Blended Cement Samples 95 & 96

Please Note:

- Both cements are ASTM C595 Blended Hydraulic Cements. Sample No. 95 is a Type IT(S30)(L7) and Sample No. 96 is a Type IT(S25)(L10).
- CCRL requests these cements to have separate determinations of sulfate (SO3) and sulfide sulfur (S).
- CCRL also requests these cements have the LOI be corrected for sulfide sulfur (S).
- Please allow until February 28th for receipt of samples.
- **Closing date for submitting all test results is April 11, 2025.**
- **IMPORTANT!! Data Entry Confirmation** - After you successfully submit test results on the CCRL website:
  - You will receive a confirmation screen.
  - You will receive a confirmation email sent to the email provided on the data entry page.
  - Sign out and sign in again, visit the Data Entry page to review and confirm your test results. If the Data Entry page is blank CCRL did NOT receive your test results.
  - **Print and keep** the confirmation email and confirmation screen as proof your data was submitted.
- If you did not receive data entry confirmation visit "Trouble Data Entry Trouble Shooting" and if you can't solve the issue, contact CCRL via ccrl@astm.org or by calling 240-436-4800, prior to the closing date.

February 7, 2025

TO: Participants in the CCRL BLENDED Cement Proficiency Sample Program

SUBJECT: Blended Cement Proficiency Samples No. 95 and No. 96

The current pair of samples in the Blended Cement Proficiency Sample Program was shipped to your laboratory. Both cements are ASTM C595 Blended Cement. Sample No. 95 is a Type IT(S30)(L7) and Sample No. 96 is a Type IT(S25)(L10). The samples for the physical tests are packaged in plastic bags and weigh approximately 8,000 grams each. The samples for chemical analysis are in glass vials and weigh approximately 50 grams each.

Please allow until February 28th, 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 were damaged, notify us by calling 240-436-4800. 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.

Instructions covering the proposed tests, and the necessary data sheets for reporting the test results, are on the following pages. Please read these carefully before proceeding with the tests. **Please note:** For these samples, CCRL requests the cements to have separate determinations of sulfate (SO3) and sulfide sulfur(S), and the LOI to be corrected for sulfide sulfur (S).

Each sample should be tested separately. The tests should be made as soon as possible after the samples are received, and the results should be promptly reported to CCRL upon completion of the tests. Test results should be entered at our website: www.ccrl.us. Notice and information about the final report will be sent by email.

Additional samples of this sample pair and past CCRL samples are 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 Program
Cement and Concrete Reference Laboratory

CCRL PROFICIENCY SAMPLE PROGRAM
BLENDED CEMENT SAMPLES NO. 95 AND NO. 96

INSTRUCTIONS FOR TESTING

The two samples for the physical tests are packaged in plastic bags, each of which contains approximately 8,000 grams of cement. The two samples for chemical analyses are sealed in glass vials, each of which contains approximately 50 grams of cement. The physical and chemical samples for the odd numbered sample represent one cement, and the physical and chemical samples for the even numbered sample represent another cement. The odd and even numbered samples should **NOT** be combined. Both cements are ASTM C595 Blended Hydraulic Cements. **Sample No. 95 is a Type IT(S30)(L7)** and **Sample No. 96 is a Type IT(S25)L(10)**.

Insofar as your laboratory is prepared to do so, make the chemical and physical determinations on each sample in accordance with the current edition of the ASTM Standard Specification for Blended Hydraulic Cements (C595), and with the various standards and specifications to which it refers. It is preferred that the same operator make all physical tests on both samples, and that the same chemist make all chemical determinations on both samples. The results of a single determination should be reported rather than an average of duplicate determinations.

PHYSICAL TESTS

Prior to testing, pass the cement for the physical tests through a No. 20 sieve in accordance with ASTM Specification C183.

Perform fineness tests on cement taken from the 8,000 g physical sample.

Perform the following physical tests on each sample in accordance with the current ASTM methods designated below.

Blended Hydraulic Cements	ASTM C595-24
Normal Consistency	ASTM C187-23
Time of Setting, Vicat	ASTM C191-21
Soundness, Autoclave	ASTM C151-23
Air Content of Mortar	ASTM C185-20
Specific Gravity	ASTM C188-17
Compressive Strength (nine cube batch)	ASTM C109-24
Fineness, Air Permeability	ASTM C204-24
Fineness, by the 45 µm (No. 325) Sieve	ASTM C430-24
Heat of Hydration using Isothermal Conduction Calorimetry	ASTMC1702-24

CHEMICAL TESTS

Perform the following chemical tests in accordance with ASTM C114-18 on each sample.

