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## ADVANCED RECOVERY OF CALCIUM CARBONATE WASTE AS A FILLER IN WATERBORNE PAINT

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### Abstract

The industry generates large quantities of waste, which must be capitalized and transformed in compounds with high added value. The objective of the present study is to obtain white waterborne paint using calcium carbonate as filler, a waste results from Romanian plant fertilizer manufacturing. The paints are used for protection of surfaces, with the focus on durability. Natural or synthetic calcium carbonate can be successful used as filler in paints, they have an alkaline pH-value and low oil absorption, very important technological properties. The calcium carbonate can significantly improve paint properties as sheen, opacity, viscosity, density and wear resistance.

This study is focused on the possibility to replace commercial filler with calcium carbonate waste and establishes the optimal content for obtaining waterborne paints with imposed properties. For obtaining white paint, the resin was mixed with 5- 30 g precipitated calcium carbonate /300 mL resin. The properties of paints obtained were determined and comparison with witness. Experimental data demonstrated that precipitated calcium carbonate (PCC) with particle diameters over 0.5  $\mu\text{m}$  influenced negative opacity properties. For improved this property grinding for obtaining particles smaller than 0.5  $\mu\text{m}$  is necessary. Using calcium carbonate waste, experimentally were obtained for waterborne paint properties close properties with witness. The PCC content can be increased to 30 g/300 mL resin, without affecting the paint properties, less the viscosity which is 14% above the required value.

*Key words:* calcium carbonate, filler, waste, waterborne paint

*Received:* June, 2020; *Revised final:* February, 2021; *Accepted:* March, 2021; *Published in final edited form:* April, 2021

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