MMD
HIGH MANGANESE LUMPY SILICEOUS ORE

HIGH GRADE ORE

Manganese – symbol Mn – is the fourth most used metal in the world (after iron, aluminium and copper). Manganese is never used in its own right (as a pure metal), but it’s an important raw material for many applications.

The final market for over 90% of all Mn ore produced is steelmaking. Ore is transformed into ferroalloys (silico-manganese or ferro-manganese) or manganese metal. These are essential raw materials for carbon and stainless steel as alloying elements, desulphurizing agents and deoxidizers in the metallurgical process.

The remaining 10% is used to produce a range of Mn compounds, indispensable in the chemical industry for the production of batteries, fertilizers, pigments and different reagents.

Comilog’s “Compagnie Minière de l’Ogooué” produces high grade oxidized ore at its Moanda mine in Gabon. The saleable products come in different grades and sizes and some ore fines are processed locally into Sinter.
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CHEMICAL COMPOSITION
Comilog products specifications – Metallurgical grades

<table>
<thead>
<tr>
<th></th>
<th>Typical</th>
<th>Guaranteed</th>
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<tbody>
<tr>
<td>Mn</td>
<td>44.50 %</td>
<td>43.00 %</td>
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<tr>
<td>SiO₂</td>
<td>8.00 %</td>
<td></td>
</tr>
<tr>
<td>Al₂O₃</td>
<td>7.60 %</td>
<td></td>
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<tr>
<td>Fe</td>
<td>5.00 %</td>
<td></td>
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<tr>
<td>P</td>
<td>0.11 %</td>
<td>0.13 %</td>
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<tr>
<td>K₂O</td>
<td>0.90 %</td>
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PACKING
MMD is only delivered in bulk.

CHARACTERISTICS
MMD grade with its high Silicon content has been specifically designed for production of SilicoManganese (SiMn) and Low Carbon SilicoManganese (LCSiMn).

It presents a very high reactivity allowing a substantial reduction in energy consumption and high productivity in the furnace.

Its low Iron content makes it a good mix with ferrous rich ores.

In the furnace the sizing of the Ore gives a good balance between the high reactivity of fine material and the permeability given by Lumpy Ore.

Comilog ore has naturally a very low Boron content of around 10 ppm which enables production of low boron Mn-alloys needed for applications such as line pipe or shipbuilding to limit embrittlement issues and to improve welding process.

SIZING
90 % typical between 5 – 75 mm at Owendo port.

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