Silicon dioxide,	SiO_2	Potassium oxide,	K_2O
Aluminum oxide,	Al_2O_3	Titanium dioxide,	TiO_2
Ferric oxide,	Fe_2O_3	Sodium oxide,	Na_2O
Calcium oxide,	CaO	Phosphorus pentoxide,	P_2O_5
Magnesium oxide,	MgO	Zinc oxide,	ZnO
Sulfur trioxide, (Corrected for S)	SO_3	Manganic oxide,	Mn_2O_3
		Sulfide Sulfur	S
Loss on ignition (Corrected for S)		Chloride,	Cl
Insoluble residue		Chromium oxide,	Cr_2O_3

These blended cement samples are Type IT with slag and CCRL requests that SO_3 and LOI be corrected for S:

Uncorrected SO_3(total sulfur – S), see Section 6.1.2 of ASTM C114-24.
Corrected SO_3 (total sulfur - S), see Section 6.1.2 of ASTM C114-24.

Uncorrected LOI, see Sections 18.1 or 26.1 of ASTM C114-24.
Corrected LOI, see Sections 18.2 or 26.1 of ASTM C114-24.

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

INSTRUCTIONS FOR REPORTING

For the sake of uniformity, report the values for the various tests to the nearest significant number indicated in the reporting forms. Be sure to indicate what chemical analysis procedure was used.

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

CCRL PROFICIENCY SAMPLE PROGRAM
BLENDED CEMENT SAMPLES NO. 95 AND NO. 96
CHEMICAL ANALYSIS REPORT FORM

RETURN TO:
Cement and Concrete Reference Laboratory
4441 Buckeystown Pike, Ste C
Frederick, Maryland 21704

FROM: _____

e-mail: _____
Check here if name or address has changed _____

CHEMICAL ANALYSIS

NOTE: Test results reported on this form should be the laboratory's "best effort". The method used should be the method used to qualify cement, or test cement for acceptance or rejection.

	Sample No. 95	Sample No. 96	Test ID	X-ray ✳	ASTM Alternate Wet Method	ASTM Reference Wet Method	A.A.	Other (specify)
Report values below to nearest 0.01%				Check the method used				
Silicon dioxide, SiO_2			10	☐	☐	☐	☐	☐
Aluminum oxide, Al_2O_3			21	☐	☐	☐	☐	☐
Ferric oxide, Fe_2O_3			30	☐	☐	☐	☐	☐
Calcium oxide, CaO			40	☐	☐	☐	☐	☐
Magnesium oxide, MgO			50	☐	☐	☐	☐	☐
Sulfur trioxide, SO_3 **(Corrected for S)**			61	☐	☐	☐	☐	☐
Sulfur trioxide, SO_3 **(Uncorrected for S)**			62	☐	☐	☐	☐	☐
Loss on ignition **(Corrected for S)**			71	☐	☐	☐	☐	☐
Loss on ignition **(Uncorrected for S)**			72	☐	☐	☐	☐	☐
Insoluble residue			80	☐	☐	☐	☐	☐
Potassium oxide, K_2O			100	☐	☐	☐	☐	☐
Titanium dioxide, TiO_2			103	☐	☐	☐	☐	☐

✳**Please provide the following information the XRF equipment used for these results.**

XRF instrument: ☐ energy dispersive ☐ wavelength dispersive

Sample preparation: ☐ pressed powder ☐ fused glass disk

Comments:

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

CCRL PROFICIENCY SAMPLE PROGRAM
BLENDED CEMENT SAMPLES NO. 95 AND NO. 96
CHEMICAL ANALYSIS REPORT FORM

RETURN TO:
Cement and Concrete Reference Laboratory
4441 Buckeystown Pike, Ste C
Frederick, Maryland 21704

FROM: _____

e-mail: _____

Check here if name or address has changed _____

	Sample No. 95	Sample No. 96	Test ID	X-ray ✳	ASTM Alternative Wet Method	ASTM Reference Wet Method	A.A.	Other (specify)
Report values below to nearest 0.001%				Check the method used				
Sodium oxide, Na_2O			90	☐	☐	☐	☐	☐
Phosphorus pentoxide, P_2O_5			102	☐	☐	☐	☐	☐
Zinc oxide, ZnO			99	☐	☐	☐	☐	☐
Manganic oxide, Mn_2O_3			101	☐	☐	☐	☐	☐
Sulfide sulfur, S			65	☐	☐	☐	☐	☐
Chloride, Cl			104	☐	☐	☐	☐	☐
Chromium oxide, Cr_2O_3			105	☐	☐	☐	☐	☐

