Pozzolan Samples 77 & 78

Important Information
Please Note:

Read all instructions before testing.

- Please allow until March 28th for receipt of these samples. There are a total of three boxes. One box for Pozzolan Sample No. 77, one for Pozzolan Sample No. 78, and one box of Portland cement used in testing the pozzolans.
- Plastic bags must be properly identified before removal from boxes.
- Both pozzolans are Class C fly ash.
- Perform the 45µm fineness test on material taken from the 2600 g physical sample.

- **The closing date for all test results is May 9, 2025.**

How to Submit Test Results:

- On the CCRL website https://www.ccrl.us/, enter your lab number and PIN and click on 'Sign In'.
- Mouse over 'Pozzolan Chemical' or 'Pozzolan Physical' and click on 'Enter Data'.
- Make sure the information at the top of the screen is accurate.
- Carefully enter your data. Round data properly. Data that is not rounded correctly cannot be submitted until correction is made. You will receive an error saying you have bad data, and the data will not be entered into the website.
- DO NOT enter 'N/A' or zeros for data that you are not reporting, leave this data area blank. Zeros will be interpreted as data.
- Once all data has been entered click on the 'Submit' button.
- You should see a confirmation screen. **Print the confirmation screen for your records.**
- If you have trouble entering or do not receive confirmation visit Data Entry Trouble Shooting or contact CCRL via ccrl@astm.org or by calling 240-436-4800, prior to the closing date.
- Sign out of the website and sign in again to check that your data was submitted properly. You may add data or make corrections up to the closing date.

CCRL
Cement and Concrete
Reference Laboratory

www.ccrl.us

March 7, 2025

TO: Participants in the CCRL Pozzolan Proficiency Sample Program

SUBJECT: Pozzolan Proficiency Samples No. 77 and No. 78

The current pair of samples in the Pozzolan Proficiency Sample Program are being forwarded by FedEx Ground to domestic addresses. Various methods are being used for international shipments. Each sample for chemical analysis is packaged in a glass vial and contains approximately 50 grams of material. The samples for the physical tests are packaged separately and weigh approximately 2600 grams each. In addition, approximately 19,000 grams of portland cement is provided for use when testing these samples.

Please allow until March 28, 2025 for receipt of these samples (non-receipt date). Please weigh these bags to ensure that you have received the proper amount of each material. If the samples have not been received on this date or if the samples you received are damaged, you need to notify us in writing, so please email us at ccrl@astm.org. Replacement samples will be sent. Failure to notify us by this date may result in you not receiving replacement samples in time to perform the necessary testing. Additional shipping charges will be incurred, if contact is not made by the non-receipt date.

The two materials are ASTM C618 fly ashes. Both samples are Class C fly ash. Tests are to be conducted separately on each sample. Read the enclosed instructions before proceeding with any testing. It is mandatory that these instructions and ASTM standard C311-24 be followed. These tests should be conducted as soon as possible after the samples are received, and the test results should be promptly reported to CCRL upon completion of testing. Test results should be entered at our website: https://www.ccrl.us/.

Additional samples of this sample pair will be available for sale after the final report has been issued. Past CCRL samples for other programs are also available for sale. These samples can be used for research, technician training, and test equipment verification. Contact us for availability and pricing.

Sincerely,

Kent Niedzielski
Program Manager
Proficiency Sample Programs
Cement and Concrete Reference Laboratory

CCRL PROFICIENCY SAMPLE PROGRAM
POZZOLAN SAMPLES NO. 77 & NO. 78

INSTRUCTIONS FOR TESTING

The contents for the odd numbered sample represent one pozzolan and the contents for the even numbered sample represent another pozzolan. The odd and even numbered samples should not be combined. **Sample No. 77 and Sample No. 78 are both a Class C fly ash**.

The pozzolan samples you receive have been processed to ensure uniformity. Care should be taken to avoid segregation while preparing the material for testing.

Chemical Tests

The two samples for chemical analysis are sealed in glass vials, each of which contains around 30 g of pozzolan.

The following chemical tests are specified in ASTM Standard C311-24. Perform these chemical tests indicated below on each sample, following your normal testing procedure. Except for the material to determine moisture content and loss on ignition, the pozzolan should be oven dried prior to chemical analysis.

