

compared. A recommendation of the improvement of the accuracy was conducted as to keep the viscous flow part small and to keep the drift flow part large. From the fluctuation of the machine and atmospheric condition, an accuracy prediction of 6.2 percent at 0.5 mm thickness was derived on the worst case (Table 2). 14 figs., 2 tables, 13 refs. [K. O.]

Device Development Center of Hitachi, Ltd.

2326, Imai, Oome-shi, Tokyo 198

*Kanagawa Works of Hitachi, Ltd.

**Hitachi Reserch Laboratory, Hitachi Ltd.

Some Properties and Sinterability of High Purity Alumina Fine Powders Kenya HAMANO, Takeshi HARA*, Chii-Shyang HWANG, Zenbe-e NAKAGAWA and Minori HASEGAWA, *Yogyo-Kyokai-Shi*, 94, 372-79 (1986) — Properties and sintering behaviour of 12 alumina samples of nearly the same grade of high purity and fine powder were compared experimentally. The all samples were α -Al₂O₃, except one which accompanied θ -Al₂O₃. Their apparent crystallite size, specific surface area, distribution of particle size, and shape and appearance of their particles differed considerably with samples. Further, green density of their compacts and sintering behaviour differed markedly with samples, but these difference might be explained well with shape and appearance of particles. From the results obtained, it became clear that to produce dense ceramics, selection of its raw materials is the most effective means. Further, required properties for good sinterable alumina powder were estimated. 9 figs., 4 tables, 3 refs. [K. H.]

Research Laboratory of Engineering Materials, Tokyo Institute of Technology

4259, Nagatsuta, Midori-ku, Yokohama-shi 227

*Asahi Kogyo Co., Ltd.

Synthesis of Hexagonal Plate-Like Corundum Using Hydrated Aluminum Sulfate As Starting Materials Keiji DAIMON and Etsuro KATO, *Yogyo-Kyokai-Shi*, 94, 380-82 (1986) — Synthesis of hexagonal plate-like corundum crystals by heating η -Al₂O₃ with AlF₃ was studied using different starting aluminum sulfates. It was suggested that a vapour phase formed in the presence of AlF₃,

transformed Al_2O_3 from $\eta\text{-Al}_2\text{O}_3$ to the surface of the growing corundum crystals. The relatively large hexagonal plate corundum crystals with a narrow size distribution were obtained when well developed hydrated sulfate crystals were used and dehydrated in vacuum and the crystallization to corundum was performed at 900°C . The experimental results indicate that the elimination of defects of Al^{3+} ion layer structure of hydrated sulfate suppresses the nucleation of $\alpha\text{-Al}_2\text{O}_3$, so that large corundum crystals may be formed in the presence of AlF_3 . 2 figs., 7 refs. [K. D.]

Nagoya Institute of Technology
Gokiso-cho, Showa-ku, Nagoya-shi 466

Saturation Magnetization of Nickel Ferrites in Relation to Lattice Strain Hiroshi YAMAMURA, Toshihiko KAKIO*, Hajime HANEDA, Akio WATANABE, and Shin-ichi SHIRASAKI, *Yogyo-Kyokai-Shi*, 94, 393-99 (1986) — Nickel ferrites, which were prepared by firing the co-precipitated oxalate of Ni^{2+} and Fe^{2+} at various temperatures from 500° to 1000°C in air, were Fe-deficient spinel-type phase. The samples fired at fairly low temperature have many crystal imperfections such as lattice strain ($\Delta d/d$) and lattice defects, which decreased with increasing firing temperature, and vanished above 800°C . The nickel ferrite having such imperfections has a low saturation magnetization, which increased with increasing firing temperature. On the other hand, the nickel ferrite prepared by solid-state was mechanically ground for extended time period to introduce lattice strain. The saturation magnetization of the sample thus obtained also decreased linearly with increasing lattice strain. These facts suggest that the lattice strain, regardless, its origin, lowers the saturation magnetization. 9 figs., 4 tables, 12 refs. [H. Y.]

National Institute for Research in Inorganic Materials
1-1, Namiki, Sakura-mura, Niihari-gun, Ibaraki 305
*Taki Chemical Co.

Preparation of Codeposited $\text{Al}_2\text{O}_3\text{-TiO}_2$ Powders by Vapor Phase Reaction Using Combustion Flame Saburo HORI, Yoshio ISHII, Masahiro YOSHIMURA* and Shigeyuki SŌMIYA*, *Yogyo-Kyokai-Shi*, 94, 400-08 (1986) — Spherical ultrafine $\text{Al}_2\text{O}_3\text{-TiO}_2$ powders were prepared by vapor phase reaction using a combustion flame. They consisted of $\gamma\text{-Al}_2\text{O}_3$ and anatase and rutile TiO_2 . $\beta\text{-Al}_2\text{TiO}_5$