

U. S. DEPARTMENT OF COMMERCE

NATIONAL BUREAU OF STANDARDS

WASHINGTON

Certificate

for

STANDARD SAMPLE 471

PORTLAND CEMENT

(for standardizing No. 200 sieve)

Residue on No. 200 sieve - - - - - 9.4 percent

Recommended Method of Standardizing No. 200 Sieve.- Place a 50-gram sample on the No. 200 sieve with pan attached. Holding sieve and pan (without cover) in both hands, sieve with a gentle wrist motion until most of the fine material has passed through and the residue looks fairly clean. This operation usually requires only three or four minutes.

When the residue appears clean, place the cover on the sieve, remove the pan, and, holding sieve and cover firmly in one hand, tap the side of the sieve gently with the handle of the brush used for cleaning the sieve (a 1 or 1 1/2 inch bristle brush with a 10-inch handle is a convenient size). Dust adhering to the sieve will thus be dislodged, and the underside of the screen may then be swept clean. Empty the pan and wipe out thoroughly with a cloth or waste. Replace the sieve in the pan and remove the cover carefully. If any of the coarser material has been caught in the cover during the tapping, see that it all gets back into the sieve.

Continue the sieving as before (with the cover removed) for 5 or 10 minutes, depending on the condition of the cement. The gentle wrist motion involves no danger of spilling the residue, the latter being kept well spread out on the screen. More or less continuous rotation of the sieve is desirable throughout the operation. This open sieving may usually be continued safely for 8 minutes or more, but care should be taken that it is not continued too long.

Replace the cover and follow the same process of cleaning as before. If the cement is in proper condition, there should now be no appreciable dust remaining in the residue nor adhering to sieve or pan.

One-minute check tests shall now be made as follows: Hold the sieve, with pan and cover attached, in one hand in a slightly inclined position and move it forward and backward in the plane of

inclination, at the same time strike the side gently about 150 times per minute against the palm of the other hand on the up stroke. Regular rotation of the sieve is essential, and the practice of sieving about 25 strokes in 10 seconds by the watch, then turning the sieve 60° and sieving for another 10 seconds, and so on throughout the one-minute tests, is conducive to uniform results. Sieves having covers with handles can be turned about the right amount without any trouble whatever, and flat covers may be marked with three straight lines through the center and intersecting at 60°. If one of the lines is marked with an arrowhead, and the habit is formed of starting this point under the right hand, one can easily keep track of the progress of the one-minute tests. In the one-minute tests the sieve should be tapped rather than struck, for a gentle vibration of the screen is all that is required. Any considerable blow on the sieve will throw the residue against the cover and very likely result in the loss of material. Repeat the one-minute tests until not more than 0.05 gram will pass through in one minute. Check the end point by making an additional one-minute test. All residues from one-minute tests weighing less than 0.05 gram shall be added to, and weighed with, the final residue.

At least three determinations shall be made for a calibration test. The difference between the percentage residue on the sieve and that assigned to the standard sample is the amount of the correction which shall be added or subtracted as indicated by the sign of the correction. Each individual must establish his own correction factor.

Essential points in the standard sieving operation are as follows:

1. Rotation of the sieve throughout the process, particularly in the one-minute tests.
2. Guarding against loss of material. Most sieves are provided with covers which do not fit closely. If loss is suspected, sieve over white paper and always tap the sieve gently.
3. A good balance which may be relied upon to 5 milligrams is required. The ordinary cement laboratory balance, exposed to dust and rough usage, is not accurate enough for this work.
4. Washers, shot, and slugs should never be used on the sieve in standardizing tests.
5. Avoid important tests on damp days. Excessive humidity interferes with good sieving. It tends to decrease the percentage of cement passing the sieve, and, in general, to produce irregular results.

For the Director,

Washington, D.C.  
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