

WELDING PRODUCTS PROGRAMME

Cast Iron

- Wide range
- Assembly and repair of all types of casting
- Excellent operator appeal
- Quick response
- Customer service
- Customised formulations

**Selectarc**
WELDING



FSH Welding Group makes every effort to ensure its customers get the full benefit of its wide experience.

Founded in 1952, Selectarc Industries' Arc welding electrode manufacturing plant has built up a reputation for leading expertise in the field, ranking it alongside with the industry's key players both in France and on the export market.

Extensive range of standard and customised products, with stringent quality norms which guarantee to comply with clients specifications as well as international standard. Our aim is simple yet ambitious: to constantly improve to ensure the satisfaction of every single customer.

Overview

Cast-iron is a carbon-steel alloy with minimum ~2 % of carbon plus other elements in lower concentrations such as manganese, silicon, phosphorus and sulphur.

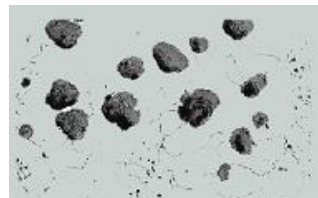
Main types of cast iron:

WHITE CAST-IRON

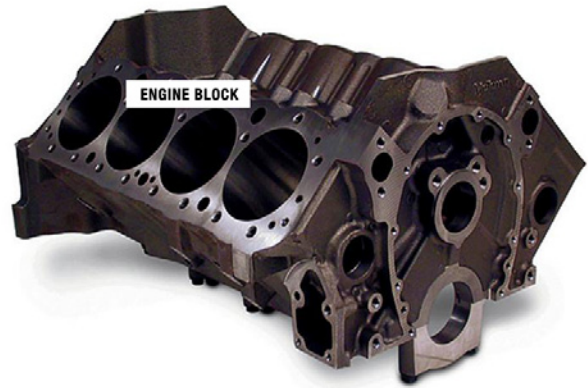


GREY CAST-IRON

- > Lamellar graphite
- > Spheroidal graphite
- > Nodular graphite



Typical structures of cast iron



Cast-iron welding applications:

- Repair of casting defects and joining cast pieces
- Frames of machine tools
- Repair of breaks or cracks due to impacts, overloads or cold temperatures
- Rebuilding of damaged parts due to abrasion
- Repair of very old parts
- ...

Uses:

- Machine frames
- Industrial machines of all kinds
- Engine blocks
- Tools
- Mechanical parts (cams, gears, crankshafts, etc.)
- Pumps
- Gearboxes
- Piping systems (tubing, valves, etc.)
- ...



Properties of Cast Iron

Advantages

- low melting point
- excellent fluidity
- excellent machinability
- good resistance to compression, friction wear and vibration
- suitable for process industry and thermal shocks

Disadvantages

- forms iron carbides during welding
- fragile
- low strength and mechanical resistance
- poor deformation capability
- sensitive to internal stresses resulting from heat

Cast-iron is a **difficult-to-weld alloy** and is inherently fragile, due to **its high carbon content**. Some types of cast-iron are non-weldable or non-welded by conventional electrodes.

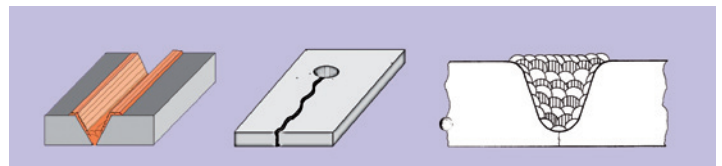


Welding technique

The main cast-iron welding techniques are: **hot technique** and **cold technique**.

This document deals with the cold technique.

This technique is well suited for massive components when preheating operations are difficult to implement.



Cold technique piece preparation and advice:

- Work on clean components with rounded edges, free from cracks and defects
- Only use electrodes with a nickel or ferro-nickel graphitizer coating
- Use low energy welding: maximum interpass temperature should be between 70°C - 120°C (depending on cast-iron type)

For further technical information, please request our

« TECHNICAL FILE: CAST IRON »



Our range of CAST IRON

Denomination	Classification AWS A.15	Main feature of the electrode
Selectarc Fonte Ni	E Ni-CI	pure nickel core / lamellar cast iron / DC+,-
Selectarc Fonte Ni2	E Ni-CI	pure nickel core / lamellar cast iron / DC- or alternating
Selectarc Fonte Ni4	E Ni-CI	pure nickel core / lamellar cast iron / nonconducting coating, barium free, DC+
Selectarc Ferro Ni	E NiFe-CI	ferro-nickel core/nodular cast iron and denatured cast iron / DC+
Selectarc Bimetal-NiFe	E NiFe-CI	ferro-nickel "bimetal" core / nodular cast iron / DC- or alternating
Selectarc Fonte BMP	E NiFe-Cr	ferro-nickel "bimetal" core / nodular cast iron / DC+ / barium free
Selectarc FeNi/Cu	E NiFe-CI	ferro-nickel-copper core / nodular and lamellar cast iron
Selectarc Fonte NiFe2	E NiFe-CI	ferro-nickel core / nodular cast iron and denatured cast iron / DC-
Selectarc Fonte Fe	E St	iron base / cold welding / tarnished cast iron / colour matching
Selectarc Fonte Fe2	E St	iron base / cold welding
Selectarc Fonte Fe3	E CI-B	iron base / hot welding

CHOICE

		Fonte -Ni	Fonte-Ni2	Fonte-Ni4*	Ferro -Ni	Bimetal-NiFe	Fonte BMP*	Fe-Ni /Cu	Fonte-NiFe2	Fonte -Fe	Fonte -Fe3
APPLICATIONS	Buffer layer for old cast irons	+	+	+	++	+	+	++	+	+++	Homogeneous hot welding!
	"Unknown" cast iron	+++	+++	+++	+	+	+	+	+	•	
	Worn cast-iron	+++	+++	+++	++	++	++	++	+	•	
	Lamellar cast iron	+++	+++	+++	+	+	+	++	+	•	
	Nodular cast iron	+	+	+	+++	+++	+++	+++	+++	•	
HANDLING	Dissimilar assemblies	•	•	•	++	+++	+++	+++	++	•	
MECHANICAL PROPERTIES	Mechanical properties of deposit	+	+	+	++	+++	+++	++	++	•	
	Cracking resistance	+	+	+	++	+++	+++	++	++	•	
	Ability not to redden	++	+	+	+	+++	+++	++	+	•	

+++ Excellent ++ Good

+ Acceptable • Unsuitable

*** SPECIAL ! BARIUM-FREE ALLOYS**

OUR SELECTION (cold welding)

Pure nickel for repair of all lamellar cast iron	Ferro-nickel for nodular and tarnished cast iron	High mechanical properties on nodular cast iron	Operator appeal for all cast iron
Fonte-Ni	Ferro-Ni	Bimetal Fe-Ni	Fe-Ni / Cu

All our datasheets and safety information sheets are available through :
www.fsh-welding.com or please ask our service centre

Request our « PANORAMA ELECTRODES » catalogue



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