

CERAMIC ABSTRACTS

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10—Production Equipment and Unit Operations

Die design for pressure sintering. H. I. Moss and W. P. Stollar. *Am. Ceram. Soc. Bull.*, 45 [9] 792-93 (1966). 3 figs., 1 ref.

Is dust extraction with bag filters efficient? H. Schlegel. *Interferom.* 1966, No. 1, pp. 31-34; *Keram. Z.*, 18 [6] 426-28 (1966).—The cloth filter has been progressively improved and is capable of complying with the latest most stringent dust hazard regulations. Cyclone and similar filters are useful for removing the coarsest particles before the air is passed through the cloth filter, thus minimizing cloth wear. S. reviews new designs of cloth filters (including vibratory types) and synthetic fiber cloths which can be used at higher temperatures and which have greater wear resistance. 2 figs., 1 table, 2 refs. J.A.S.

Modern conveyors for internal transport. H. R. Mueller. *Spezial.* 97 [3] 171-76 (1964).—German equipment for overhead track and trackless transport systems is reviewed. 12 figs. H.S.H.

Use of dust protection apparatus in the ceramic industry. Claus Hermsdorf. *Keram. Z.*, 18 [6] 431-34 (1966).—A review of masks and air respirators. 9 figs., 1 table, 6 refs. J.A.S.

Wet preparation (of plastic bodies) and the machinery. Peter Haendle. *Glas-Email-Keramo-Tech.*, 17 [3] 83-90 (1966).—A review of modern machinery for the preparation of bodies containing 15 to 20% moisture includes conveyors, mixer-conveyors, roll crushers, disintegrators, shredders, mixers, silos, and storage floors. Quicker mixing with hot water is discussed. 22 figs. J.A.S.

PATENTS

Apparatus and method for conveying dry pulverulent solid in liquid-like state. Arthur M. Squires. U.S. 3,268,264, Aug. 23, 1966. D.J.B.

Apparatus for the production of ceramic, cermet, and metal components. Nick C. Lirones (Howe Sound Co.). U.S. 3,263,957, Aug. 2, 1966.—A mold for producing articles from slip including thin sections extending to progressively thicker sections has a base portion of absorbent material and side walls comprised of areas of absorbent and nonabsorbent material, the absorbent areas in one side wall being dimensioned to be progressively larger from the thinnest sections of mold to the thicker sections thereof and from the top of the mold to the bottom thereof. D.J.B.

Filter apparatus. Steven S. Davis (Elmco Corp.). U.S. 3,262,576, July 26, 1966.—A filter of the type having an endless web filter medium trained to pass successively over a filtration section, an intervening space, and a discharge section has a rigid mill with a concave surface to compensate for the lag occurring

in the central portions of the medium during its travel across the intervening space between the filtration and discharge sections. D.J.B.

Filtration-desiccation method and apparatus. Georges Marchand and Pierre Sarrat (Commissariat à l'Énergie Atomique). U.S. 3,262,562, July 26, 1966.—A process of filtering and drying solids in a liquid solids mixture in a flat container having a vertical filtration wall includes feeding the mixture into the container on one side of the wall, withdrawing the liquid from the other side of the wall, rotating the container to a horizontal position with the solids beneath the filtration wall, drying and calcining the solids, and recovering them. D.J.B.

Hydraulically moved control devices of the lower pressing plungers in molds for tile and the like objects in ceramic. Alberto Gatti. U.S. 3,264,703, Aug. 9, 1966. D.J.B.

Materials mixing and blending machine. John J. Fischer and Ralph E. Bender (Patterson-Kelley Co., Inc.). U.S. 3,266,779, Aug. 16, 1966. D.J.B.

Mixing machine. Paul Eppenberger (Gebrüder Buehler). U.S. 3,266,781, Aug. 16, 1966.—A method of mixing, e.g., a liquid component and a granular component, comprises centrifugally hurling a first component against a surface to form a thin layer, directing a second component to the same surface, and scraping the intermixed layers from the surface. D.J.B.

Process and device for reducing the liquid content of a material containing a liquid and a solid. Dowty Rotol Ltd. Fr. 1,327,608, March-April 1963.—The process comprises introducing the material under pressure into a chamber in such a way that when the chamber is filled the pressure forces the liquid across a porous wall. The introduction of material is then interrupted, and the material remaining is ejected by a device moved into the chamber, e.g., a porous piston. W.M.F.

