« CLAIMS»

1. Process for manufacturing highly porous slaked lime having a high BET specific surface area being comprised between 30 m^2/g and 50 m^2/g and a high BJH pore volume, composed by the pores with a diameter less than 1000 Angstroms, higher than or equal to 0.15 cm^3/g, said process comprising a feeding step of quicklime, a feeding step of water in a feeding zone of a hydrator, a slaking step of said quicklime in a slaking zone of said hydrator and a maturation step in a maturation zone of said hydrator to form slaked lime, characterized in that said feeding step of quicklime and said feeding step of water are performed so as to obtain a water/quicklime ratio comprised between 0.8 and 1.3 by weight, preferably between 0.9 and 1.2 and more preferably close to 1, the process further comprising a step of removing vapor generated during said slaking step, said step of removing vapor being performed over at least 90% of the length of said slaking zone to form a raw highly porous slaked lime being a high specific surface area and high pore volume slaked lime.

2. Process for manufacturing highly porous slaked lime according to claim 1, further comprising a drying step of said raw slaked lime to form a dried powdery high specific surface area and high pore volume slaked lime.

3. Process for manufacturing highly porous slaked lime according to claim 1 or claim 2, wherein said slaking step of said quicklime is performed into a single stage hydrator.

4. Process for manufacturing highly porous slaked lime according to anyone of the claim 1 to 3, wherein said step of removing vapor is performed through a fabric filter.

5. Process for manufacturing highly porous slaked lime according to any of claim 1 to 4, wherein said step of removing vapor is performed along the entire length of the hydrator.

6. Process for manufacturing highly porous slaked lime according to anyone of the claim 1 to 5, wherein the feeding step of quicklime is made by a weighing device, in particular by a conveyor belt, allowing quicklime to fall into the hydrator.

7. Process for manufacturing highly porous slaked lime according to claim 6, wherein the feeding of water is carried out at a single point at the entry of the hydrator, preferably onto the falling quicklime.

8. Process for manufacturing highly porous slaked lime according to anyone of the claim 1 to 7, wherein said quicklime presents a reactivity towards water t_{60}, measured according to the European standard EN 459-2, equal to or greater than 15 seconds and equal to or lower than 10 minutes, preferably equal to or lower than 5 minutes, more preferably equal to or lower than 3 minutes and most preferably equal to or lower than 2 minutes.

9. Process for manufacturing highly porous slaked lime according to anyone of the claim 1 to 8, wherein said quicklime presents a particle size d_{98} comprised between 90 µm and 10 mm, preferably equal to or lower than 5 mm, more preferably equal to or lower than 2 mm.

10. Process for manufacturing highly porous slaked lime according to anyone of the claim 1 to 9, wherein said water presents a temperature equal to or lower than 60°C, preferably equal to or lower than 40°C, preferably equal to or lower than 20°C.

11. Process for manufacturing highly porous slaked lime according to anyone of the claim 1 to 10, wherein during said slaking step, lime is mixed and lifted by a shaft equipped with mixing paddles.

12. Process for manufacturing highly porous slaked lime according to anyone of the claim 1 to 11, wherein the temperature in the hydrator is kept below 100°C, preferably between 85 and 99°C, more preferably between 95 and 98°C.

13. Process for manufacturing highly porous slaked lime according to anyone of the claim 11 to 12, wherein the manufacturing process of

highly porous slaked lime is controlled by measuring the moisture of the raw slaked lime or the motor intensity of the shaft equipped with mixing paddles.

14. Process for manufacturing highly porous slaked lime according to anyone of the claim 1 to 13, wherein the moisture content of the raw slaked lime is ranking between 15 and 30 weight %, preferably between 20 and 25 weight % with respect to the weight of said raw slaked lime.

15. Process for manufacturing highly porous slaked lime according to anyone of the claim 1 to 14, wherein the feeding step of water is a feeding step of water comprising additives, such as di-ethylene glycol, alkali metal compound selected from the group consisting of alkali metal hydroxides, carbonates, hydrogencarbonates, and mixtures thereof.