

V.3. M 1194 vs. M 1257¹

Two samples of both M 1194 A and M 1257 A were calcined together at 800°C for 2 hours and at 900°C for 45 minutes. The comparison of the two sample was done on the basis of their bulk density and linseed oil absorption after calcination. The results of these calcinations are summarized in Table 6.

Table 6 : Comparison of sample M 1194 and M 1257.

Sample	M 1194 A	M 1257 A	M 1194 A	M 1257 A
Calcination conditions	800°C – 2 hours		900°C – 45 minutes	
Bulk density (g/cm ³)	0.57	0.44	0.58	0.46
Oil absorption (%)	52	70	48	68

The two conclusions of this comparison are :

- Sample M 1257 is better than M 1194, especially in terms of hardness;
- Calcinations at higher temperature decrease product quality.

VI. CONTINUOUS CALCINATION

VI.1. Pilot installation

Continuous calcination trials were conducted in a small scale continuous counter-current rotary kiln (2.0 m length - 0.2 m inside diameter) equipped with a 75 kW propane burner and lined with SiO₂-Al₂O₃ refractory concrete. The slope of the kiln can be mechanically adjusted, while its rotation speed can be controlled by an inverter.

Exhaust gas are draft by a 7.5 kW fan (4,000 m³/h) which is also driven by an inverter and are dedusted by a cyclone (0.4 m diameter – 1.0 m height) which allows to extract the particles down to $\approx 5 \mu\text{m}$, the finer material being collected by a sinter plate filter (52 m²), of Herding type. These ultrafines were not recovered due to contamination issues.

Crushed samples are fed to the kiln using a belt conveyor (0.70 m length - 0.07 m width) driven by an inverter allowing to adjust the feed rate.

Picture 9 shows a view of the pilot plant.

Picture 9 : Laboratory rotary kiln - overall view.

