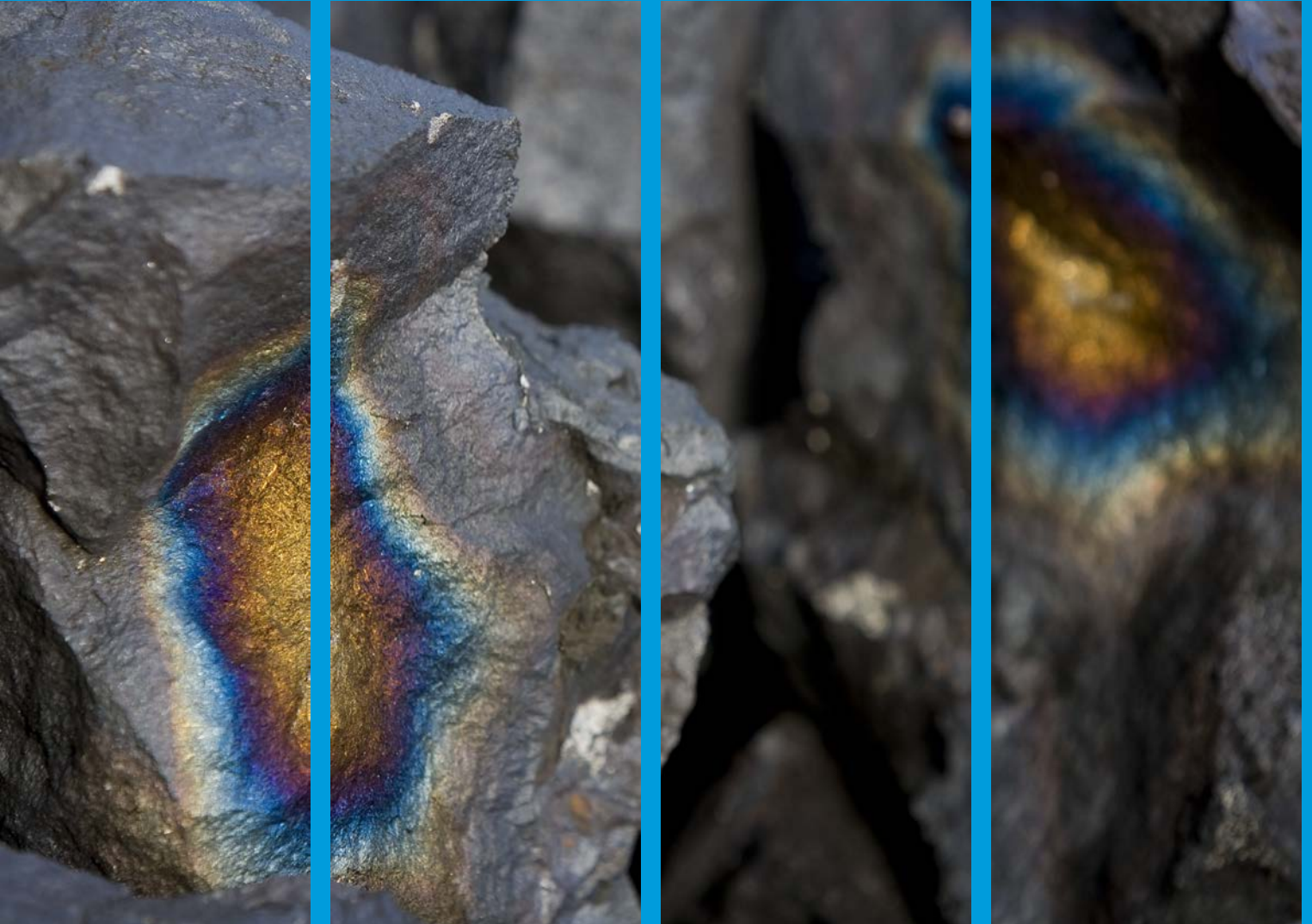


LOW CARBON SILICOMANGANESE

LCSiMn



MN ALLOYS

Mn alloys are mostly used in steelmaking and foundry activities.

Some 30 % of the manganese used today in steelmaking is still used for its properties as a deoxidant and a sulphide former. In this last case it combines with sulphur avoiding the formation of iron sulphides, which sulphides are low melting point phases which become liquid at hot rolling temperatures and which, consequently, generate surface cracking.

The other 70 % of the manganese is used purely as an alloying element. Steels usually contain from 0,2 % to 2 % Mn depending on grades as Mn is the cheapest alloying element among those which enhance some key mechanical properties like strength and toughness. In the specific case of stainless steel it can substitute expensive nickel in some austenitic grades called 200 series.

There are two families of Mn alloys called ferro-manganese (FeMn) and silico-manganese (SiMn). Silico-manganese adds additional silicon which is a stronger deoxidizer and which also helps to improve some mechanical properties of steel. In each family carbon is controlled and is lowered when producing "refined" grades. Nitrogen, Boron, Titanium, Phosphorus are elements which can be controlled depending on requested specification.

A very specific application of refined manganese alloys is a constituent in the coating of welding electrodes.

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CHEMICAL COMPOSITION

Typical grades available. Other grades are on request. Valid for sizes > 10 mm.

Grade	% Mn Spec.	% Si Spec.	% Si Typical	% C	% P Max.	% S Max.
LCSiMn	58 - 63	26 - 32	27	0.10	0.10	0.01
ULCSiMn	58 - 63	27 - 32	28	0.05	0.05	0.01

SIZING

Standard sizing :

20 – 80 mm – maximum 10 % undersize

10 – 50 mm – maximum 10 % undersize

3 – 25 mm – maximum 5 % undersize

All sizes:

Maximum 10 % oversize.

PHYSICAL DATA

Density: 5.9 – 6.5 g/cm³

Bulk density: approx. 3000 kg/m³

Angle of repose: 40° - 60° - depending on size of material

Melting range: 1075°C – 1240°C



PACKING

LCSiMn is usually delivered as bulk. Packing in big bags and other packaging is on request.

ORIGIN OF PRODUCT

Norway.

CHARACTERISTICS

It is lumpy material with a silvery metallic surface.

Advantages of using low carbon silicomanganese:

LCSiMn is used in the production of stainless steel in AOD, VOD and CLU processes with the following advantages:

- Use of LCSiMn during slag reduction instead of HCFeMn during decarburization reduces the total treatment time. This reduces the amount of oxidized Mn, and hence the quantity of Si needed in the slag reduction period. At the same time, this reduces lining attack due to less fluid slag (less MnO).
- Computer model calculations at KTH, Sweden, show improvements in productivity of 4 % to 6 % during decarburization process of steel, by changing from the use of HCFeMn to the LCSiMn practice.

LCSiMn can replace Mn-metal and FeSi in the production of some low carbon steel grades.

The LCSiMn manganese to phosphorus ratio (% Mn / % P) can be twice to four times higher than standard HCFeMn. Phosphorus input is significantly lowered when using LCSiMn.

Web: <http://www.eramet.fr> – Contact: sales@eramet-comilog.com



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