Moisture content	Loss on ignition
Silicon Dioxide, SiO_2	Sodium oxide, Na_2O
Aluminum oxide, $A1_2O_3$	Potassium oxide K_2O
Ferric oxide, Fe_2O_3	Available sodium oxide, Na_2O
Calcium oxide, CaO [1]	Available potassium oxide K_2O
Magnesium oxide, MgO	Total Available Alkali (equivalent Na_2Oe)
Sulfur trioxide, SO_3	

[1]**Note**: CaO must now be reported as CaO with minor oxides or CaO without minor oxides. Spectroscopic methods like atomic absorption inductively coupled plasma (ICP), and XRF determine Ca without minor oxides (wo/minor). Reference methods (wet chemistry) determine Ca with Sr and Ba (w/minor).

It is preferred that one analyst make the chemical tests on both samples on the same day. The results of a single determination should be reported rather than the average result of duplicate determinations.

Physical Tests

The two samples for the physical tests are packaged in plastic bags, each of which contains approximately 2,600 g of pozzolan. Approximately 19,000 g of portland cement is provided with these samples. This cement should be used for the following test methods which require a portland cement.

Physical Tests (Continued)

The following physical tests are specified in ASTM Standard C311-24. In accordance with the capabilities of your laboratory, perform the following physical tests on each sample.

- Density
- Increase of drying shrinkage of mortar bars
- Air entrainment of mortar
- Water requirement for SAI with portland cement
- Effectiveness of mineral admixture in controlling alkali silica-reactions
- Fineness by 45-µm sieve
- Soundness by autoclave expansion
- Strength activity index with portland cement

It is preferred that the same operator make the physical tests on both samples on the same day.

Perform fineness test (ASTM C430, 45µm sieve) on pozzolan taken from the 2,600 g sample.

Instructions for Air-Entrainment of Mortar – CCRL Test No. 350:
In calculating the percent of Vinsol resin required to produce 18 percent air content, the actual weight of the Vinsol resin solids must be used and not the weight of the Vinsol resin solution. Laboratories which desire to prepare their own Vinsol resin solution may refer to ASTM C226-22 section 3.3.4.2 for guidance. For those laboratories using a commercially prepared Vinsol resin admixture of unknown concentration, ASTM C494-19, section 18.2, provides a procedure for determining residue content of a liquid admixture. It should be noted that, in practice, this test is used to monitor the uniformity of air-entraining agent requirements of a particular pozzolan source over a period of time. For the purpose of this proficiency sample program, the ability of the laboratory to determine the proper amount of air-entraining agent for a particular pozzolan is being tested.

Instructions for Effectiveness of Mineral Admixture in Controlling Alkali Silica-Reaction –CCRL Test No.390: Results shall be evaluated using relative expansion limits. Use the portland cement provided for the control mixture and the test mixture. The test mix shall consist of 320 g of portland cement and 80 g of mineral admixture.

INSTRUCTIONS FOR REPORTING

For the sake of uniformity, report the values for the various physical tests to the nearest significant number indicated on the report forms, and report the values for the chemical analysis to the nearest 0.01 percent. Be sure to indicate on the reporting form the chemical procedure used for each test.

Test results should be entered at our website: https://www.ccrl.us.

CCRL PROFICIENCY SAMPLE PROGRAM
POZZOLAN SAMPLES NO. 77 AND NO. 78
CHEMICAL TESTS REPORT FORM

RETURN TO: Kent Niedzielski
Program Manager
Cement and Concrete Reference Laboratory
4441 Buckeystown Pike, Suite C
Frederick, Maryland 21704
Email: ccrl@astm.org
Enter test results at our website: www.ccrl.us

FROM: _____
_____
_____
_____
_____
e-mail: _____

CHEMICAL ANALYSIS TEST RESULTS

(Report values to nearest 0.01%)

