

## TREATMENT OF ILLITIC CLAYS FROM LATVIA WITH ORGANIC ACIDS

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Clays and clay minerals are widely used as excipients and active ingredients in cosmetic products and pharmaceutical preparations. The use of clay minerals are based on many properties, one of them being particle size. Another important factor is the purity of clay samples [1,2]. Naturally occurring clays typically are mixtures of clay minerals and non-clay minerals, such as quartz, feldspar, carbonates, metal oxides and hydroxides. The distribution of clay particle size in raw clay samples are influenced by these impurities, mostly by carbonates and iron containing compounds. They behave as cementing agents, thereby inducing the aggregation of clay particles. Because of these aggregates the stability of clay suspensions decreases and the purification of raw clay samples from non-clay minerals is hindered. The removal of carbonates and iron compounds can be performed by dissolution with organic and inorganic acids [3].

In the present study the use of organic acids for carbonate and iron compound dissolution treatment and the effects on mineralogy and grain size distribution is investigated. The clay samples were taken from deposits in Latvia, containing 13-15% carbonates and illite as the main clay mineral. Clay – aleirite fraction < 63  $\mu\text{m}$  was used. The samples were treated with various concentrations of citric, oxalic and malic acids for 4-6 h. Changes in mineralogical composition were identified by using X-ray diffractometer. Particle size distribution was measured for fractionated and non-fractionated clay samples with laser particle size analyzer. In the dissolution process of the carbonates soluble and insoluble calcium and magnesium salts are formed as by-products.

The influence on the aggregation and size distribution of clay particles depends on the type and concentration of the acids. Both calcite and dolomite is completely dissolved only in 0.2 M acids. Dissolution of iron compounds increases with increasing the concentration of acids.

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### References

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