Slip Casting

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Slip casting has been used as a forming process of clay wares for about 100 years, and now this process is used to make most of the sanitary wares. Comparing to other ceramic forming processes, slip casting has the following advatages.

(1) suitable for producing large or intricate shapes
(2) attractive for various short production runs because of inexpensive tooling or equipment

Lately the slip casting process has drawn attention in the field of nonclay ceramics.

The first problem for developing the slip casting process of advanced ceramics is to establish the technology to optimize and stabilize slip properties in assured status. Particularly the followings are important.

(1) Particle size distribution of the mass amount of fine particles, size and volume ratio of coase/fine particles to get optimun packing
(2) Deflocculation condition of the casting slip optimization of PH and deflocculants control of soluble salts
(3) Binders selection improving strength and extention without decreasing of fluidity and casting rate of slips

The second problem is to improve forming productivity. The pressure casting is suitable for solving this problem.

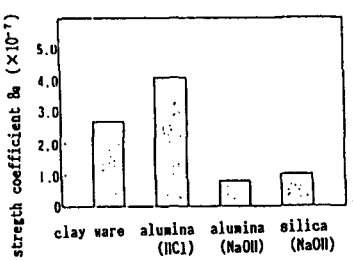

Fig.3 Stregth coefficient for various cast bodies

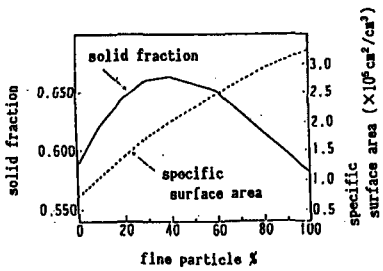

Fig.1 Solid fraction and specific surface area vs. size composition of the casting slip.

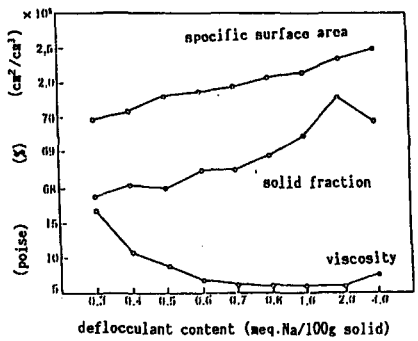

Fig.2 Viscosity, solid fraction and specific surface area vs. deflocculant content of the casting slip.

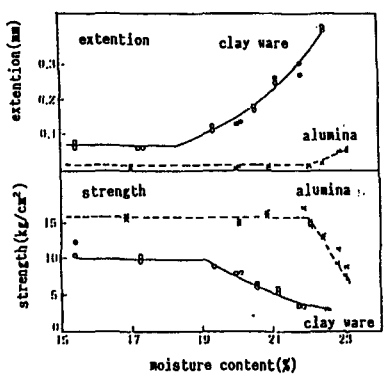

Fig.4 Comparison of strength and extension vs. moisture content curves for clay and nonclay bodies.