Roller-actuated vibro-energy mill. Richard K. McKibben (Southwestern Engineering Co.). U.S. 3,266,739, Aug. 16, 1966. D.J.B.

Vibrating sieve. Michael J. Buckley (Pittsburgh Plate Glass Co.). U.S. 3,263,817, Aug. 2, 1966.—A screening apparatus comprises two outer coarse mesh conical screens and a fine mesh conical screen in nested relation therebetween, upper and lower peripheral rings arranged exterior to the coarse mesh screens, fasteners to secure the rings and screens together, an access extension on one ring, a vibrator, and means to transmit vibratory impulses from the vibrator to the ring. D.J.B.

See also Sect. 9: Control of the dry-pressing process.

11—Instruments and Test Methods

Analysis of titanium dioxide pigments by spark-source mass spectrography. P. F. S. Jackson and J. Whitehead. *Analyst*, 91 [1084] 418-27 (1966).—Graphite and Ag are satisfactory electrodes for the analysis of TiO₂ pigments by solid source mass spectrography for all elements except Na and Cl. Quantitative analysis in 3 hr is possible by the use of Nb in low concentration as an internal standard. 3 refs. W.A.

Apparatus for measuring the thickness of silver layers on mirrors. S. M. Rabinovich. *Steklo i Keram.*, 19 [7] 18-21 (1962).—An electronic apparatus is based on the use of eddy currents. 4 figs. K.S.

Comparative dust measurements in working places in the ceramic industry and their evaluation. A. Winkel. *Keram. Z.*, 18 [6] 422-25 (1966).—The silicosis hazard index (Z) proposed by the author (*Staub*, 1964 and 1965) was tested in the ceramic industry and proved to be a valuable assessment of the hazard. $Z = (C \times Q)/100$, where C is concentration (mg/m³) of dust particles smaller than 5μ and Q is the free SiO₂ in the dust. There was no incidence of silicosis if Z was >0.2, but it was severe if Z was 1. 6 figs., 7 refs. J.A.S.

Determination of small amounts of magnesium in limestone. Franz Gebhardt and Marvot Achilles. *Giustech. Ber.*, 38 [12] 487-91 (1965).—To overcome the difficulty encountered in determinations of Mg in the presence of a high concentration of Ca, the authors used flame-photometric analysis. The 371 mμ MgOH line rather than the Mg resonance line at 285.2 mμ was used, because the latter is straddled by strong OH lines. After a

study of the influence of possible disturbances (Al₂O₃ and Fe₂O₃), standard solutions were prepared and used to establish a concentration vs. intensity calibration. This was independently compared with spectrophotometric results after a Ca-Mg separation via ion exchange. The results of the methods showed good agreement. The flame-photometric method is suitable for samples containing less than 1% MgO. 7 figs., 1 table, 8 refs. K.W.J.F.

Device for cleaving crystals. M. L. Volpe and C. E. Paschall. *Rev. Sci. Instr.*, 36 [2] 237-39 (1965).—A device for cleaving MgO and NaCl single crystals into large but very thin wafers is described. 2 figs., 2 refs. A.M.L.

Dust measurements with the konimeter. W. Thiele. *Keram. Z.*, 18 [6] 429-30 (1966).—An instrument made by Jenoptik Jena G.m.b.H. collects the particles <10μ from 1 to 5 cm³ of air on a sticky microscope slide, on which a count is made at 200X magnification. 6 figs., 2 refs. J.A.S.

Electron probe X-ray microanalyzer. Harvey B. Merrill, Jr. *Instr. Control Systems*, 39 [8] 77-80 (1966).—Nondestructive qualitative and quantitative analyses of surfaces can be made with high accuracy. An electron beam bombardment causes the emission of X rays characteristic of the element being bombarded. The X rays are analyzed by diffracting them with a crystal and measuring them with an appropriate detector. 10 figs. W.W.P.

Elliot G.m.b.H. liquid density measuring apparatus Mark 4. *Anon. Keram. Z.*, 18 [6] 337 (1966).—The liquid, e.g., ceramic