ProMine is the acronym for an EU FP7 four year long research project entitled “Nano-particle products from new mineral resources in Europe” which started in May 2009. The ProMine consortium led by Geological Survey of Finland (GTK) includes 27 partners from 11 EU member states. The philosophy behind ProMine is to stimulate the extractive industry to deliver new products to the manufacturing industries.

In particular, the project aims to develop five new, high value, mineral-based nano products, one of which can be directly related to the forest industries; e.g. nano silica particles for coating paper for inkjet printing. This work focuses on the development of processes mainly for magnesium- and calcium silicate raw material production. Calcium or magnesium silicate-containing rocks are first disintegrated for the release of calcium, magnesium and silica oxides. Nano silica particles are subsequently produced in an aqueous suspension under controlled process conditions for application to a paper web by either a foam application or curtain coating application technique.

Another high value, mineral-based nano product is the precipitation of metals onto cellulose fibre templates, and these metallised cellulose fibres so formed will be used as an electrically conductive material in an ink which can be used in industrial inkjet applications to form the conductive element in a semiconductive or dissipative ink for abrasive paper. The production of metallised fibres or nanoparticles using mine drainage water includes pretreatment with filtration plus other necessary treatments, subsequent sorting of the metals and finally production of metallised fibres or nanoparticles by precipitation of a metal or metal compound, such as Copper, onto cellulose fines (or other suitable template). The density of these particles on surface should be enough to realize semiconductive or a dissipative surface.

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