

One of the most important activity in the metallurgy of modern foundry is the application of the inoculant process that consist in addition of small amounts of elements to liquid metal just before the casting.

This elements called inoculants, allow to change and check the metal structure with important phisical and mechanical changes and the negligible variation of the bedinning alloy chemical analysis.

The addition of this inoculants promote the graphite crystallization and germination, improving the shape and the dimension.

Inoculants priority:

- reduction of carbides (Fe₃C) and White solidification
- promote the graphite composition and shape
- reduction of the evanescence effect favoring the graphitic nucleation step
- micro eddies reduction
- reduction of graphite floatation
- defects reduction of the gases
- superficial ferrite elimination

Inoculants elements effects in the iron-carbon alloys

Aluminium

Aluminium improves the ferritization and neutralizes the azote

Calcium

Calcium has the function of strong flux for the bath, improving graphitic germination and reducing the carbides Fe₃C.

Barium

Barium favorites the graphite creation, reducing the inoculants evanescence in the alloy.

Strontium

Strontium reduces the white solidification, increasing eutectic cells, reducing the eddies defects caused by excessive graphitic germination.

In the spheroidale cast iron produce with ternary alloy Fe Si Mg with the absence of rare earth, has the function to reduce the white solidification and increase nodules (addition of pure strontium in the base inoculant Fe Si must be 1%)

Zirconium

Zirconium neutralizes free azote, better the inoculant solubility and associated with manganese, reduce the temperature of inoculant Liquidus.

Cerium and rare earth

Cerium and rare earth have the function to increase the quantity of eutctic cells in the alloy and reduce the evanescences effects.

Cerium and rare earth are also good desulphurizing, and inoculants with the base elements often are used as preconditioners of the bath.

Bismuth

Bismuth added to rare earth in the spheroidal cast irons, increase the graphitic nucleation center, reducing the dimension and facilitating the reduction of white solidification.

TIPO GRADE	Analisi chimica tipica Typical Chemical Analysis									
	Si %	Ba %	Ca %	Al %	Zr %	Mn %	Bi %	Sr %	Tre %	Fe %
Inoculant S	70 - 75		0.6 - 1.5	0.6 - 1.5						Rem
Inoculant SBC	65 - 75	2 - 3	1 - 2	0.5 - 1.5						Rem
Inoculant SZM	60 - 70	0.3 - 1	0.5 - 2	0.5 - 1.5	3 - 5	2.8 - 4				Rem
Inoculant SZC	70 - 75		1.5 - 2.5	1 - 1.5	1 - 2					Rem
Inoculant SSR	70 - 75		0.1 max	0.5 max				0.6 - 1.2		Rem
Inoculant SBL	60 - 70		1 - 1.5	1 - 1.5			0.8 - 1		0.6 - 1	Rem
Inoculant HMN	60 - 65	4 - 6	1 - 1.5	1 - 1.5		9 - 11				Rem
Inoculant LSBC	70 - 75	0.75 - 1.25	0.75 - 1.25	0.75 - 1.25						Rem
Inoculant HBC	60 - 65	9 - 11	0.8 - 1.5	0.8 - 1.5						Rem

Granulometria Disponibile: 0.2 - 0.7 mm, 0.5 - 2 mm, 1 - 2 mm, 3 - 6 mm, 6 - 12 mm
Available Size: 0.2 - 0.7 mm, 0.5 - 2 mm, 1 - 2 mm, 3 - 6 mm, 6 - 12 mm
Imballo: Big Bag 1000 kg, Fusti metallici 250 kg circa, Sacchi 25 kg circa
Packaging: Big Bag 1000 kg, Drum about 250 kg, bag about 25 kg



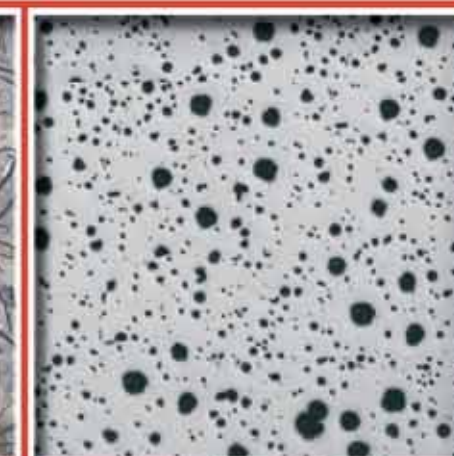
Gray Cast Iron

SBC Treatment



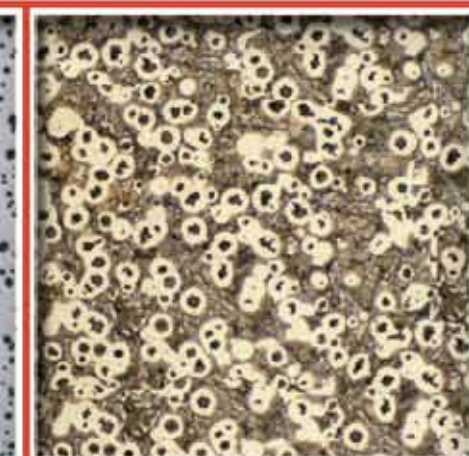
Gray Cast Iron
Attack Nital 4%

SBC Treatment



Nodular Iron

SBL Treatment



Nodular Iron
Attack Nital 4%

SBL Treatment