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NEW PRODUCT FROM SEPOR

SEPOR FC BOND MILL/ORE SCRUBBER

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Sepor FC Bond Mill

The FC. Bond Ball Mill is a small universal laboratory mill used in calculating the grindability of all ores.

With Sepor’s new FC Bond Mill comes the ability to change the test apparatus from a Bond Mill to an Ore Scrubber to an Agglomerator with a simple change of the barrel. The new 3 in 1 mill comes in mild steel and stainless, with the option for the scrubber and agglomerator barrels to be rubber lined. Great for first pass small scale ore testing.

This Ball Mill can be used for units of time (hours, minutes) or it can be used for any number of revolutions. According to the type of grind desired.

The Test. The standard Bond test, the feed is prepared by stage crushing to pass a 6 US mesh (3.36 mm) screen. Eighty per cent (80%) of the ore to be tested should pass 6 mesh but be retained on a 14 mesh screen (~6, +14). Ore to be tested is screened on a 6 mesh sieve with a 14 mesh sieve, a 60 mesh and fines pan. It is screen analyzed and packed into a 700 cm³ graduated cylinder, and the weight of 700 cm³ is placed in the mill and ground dry at 250 % circulating load. The mill runs at 70 rpm and has a grinding charge consists of 285 iron balls, ranging in size from 5/8 inch to 1 1/2 inch in diameter, weighing 20,125 grams. It has a calculated surface area of 842 sq. inches.

Because of variations in grinding ball sizes no exact number of balls of each size can be specified. The ball charge is prepared by starting with 285 balls, consisting of approximately equal weights of various sizes available these sizes include: 5/8 inch, 3/4 inch, 1 inch, 1 1/4 inch and 1 1/2 inch, about 400 grams of each size. For every 0.002" increase in ball diameter the ball weight varies 0.40% and the ball surface area varies 0.26%. Commercial grinding balls vary by 3% to 10%, and often up to 20%, when grinding media is scarce. With 285 balls always present, some balls of one size are removed and replaced with the smaller sized balls. This is continued until the total weight is as close to 44.5 pounds as possible, making the last adjustment with the smallest size of balls. Do not remove all the balls any size. It is a good idea to keep track of the number and size of balls required to make up a 285 ball, 44.5 pound weight FC Bond Ball Mill charge, for future reference. It can be used for future tests and adjusted as required. It is apparently important to remove the same number of balls that are being replaced, while adjusting the final weight as this insures the proper balance between media weight and surface area. See pages 7& 8 for more information on the tail charge.

GRINDABILITY IS THE NUMBER OF NET GRAMS OF SCREEN UNDERSIZE PRODUCED PER REVOLUTION.

Actual FC Bond Mill Charge Weight versus the FC Bond Weight as prescribed by Fred Bond — Theory Meets Manufacturing Reality

1. Due to the varying tolerance in manufacturing of grinding balls, a fraction of an inch in diameter variance on a grinding ball will make a difference on the total weight of the grinding charge. This was addressed by Fred Bond in response to queries made as to his specified charge not meeting his own criteria, assuming they were spherical. Since it was (and is) very difficult to obtain exactly the correct weight with the specified number and size of grinding balls, it was decided that the number of balls, the total specific area of the grinding charge and the total weight of the grinding charge should be kept the same, but that these factors should be arrived at by substituting grinding balls of lesser weight and size until the 44.5 pound, 842 square inch total area charge is achieved with 285 grinding balls.

2. Extra grinding balls are supposed to be furnished with each ball charge, for this purpose of substitution, to achieve the desired weight.

The density of steel is 0.2834722 Lbs. /Cubic Inch.

Sepor Ore Scrubbers

Sepor Ore Scrubbers are designed to break up materials, clay and sand. The presence of clay can make recovery difficult as the materials and metals can be encased in agglomerates. The fines are washed from the oversize using water with the assistance of internal lifter bars. The washed oversize is now ready for the downstream processing and the fines can be processed as slurry.

Sepor designs its’ Ore scrubber with the normal shell aspect ratio (L/D) of 2:1, however the L/D parameter does not have set values, the actual geometry can be altered to any desired value by the customer. Sepor can provide you with what you want and how you want it beyond the standard sizes. The feed opening is circular so bridging and blockage is minimized. It is also smaller that the operating level in the unit to minimize splash and spillage from the fluid.

Sepor Ore Scrubbers are perfect for processing clayey materials to separate fines from coarse material. The size split between the coarse and fines is dependent on material and the customer’s indication, which is carried out via post scrubber screening, which can be provided by Sepor as well. The scrubbers are designed in batch configuration and in mild steel. Scrubbers constructed of Stainless Steel as well as Lined models can be provided if required. They come is standard sizes of 15x30, 24x48 and 32x64, other sizes are available by special design.

Sepor also has available Ore scrubber inserts for existing mills allowing the use of existing mill equipment to be used with this insert as an Ore scrubber.

Agglomerators

Sepor’s agglomerators are effective in bringing together fines in a controlled environment with the assistance of a rotary drum. Agglomerators are suitable for a wide array of materials and applications such as Heap leach systems, balling, industrial minerals and chemicals. Equipment is made of Mild Steel with a replaceable rubber lining designed to protect against drum wear and limit cake build up. Stainless steel models are available. Equipment comes in standard shell ratios.