TESTING PROCEDURE OF BENTONITE POWDER

Followed by majority Coimbatore foundries

1. **Swelling Capacity :**

   Take 2 grams Bentonite powder and add it in very small amount in 100 ml distilled water contained in a standard glass graduate. These small amount are sprinkled on the surface of water, and allowed to settle before adding more material. Care should be taken that the graduate or the water in it is not shaken in the least. After 24 hours from the addition of the last remain of Bentonite, the volume of the gel is recorded ad the swelling capacity of Bentonite.

2. **Gel Formation Index :**

   Weigh accurately 1.4 gram of Bentonite powder 0.2 gram Magnesium (MGO) and 2.6 gram aluminum Oxide (Al₂O₃). Take the mixture in a big class contained 100 ml of distilled water and then agitated the whole content vigorously in high speed stirrer (3000 rpm) for 1 hour. After one hour transfer the content in a 100 ml Cylinder to stand 24 hours. Measure the volume of the supernatant liquid and subtract it from 100 ml. This will gives the gel index value of Bentonite.

3. **Gelling time :**

   2 gram Bentonite Powder is shaken vigorously for 60 second in 20ml of distilled water in a corked tube. After shaking the V tube is allowed to rest in vertical position. The minimum rest period, to be noted in minute and second, required by the contents to form a gel, that is to refuse falling down when the test tube is inverted is the gelling time.

4. **Sieve analysis :**

   This is carries out by sieving the dried material through various B.S.Sieve.

5. **pH value :**

   Take 2 grams of Bentonite Powder, add 100 ml distilled water, mix it thoroughly with the help of mechanical stirrer to get the homogenous liquid. Check the pH of this liquid by pH paper having pH between 0-10.5 Moisture.

   Take 100grams Bentonite Powder and put it before a heat lamp for 10 minutes. Weigh the powder against the loss during the procedure is Moisture content.
**Determination of Alkalinity as a Na$_2$CO$_3$ of soda ash:**

**Procedure:**

Prepare 0.1 N HCl by adding 8.6ml HCl in 1 Liter distilled water. Now take 2 grams of sample in 500 ml volumetric flask then dissolve and make up to mark. Take 50ml make up solution in conical flask and add Methyl Orange Indicator then titrate with 0.1 N HCl till purple colour.

**Calculation:**

$$\text{Na}_2\text{CO}_3\% = \frac{\text{BR} \times \text{N of HCl} \times (\text{eq. wt of Na}_2\text{CO}_3) \times 100 \times 500}{\text{Wt sample} \times \text{Taken solution} \times 1000}$$

**Determination of Moisture:**

**Procedure:**

Weight accurately about 10 grams of the sample in a tarred porcelain dish. Spread the material uniformly over the bottom of the dish. Keep it in an air oven maintained temperature at 105 +/- 5® for two hours. Cool the dish in a desiccators and weigh.

$$\text{Moisture }% \text{ by mass} = \frac{M_1 - M_2}{M_1} \times 100$$

**Determination of Gel time:**

**Procedure:**

Weigh 2.5 gram of dried Bentonite powder sample accurately. Add gradually to 25 ml distilled water contained in test tube. Shake well for 1 minute. Turn upside down the test tube and see the suspension whether it will fall down or not. If yes keep the test tube undistributed for one minute. After one minute again invert the test tube and observe the suspension whether it is stick on tube walls or falls down.

Not down the gel time.

**Determination of pH Value:**

**Procedure:**

Take 2.0 grams of the dried Bentonite Powder, add 100 ml of distilled water and mix thoroughly. Determine the pH of the suspension by digital pH meter.
Determination of Fineness:

Procedure:

Weigh accurately about 50 gram of the dried Bentonite Powder and sieve it in the normal manner using 100 mesh and 200 mesh IS sieve for 15 minutes.

Weight the amount of Bentonite powder retained on the two sieves, subtract these masses from the amount of Bentonite taken and report the result as percentage masses of Bentonite passing through 100 meshes and 200 meshes respectively.

Determination of Liquid Limit:

Procedure:

Take 100 grams of Bentonite Powder and 10% moisture and 900 ml distilled water. Dissolve it and strud the mixture and fill it in the stoker. Divide the equal part with marker. Start the countdown. Rotate the stoker. Up to 15-20 strok is good result. After 24 hours mix the water again. If the strok is 15 then the liquid limit is 1000.
6. **MB Value :-**

   A. Prepare a solution of Methylene Blue dissolving 2.64 Gms of Methylene Blue powder in one liter distilled water.

   B. Prepare Acid solution by adding 49 gms of Sulphuric acid in one liter distilled water.

   C. Boil the bulk of 555 gms of Bentonite (to be tested) mixed with 50 ml distilled water and 5 gm of sand in a beaker on flame.

   D. When cooled, add acid solution 2.5 ml in above bulk and stir well with stick until it is totally mixed.

   E. Add M.B. solution in above material and test it on filter paper by making a dot. Take some time again stir the solution and take dot do this process simultaneously. Add the M.B. solution till dot forms rounded.

   F. In order to arrive at the final M.B. value :

      Refering chart of M.B. value : For example if the ml value is 86 then multiply this value by 1.45 = 124.7 (86 x 1.45) now again referring the chart ml column 125 the value is 660. Thus the final M.B. value will be 660.

For correct reading better use filter paper 10 : 1 only.

   We recommend use Methylene Blue powder for microscopically staining latest bottle markete by qualigens fine chemicals – A division of Glaxo India LTD.; Mumbai 400025. Ensure that the bottom of the bottle of Methylene Blue powder has the following mark embossed (BT – 65 GJB 2) (Mew Mark).