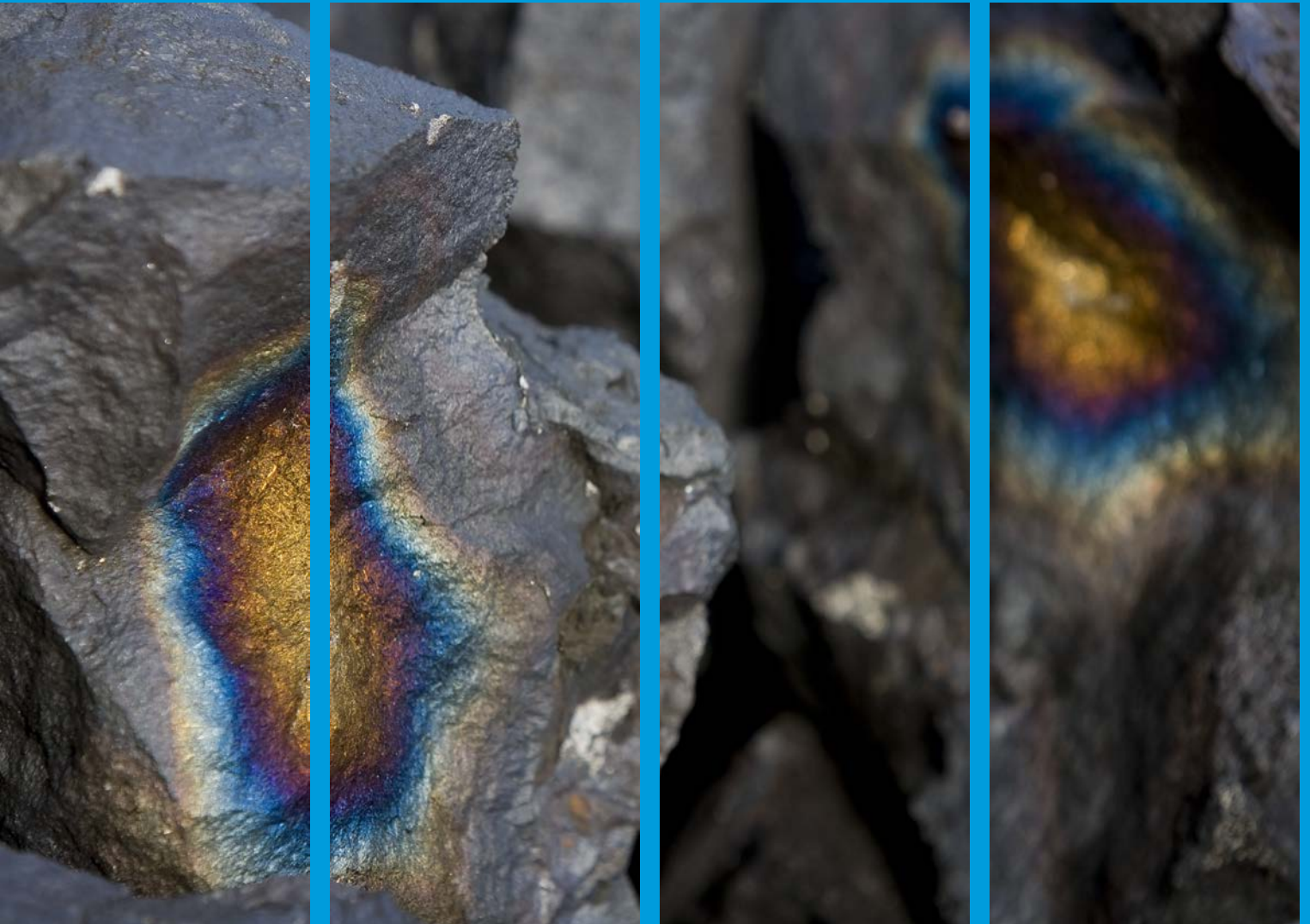


SILICOMANGANESE

SiMn



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.

SILICOMANGANESE

SiMn

CHEMICAL COMPOSITION

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

Grade	Mn Min.	Si Min.	C Max.	P Max.	S Max.	Ti Max.	B Max.
SiMn	65	17	2.0	0.17	0.03	-	-
SiMn Low B	65	17	2.0	0.17	0.03	0.25	0.02

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: 6.1 g/cm³

Bulk density: approx. 3200 kg/m³

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

Melting range: 1060°C – 1285°C



PACKING

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

ORIGIN OF PRODUCT

Norway – France

CHARACTERISTICS

It is lumpy material with a silvery metallic surface.

Effects of the addition of silicomanganese to steel:

Both silicon and manganese have an important influence on the properties of steel, depending on the amount added and the combined effect with other alloying elements.

Silicon and manganese have a strong affinity for oxygen, and will act as deoxidisers.

Deoxidation with SiMn results in cleaner steel, as the liquid manganese silicate formed coagulates and separates easier from the melt, compared to solid SiO₂ formed during FeSi deoxidation.

Use of silicomanganese adds less carbon to steel compared to standard FeSi 75 plus HCFeMn.

Computational Fluid Dynamics calculations show that the yield of silicon from silico-manganese is higher than that of standard FeSi 75.

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



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