron, nodular cast iron or high stress parts.

SN-99	AWS A5.15 ENi-CI、GB/T 10044 EZNi-1
SN-99A	AWS A5.15 ENi-CI-A
Characteristics	High graphite coating, low hardness, plasticity crack resistance, machinability.
Applications	Widely applied to grey cast iron joints, and repairs with other materials.

Characteristics & advantages of Sorex made cast iron electrodes

1.	Superior Cladding, stable arc and heat resistance easy slag removal, bright bead appearance.
2.	Impurity content (P & S) is low, P+S not more than 0.015% and superior crack resistance.
3.	Low hydrogen graphite coating delivers less sensitivity against blow holes and cracks.
4.	No pre-heating required and widely applied to market segments.

Weldability, weld tips, and notes

High Carbon composition, many impurities, low plasticity, inferior weldability, sensitive to cooling speed, occurs bleaching, cracks, and blow holes.

1.	Clean the weld parts without water (moisture), containments such as rust and oil. Design the groove opening accordingly.
2.	To avoid bleaching and cracks, it is recommended to adopt low current, short arc, low inter-pass temp. (＜60℃) short bead (＜80mm) and hammer blow.
3.	It is recommended to make cladding from side face toward central part to repair gradually if the parts to weld is big.

Weldability, weld tips, and notes

High Carbon composition, many impurities, low plasticity, inferior weldability, sensitive to cooling speed, occurs bleaching, cracks, and blow holes.

4.	It is recommended to make intermittent & symmetrical welding every pass to reach equilibrium stress and maintain the pass temperature by preheating if the welding is more than 2 passes.
5.	It is recommended to fill the crater at arc extinction to avoid crater cracking.