✳**Please provide the following information the XRF equipment used for these results.**

XRF instrument: ☐ energy dispersive ☐ wavelength dispersive

Sample preparation: ☐ pressed powder ☐ fused glass disk

Comments:

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

CCRL PROFICIENCY SAMPLE PROGRAM
BLENDED CEMENT SAMPLES NO. 95 AND NO. 96
PHYSICAL TESTS REPORT FORM

RETURN TO:
Cement and Concrete Reference Laboratory
4441 Buckeystown Pike, Suite C
Frederick, Maryland 21704

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

FROM: _____

e-mail: _____

TEST RESULTS

Report as Indicated in ( )

	Sample No. 95	Sample No. 96	
NORMAL CONSISTENCY:			
Water *(nearest 0.1 percent by weight of cement)*			[110]
VICAT TIME OF SETTING:	**Minutes**	**Minutes**	
Initial Set, Report in **minutes** *(nearest 1 minutes)*			[120]
Final Set, Report in **minutes** *(nearest 5 minutes)*			[121]

AUTOCLAVE EXPANSION:	**No. 95**	**No. 96**			
Final Reading					
Initial Reading					
Difference					
Percent Expansion *(nearest 0.01 percent)*					[160]
AIR CONTENT OF MORTAR:					
Percent Air *(nearest 0.1 percent)*					[170]
Mixing water *(nearest 0.1 percent by weight of cement)*					[180]
Flow Obtained *(nearest percent)*					[190]
Density of Hydraulic Cement:					
Specific Gravity *(nearest 0.01 g/cm^3)*					[310]

COMPRESSIVE STRENGTH:		**No. 95**	**No. 96**			
3-day, total load, lbs.	1)					
	2)					
	3)					
Average 3-day *(nearest 10 psi)*						[200]

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

CCRL PROFICIENCY SAMPLE PROGRAM
BLENDED CEMENT SAMPLES NO. 95 AND NO. 96
PHYSICAL TESTS REPORT FORM

RETURN TO:
Cement and Concrete Reference Laboratory
4441 Buckeystown Pike, Suite C
Frederick, Maryland 21704

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

FROM: _____

e-mail: _____

		Sample No. 95	Sample No. 96	
COMPRESSIVE STRENGTH (CONTINUED):	**No. 95**	**No. 96**		
7-day, total load, lbs.	1) _____	_____		
	2) _____	_____		
	3) _____	_____		
Average 7-day (nearest 10 psi)		_____	_____	[210]
	No. 95	**No. 96**		
28-day, total load, lbs.	1) _____	_____		
	2) _____	_____		
	3) _____	_____		
Average 28-day (nearest 10 psi)		_____	_____	[211]
Mixing Water *(nearest 0.1 percent by weight of cement)*		_____	_____	[220]
Flow Obtained *(nearest percent)*		_____	_____	[230]

FINENESS:

Air Permeability –
Air Permeability, *(nearest 1 m^2/kg)* ..... _____ _____ [270]

45 µm (No. 325) Sieve –

	No. 95	**No. 96**
Correction Factor for 45 µm sieve (nearest 0.1 percent)	_____	_____

45 µm (No. 325) Sieve, Corrected percent passing (nearest 0.01 percent) ..... _____ _____ [281]

Comments:

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

CCRL PROFICIENCY SAMPLE PROGRAM
BLENDED CEMENT SAMPLES NO. 95 AND NO. 96
HEAT OF HYDRATION REPORT FORM

RETURN TO:
Cement and Concrete Reference Laboratory
4441 Buckeystown Pike, Ste C
Frederick, Maryland 21704

FROM: _____

e-mail: _____

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

ASTM **C1702 HEAT OF HYDRATION BY ISOTHERMAL CONDUCTION CALORIMETRY**

	Sample No. 95	Sample No. 96	
3-day, J/g *(nearest 1 J/g)*	_____	_____	[500]
7-day, J/g *(nearest 1 J/g)*	_____	_____	[510]

Method Used:

☐ Method A - sample and water are both temperature equilibrated and mixed inside the calorimeter.
☐ Method B - sample is mixed outside of the calorimeter then put into the calorimeter.

Instrument Used:
Manufacturer: _____
Model: _____

Tests performed by _____ Date _____
Tests reported by _____ Title _____
Phone _____ Fax _____ CCRL Laboratory Number _____