DKMT+

TRADITIONAL + INNOVATIONAL

INTRODUCTION

DKMT + specializes in the production of Cored Wire as well as in the global trading of ferroalloys, inoculates, modifiers and other metallurgical auxiliary raw materials.

In addition to the traditional filler compositions of cored wire, we offer our customers a unique innovative patented solution that allows us to solve problems of increasing mechanical properties. We offer technical assistance, selection, and supply of equipment for out-of-furnace processing, as well as trade-service contracts.

We value each of our clients, providing high-quality products and services, and building long-term relationships.

TRADITIONAL CORED WIRE

Description of material	Chemical Composition	Diameter	Application
Calcium Silicon	Ca: 30 Si: 60 C: 0.5% max	Ø 13-16	The modifying treatment with Calcium Silicon consists in the globularization of of non-metallic inclusions of molten steel (for instance Al2O3 deoxidation products) and their removal from steel.
FeCa30, FeCa40 (Calcium Iron, Ferro Calcium)	Ca: 30%, Ca: 40% Al: 1.5% Fe: Balance	Ø 9-16	FeCa cored wire is used for steel with low content of silicon. It is used for: - deoxidation and desulfurization treatment - decreasing of non-metallic inclusions.
Calcium Aluminium Iron	Ca: 40-42% Al: 25% min Fe: Balance	Ø 9-16	The modifier is used for - deoxidation and desulphurization - refining treatment of molten steel (reduction of non-metallic inclusions).
FeTi 70 (Ferro Titanium)	Ti: 65-75%	Ø 9-16	Alloing of steel with Ferro Titanium makes it possible: - to obtain fine grain steel structure - to increase mechanical properties.
Carbon	C: 90% min	Ø 9-16	Recarborizer
Graphite	FC: 95% min	Ø 13-16	Graphite cored wire is used for finishing the chemical compound of molten metal in carbon content.
SIMAG® (Ferro Silicon Magnesium)	Mg: 18-50% Si, Ca, REM & othere in various proportion	Ø 9-14	The modifier (nodulariser) is designed to produce castings from ductile iron and cast iron with vermicular graphite.
Ferro Boron	B: 18-20% Si: 3% max Al: 1% max	Ø 9-16	Microalloing of steel with Boron is used for: - oxidation of steel - steel hardenability - improving of mechanical properties.
Ferro Niobium	Nb: 65-66% Si: 2-3% Fe: Balance	Ø 9-16	Niobium improves steel quality as a result of three mechanisms: - grain refinement of austenite and ferrite and slowing down recrystallization and grain growth; - suppression of the nucleation of polygonal ferrite as a result of increased hardenability; - increase in strength due to the release of niobium carbonitrides during cooling of steel or subsequent aging.
Ferro Silicon	FeSi 65 FeSi 70 FeSi 75	Ø 9-16	Ferro Silicon of different grades is used for steel and iron preparing in furnace.
SIBAR® (Ferro Silicon Barium)	FeSiBa4 FeSiBa7 FeSiBa12 FeSiBa22	Ø 9-16	Ferro Silicon Barium inoculant is used for graphitizing treatmment (including late inoculation) of cast iron/nodular iron to prevent cementite formation, to increase the crystallization nucleas.
Ferrovanadium	V: 50-65% max Si: 2% max Al: 2.5% max C: 0.3 max	Ø 9-16	Favorable effect of vanadium on austenite grain refinement is associated with the "barrier" in the form of vanadium carbide, which is sparingly soluble in austenite and only when it passes into austenite does the grain begin to grow. The introduction of 0.05 ... 0.12% V provides an increase in the strength of steel by 20 ... 50% both in hot-rolled and normalized condition, and after thermal improvement.
	V: 75-85% max Si: 2% max Al: 1.5% max C: 0.3 max	Ø 9-16	
FerroMolibdenium	Mo: 55-65% max Si: 1% max C: 0.1 max S: 0.1 max	Ø 9-16	Ferro Molibdenium is used for microalloying of molten steel, it is impact on the microstruture, improve mechanical properties.
DM1 Desulfurization for Iron	Mg: 34% Flux: Balance	Ø 9-13	The cored wire DM1 is used for desulphurization of iron during ladle treatment.
MCM Micro-Crystaling Modificator	FeSiCaBa, Ti*, Zr*, Sr*	Ø 9-16	Insteel modifiers make it possible to achieve the following objectives: - reducing the content of non-metallic inclusions - increasing the fluidity of stee - improving mechanical properties, wear resistance, tightness of steel castings, etc.

* These elements can be present in powder of cored wire separately or together.

MCM (MICRO-CRYSTALING MODIFIERS), RAPIDLY COOLED FOR CAST IRON AND STEEL

MCM — The method for obtaining microcrystalline modifiers consists in that the pouring of the modifier is carried out continuously by freezing the melt on a special device with a cooling rate of 700-1000°C/sec.

In contrast to the conventional method of pouring casting modifiers, the technology for obtaining microcrystalline materials makes it possible to obtain an alloy in the form of plates with a thickness of less than 5 mm. At a high cooling rate of the melt, a uniform distribution of phase structural components is achieved, their sizes are reduced by 5...10 times. Freezing crystallization contributes to an increase in the density of the modifier, a decrease in the concentration of gases dissolved in it (oxygen by 3.6 times, nitrogen by 4.0 times, hydrogen by 1.4 times).

The use of casting technology with a high cooling rate of alloys leads not only to an increase in the dispersion of phases, but also to the formation of metastable states, an expansion of the solid solution region, and a decrease in lines and points on the phase diagrams in the low-temperature region. It can be stated that the use of this technology leads to a significant increase in the activity of the modifying components of the alloy, and, consequently, to an increase in the efficiency of the modifier.

Appearance of the repidly cooled modifier

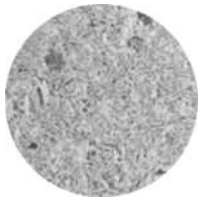

Image of the microstructure of the rapidly cooled modifier (100x magnification)

Image of the microstructure of a standard modifier (100x magnification)

INNOVATIVE CORED WIRE

A complex of refining components and a coating containing ultrafine modifying particles

The patented technology for the manufacture of cored wire makes it possible to obtain a product that has a complex effect on the processed melt, namely:

- a complex of alkaline earth components has a strong refining effect on the melt, significantly exceeding the capabilities of single-component refining materials (silicocalcium, ferrocalcium, etc.)
- paintwork coating applied to the sheath of the cored wire increases its survivability in the melt and increases the efficiency of the refining effect.
- ultrafine refractory modifying particles are introduced into the melt as a paintwork coating filler, leading to a refinement of the grain structure and, as a result, to an increase in the mechanical properties of metal products.

METAL STRUCTURE MODIFIERS

The developed and patented technology for the production of a metal structure modifier makes it possible to produce a material, as a result of which not only the mechanism of refining the melt from non-metallic inclusions is realized, but also conditions are created for the formation of nano-sized modifying compounds, which make it possible to obtain the effect of dispersed metal strengthening.

The resulting particles should have a size of about 25 nm and be distributed in the melt so that the average distance between them was about 150 nm. Thus, the developed modifier makes it possible to implement the mechanism of dispersed hardening of the metal matrix by endogenous compounds, which, in turn, leads to an increase in the performance characteristics of the resulting products.

DKMT+

THE QUALITY
IS CONFIRMED
ISO9001:2015

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