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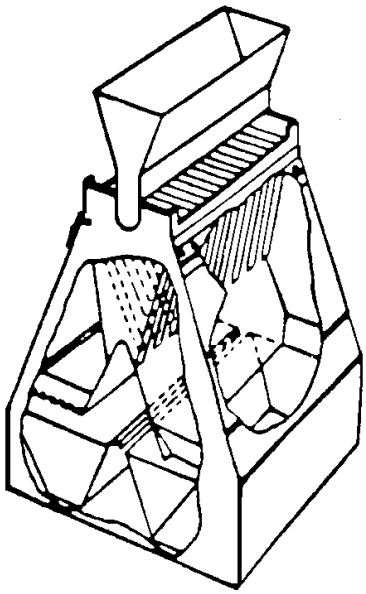
1. Air drying of sample is recommended if high moisture (>10%) coal is being fired or sieving is not performed immediately after sample extraction. This is to prevent the coagulation of sample on top of sieve screens which prevents particles to pass through screens and results in non-representative coal fineness. Coagulation of coal sample usually appears as small "balls" of coal on 100 Mesh screens. ASTM D-197 specifies drying at 18° – 27°F above room temperature with (1) to (4) air changes per minute until weight loss is less than 0.1% difference.

   This step can usually been eliminated if the following criteria has been established:

   - Pulverizer Discharge temperature above 160°F
   - Fuel moisture is moderate
   - Collected samples are placed in air-tight “Ziploc” bags
   - Sieving is performed immediately after extraction
   - No coagulation of coal is observed during sieving

2. Remove 50 grams of coal from the sample. This is done by using an ASTM riffler or by “rolling” the sample (usually between 200 g and 800 g). We advocate the riffler method which is cleaner and more efficient. A 50 gram sample can not be simply “scooped or spooned” from the whole sample, this may result in a disproportionate quantity of fine or coarse particles. If sample is not exactly 50 g, be sure to weigh and record initial sample weight. The figure below illustrates a coal riffle as specified by ASTM D 197-87.

ASTM Coal Riffler

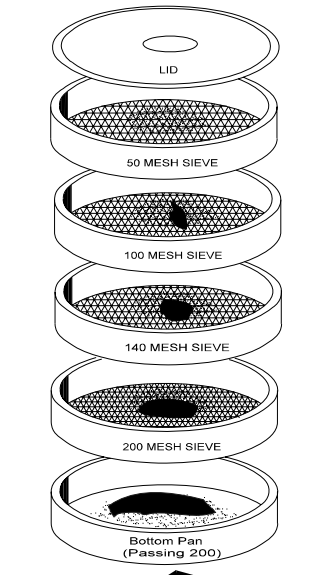


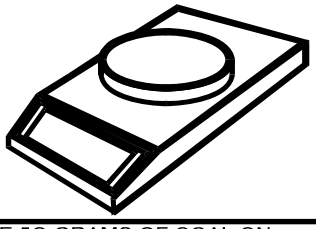
3. Shake the sample through a series of 50, 100, 140 and 200 Mesh U.S. Standard sieves. Figure 13 illustrates the order of the sieves.

4. Record the weight of coal residue on each screen and coal in the bottom pan (passing 200 Mesh). Great care should be taken in weighing coal sample residue on each screen. Residue on 50 Mesh will be very small and must be weighed accurately to yield representative data. A scale capable of accuracy to 1/1000 (0.001) must be utilized.

Coal Sieving Procedure

5. Calculate the percentage of total sample passing 50, 100, 140 and 200 Mesh.





PLACE 50 GRAMS OF COAL ON STACKED 50,100,140 AND 200 MESH SIEVES AND SHAKE FOR 20 Minutes

Weight of Test Sample	50 g	50.00
Weight of Residue on 50 Mesh	R_1 g	
Weight of Residue on 100 Mesh	R_2 g	
Weight of residue on 140 mesh	R_3 g	
Weight of Residue on 200 Mesh	R_4 g	
Weight of Sample in Pan *(Passing 200 Mesh)*	R_5 g	

% Passing 50 Mesh $$\frac{(50.00 - R_1) \times 100}{50.00}$$

% Passing 100 Mesh $$\frac{(50.00 - (R_1 + R_2)) \times 100}{50.00}$$

% Passing 140 Mesh $$\frac{(50.00 - (R_1 + R_2 + R_3)) \times 100}{50.00}$$

% Passing 200 Mesh $$\frac{(50.00 - (R_1 + R_2 + R_3 + R_4)) \times 100}{50.00}$$

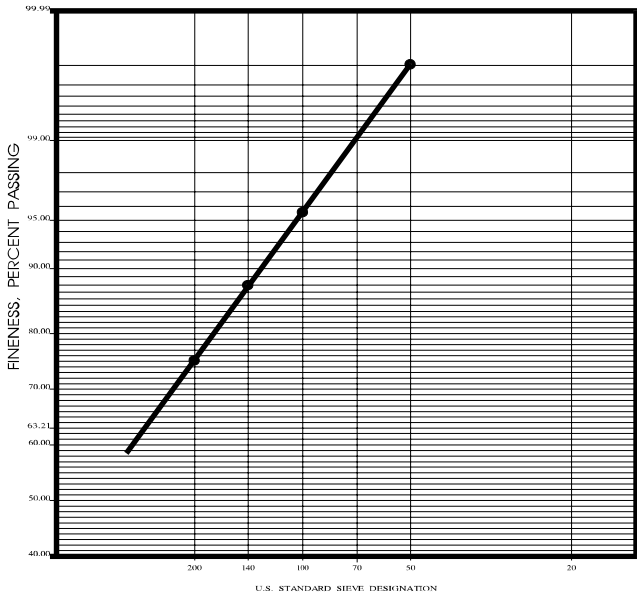
% Recovery $$\frac{(R_1 + R_2 + R_3 + R_4 + R_5) \times 100}{50.00}$$

Coal Sieves and Calculations

Coal Sieving Procedure

6. Plot percentages passing each sieve to the Rosin and Rammler equation. The percent passing 50, 100 and 200 Mesh should fall on a straight line. If the plotted line is not linear, the sample is non-representative and must be extracted. The Figure below illustrates representative coal fineness plotted against the Rosin and Rammler equation. Non-representative sampling is the result of one of following:

    - Sampling rate not isokinetic
    - Testing error or error in calculating sampling rate
    - Sample Splitting or Coal sieving error
    - Excessive sample Moisture



Coal Fineness Plotted Against Rosin & Rammler