Section 978

PROCEDURE FOR TESTING POZZOLAN PERCENTAGES IN CEMENTITIOUS BLENDS FOR VOLUMETRIC TRUCKS

978.1 Scope

This method covers the procedure for sampling and testing blends of cement and pozzolan in volumetric truck bins to verify correct material ratios and mixing processes.

978.2 Sampling Procedure

1. Use a clean, dry plastic container to obtain approximately a 100 g sample of the blended material from the center of the bin of the volumetric truck. DO NOT APPLY EXTRA MIXING WITH THE SAMPLING PROCEDURE. Seal the container and send it to the Central Materials chemistry lab for testing.

978.3 Test Procedure

1. Weigh a 2 g aliquot of the sample to 0.0001g in a platinum crucible. Ignite this aliquot for at least 100 minutes at 950°C. Weigh again and record both values.
2. Weigh (to the 0.0003 g) a proportioned[i] amount of the ignited aliquot and (to the 0.0009 g) a proportioned amount of an appropriate flux to a Pt alloy crucible.
3. Mix thoroughly with a clean spatula.
4. Fuse the flux mixture using the same recipe as the calibration for blended cement.
5. Allow the fused bead to cool. Then test for the following oxides: SiO_2, Al_2O_3, and CaO using WD-XRF.

978.4 Calculations

1. Compute back the actual percentages of the un-ignited (S) material by incorporating the loss on ignition as follows:

$$S = R * \frac{I}{T}$$

Where:

R = XRF reported % value of the oxide.
T = Total mass of blended cement before ignition.
I = Total mass of blended cement after ignition.

2. Calculate the percent of pozzolan (x) from each of the oxides using this formula:

$$x = \frac{S - S_2}{S_1 - S_2} * 100$$

Where:

S = Blended % concentration of the oxide.
S_1 = Fly Ash % concentration of the oxide.
S_2 = Cement % concentration of the oxide.

978.5 Report

The final percent of pozzolan is then calculated by taking the average of the *x's* from each oxide.

[i] *The proportioned amount of ignited material should be the same ratio used for calibration.*