

## Z-GRAPH<sup>®</sup> INOCULANT FOR GRAPHITIZING TREATMENT

The grades of this inoculant are as follows:

Z-GRAPH<sup>®</sup>, Z-GRAPH<sup>®</sup>TM, Z-GRAPH<sup>®</sup> TP and Z-GRAPH<sup>®</sup>R

When graphite flake cast iron produced in EA furnaces is used for making castings, particular problems may arise. Often they are caused by local superheating, high casting speeds, and a large amount of scrap and various carburizers in charged materials. In addition, it increases the chilling tendency for cast irons, and the likelihood of appearance of gas- and shrinkage-related porosity defects. It also worsens their workability.

To solve the abovementioned problems, our company has developed a line of inoculants under the trademark Z-GRAPH<sup>®</sup> for treating irons produced in electric-arc furnaces.

The graphitizers contain different concentrations of **Ba, Mn, Ca, Zr**. The Z-GRAPH<sup>®</sup>R graphitizer contains **cerium (Ce)** and **lanthanum (La)** instead of barium.

The chemically active elements contained in the inoculants affect cast irons by refining their graphite inclusions on the one hand, and increasing their amount on the other. As a result, the mechanical properties of cast-iron castings improve in all their cross-sections. The presence of Zr and Ba in the first three inoculants makes it possible to produce thin-walled castings free of chilling defects, neutralize the harmful influence of nitrogen that leads to the formation of gas- and shrinkage-related porosity defects.

The inoculants are used to efficiently treat cast irons having low carbon equivalent values.

Use of the Z-GRAPH<sup>®</sup>TP inoculant for many years has proved efficient in treating cast irons used for manufacturing high-pressure equipment (hydraulic distribution valves and high-pressure pumps). This inoculant increases the density of cast irons thus improving the leakproofness of parts and components made from them.

The Z-GRAPH<sup>®</sup>R inoculant has an optimum combination of REM and zirconium. It has the **unique property** of influencing the formation of favorable finely dispersed carbide phases **during the crystallization of special-purpose wear resistant cast irons**. Its use for ladle treatment of irons that are used for manufacturing parts and components for mining equipment **makes it possible to essentially improve their performance characteristics**. The final product of such treatment is wear-resistant chrome iron.

### Standard sizes of inoculant particles:

- 0.3-2 mm for inoculants introduced into the molten metal as it enters a ladle
- 2-6 mm or 1-10 mm for inoculants placed at the bottom of a ladle
- 0.2 -0.8 mm for inoculants introduced into the molten metal as it enters a mold
- Cored wires

In the case when molten metal is poured into a ladle, 1-3 kg of inoculants is consumed per 1 t of iron. In the case when molten metal is poured into a mold, twice as small an amount of inoculants may be consumed.



Calculate precisely the amount of a modifier to be added. The amount depends on the treatment process to be used. Saving on modifiers may lead to inconsistent of treatment process.