	Sample No. 77	Sample No. 78		PROCEDURE FOLLOWED: ASTM Alternate	ASTM Reference	X-Ray	A.A.	Other (specify)
Moisture content			[05]					
Silicon dioxide *(SiO_2)*			[10]					
Aluminum oxide[1]			[20]					
[1]*(P_2O_5 & TiO_2 included)*								
Aluminum oxide[2]			[21]					
[2]*(P_2O_5 & TiO_2 not included)*								
Ferric oxide *(Fe_2O_3)*			[30]					
Calcium oxide[3] *(CaO)*			[40]					
[3]with minor oxides *(SrO & BaO included)*								
Calcium oxide[4] *(CaO)*			[42]					
[4]without minor oxides *(SrO & BaO not included)*								
Magnesium oxide *(MgO)*			[50]					
Sulfur trioxide *(SO_3)*			[60]					
Loss on ignition			[70]					
Sodium oxide *(Na_2O)*			[90]					
Potassium oxide *(K_2O)*			[100]					
Available sodium oxide *(Na_2O)*			[91]					
Available potassium oxide *(K_2O)*			[93]					
Total Available Alkalis *(equivalent Na_2O)*			[95]					

Please furnish the following information:

Type of x-ray used: ____ energy dispersive _____ wavelength dispersive
____ sequential _____ simultaneous

Specimen preparation: ____ pressed powder _____ fused bead

Tests performed by_____ Date _____
Tests reported by _____ Title _____
Phone _____ FAX _____ CCRL laboratory number _____

CCRL PROFICIENCY SAMPLE PROGRAM
POZZOLAN SAMPLES NO. 77 AND NO. 78
PHYSICAL TESTS REPORT FORM

RETURN TO: Kent Niedzielski
Program Manager
Cement and Concrete Reference Laboratory
4441 Buckeystown Pike, Ste C
Frederick, Maryland 21704
Email: ccrl@astm.org
Enter test results at our website: www.ccrl.us

FROM: _____
_____
_____
_____
_____
e-mail: _____

PHYSICAL TEST RESULTS
Report Values as Indicated in ( )

	Sample No. 77	Sample No. 78	
DENSITY: *(nearest 0.01 g/cm ;)*			[310]
FINENESS:			
45 µm (No. 325) Sieve, Corrected percent retained *(nearest 0.01 percent)*			[281]
Correction Factor for 45 µm sieve *(nearest 0.01 percent)*			
INCREASE OF DRYING SHRINKAGE OF MORTAR BARS: *(nearest 0.001 percent)*			[340]
SOUNDNESS - by autoclave expansion:			
Percent expansion *(nearest 0.01 percent)*			[160]
NORMAL CONSISTENCY:			
Water *(nearest 0.1% by weight of cement & pozzolan)*			[110]
AIR ENTRAINMENT OF MORTAR:			
○Vinsol resin, *(nearest 0.001% by weight of cement & pozzolan)*			[350]

[1]See instructions - page 2 (Air-Entrainment of Mortar - Test No. 350).

Tests performed by _____ Date _____
Tests reported by _____ Title _____
Phone _____ FAX _____ CCRL laboratory number _____

CCRL PROFICIENCY SAMPLE PROGRAM
POZZOLAN SAMPLES NO. 77 AND NO. 78
PHYSICAL TESTS REPORT FORM

FROM: _____

_____

_____

_____

e-mail: _____

Enter test results at our website: www.ccrl.us

			Sample No. 77	Sample No. 78	
STRENGTH ACTIVITY INDEX WITH PORTLAND CEMENT:					
Control Mix:	No. 77	No. 78			
Flow obtained *(nearest percent)*	_____	_____			
Test Mix:					
Mixing water					
(nearest 0.1% by weight of cement & pozzolan)	_____	_____			
Flow obtained *(nearest percent)*	_____	_____			
Strength Activity Index:					
7-day *(nearest percent)*.....			_____	_____	[359]
28-day *(nearest percent)*.....			_____	_____	[360]
WATER REQUIREMENT: Percent of control *(nearest percent)*			_____	_____	[370]

[2]EFFECTIVENESS OF MINERAL ADMIXTURE IN CONTROLLING ALKALI SILICA-REACTIONS:

	No. 77	No. 78			
Mortar bar expansion from control mix, E_r	_____	_____			
Mortar bar expansion from test mix, E_t.....	_____	_____			
Reduction of mortar expansion (E_r - E_t) x 100/ E_r *(nearest percent)*.....			_____	_____	[390]

[2]See instructions - page 2 (Effectiveness of Mineral Admixture in Controlling Alkali Silica-Reactions -Test No.390)

Tests performed by _____ Date _____
Tests reported by _____ Title _____
Phone _____ FAX _____ CCRL laboratory number _____