Development of stable clay mixtures for a long-term supply of the Iranian sanitary industry

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Triggered by new production technologies and consumer requirements such as large-sized sanitaryware combined with increased geometrical complexity, also raw material suppliers are forced to develop new mixtures as well as technical solutions and logistic support. For example, Stephan Schmidt Group (SSKG) delivers approximately 100,000 tpy of clays to the sanitary markets worldwide alone.

The production of large sanitary products with complex geometry makes special requirements on slip formulation, body formation times, dry bending strength and sintering behaviour, especially if local raw materials such as hard, argillaceous shales must be combined with plastic clays. These requirements must be traced back to mineralogical, physical and chemical properties of the raw materials used, e.g. chemical composition including sulphur and organic carbon, and grain size distribution below 100 µm, combined with the definition of minimum and maximum specification values.

Essential for the development of reproducible solutions that allow a more rapid casting and an increase of body strength are the availability and combination of technical equipment for casting with reliable characterization methods. For instance, it is important for slip casting of sanitaryware that mineralogy has to be controlled by additional specific methods like C.E.C. (cation exchange capacity) and rheometrical measurements to guarantee the required rheology (viscosity, thixometry).

Finally it will be shown how a long-term supply may be guaranteed based on the amount of open pits, the variety of clays, the technology for processing and blending different clays and the support of quality assurance, R&D projects and logistic concepts.

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