

AMCT10 PROCESSING OF CERAMIC RAW MATERIALS

UNIT-1 QUARRYING

- 1.1 Winning of clays, quarrying of non-plastic materials, transportation.
- 1.2 Clay purification methods- wet and dry methods.
- 1.3 Weathering of clay.
- 1.4 Beneficiation of non plastic materials.

UNIT-2 SIZE REDUCTION

- 2.1 Laws of size reduction,
- 2.2 Mechanism of size reduction.
- 2.3 Different crushers and grinders- jaw crusher, gyratory crusher,
- 2.4 Hammer mill, different types of tumbling mill,
- 2.5 Jet mill, attrition mill, vibro energy mill- principle of working.
- 2.6 Closed circuit and open circuit grinding.

UNIT-3 MECHANICAL SEPARATION

- 3.1 Introduction, types.
- 3.2 Screening – dry and wet screening, equipment's,
- 3.3 Effectiveness of screen, test sieves-ASTM, BSS, BIS, IS.
- 3.4 Filtration – theory of filtration, batch and continuous filters, principles of cake filtration.
- 3.5 Separation based on movement through a fluid
- 3.6 Sedimentation, cyclone separation, air classification. Magnetic separation.

UNIT-4 MIXING

- 4.1 Mixing- mechanism of mixing, types of mixers- batch and continuous mixers- pan mixer,
- 4.2 Shaft mixer, U mixer, muller mixer and other mixers,
- 4.3 Liquid mixers – mechanism, blungers, agitators.

UNIT-5 CONVEYING AND STORAGE OF MATERIALS

- 5.1 Conveying- solid conveying-types of conveyors,
- 5.2 Criteria for selecting a conveyor;
- 5.3 Liquid conveying-condition for liquid conveying, different types of pumps.
- 5.4 Storage methods of different ceramic powders. Problems in bin storage

References Books:

1. Ryan W and Redford C, White wares: Production, Testing and Quality Control, Pergamon Press, NY, 1987.
2. Vincenzini P, Fundamentals of Ceramic Engineering, Elsevier Applied Science, London,1991.
3. Paul De Germ E, Black J.J and Ronald A.Kohser, Materials and Processes in Keishi Gotoh, Powder Technology Handbook, Marcel Dekker Inc., 1997.