Blended Cement Samples 65 & 66

Please Note:

- Both of these cements are ASTM C595 Blended Hydraulic Cements. Sample No. 65 is a Type IP(12) and Sample No. 66 is a Type IP (25).

- Please allow until March 12th for receipt of samples.

- Closing date for submitting test results is April 16, 2010 (April 23 for 28-day results).

- **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 screen as proof your data was submitted.

- If you did not receive data entry confirmation visit "Trouble Data Entry Trouble Shooting" or contact CCRL at 301-975-6704.

CCRL
Cement and Concrete Reference Laboratory

www.ccrl.us

February 17, 2010

TO: Participants in the CCRL BLENDED Cement Proficiency Sample Program

SUBJECT: Blended Cement Proficiency Samples No. 65 and No. 66

The current pair of samples in the Blended Cement Proficiency Sample Program were shipped to your laboratory. Both cements are C595 Blended Cement. Sample No. 65 is a Type IP(12) and Sample No. 66 is a Type IP(25). The samples for the physical tests are packaged in plastic bags and weigh approximately 6,000 grams each. The samples for chemical analysis are in glass vials and weigh approximately 30 grams each.

Please allow until March 12, 2010 for receipt of these samples. If these samples have not been received on this date or if the samples you receive are damaged, notify us by sending email to ccrl@nist.gov or by calling 301-975-6704. Replacement samples will be forwarded.

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.

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: http://www.ccrl.us/. The closing date for test results will be April 16, 2010. The results for 28-day test results will be accepted until April 23, 2010. 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,

Robin K. Haupt

Robin K. Haupt, Supervisor, PSP
Cement and Concrete Reference Laboratory
Materials and Construction Research Division
Building and Fire Research Laboratory

CCRL PROFICIENCY SAMPLE PROGRAM
BLENDED CEMENT SAMPLES NO. 65 AND NO. 66

INSTRUCTIONS FOR TESTING

The two samples for the physical tests are packaged in plastic bags, each of which contains approximately 6,000 grams of cement. The two samples for chemical analyses are sealed in glass vials, each of which contains approximately 30 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 a C595 Blended Hydraulic Cements. **Sample No. 65 is a Type IP(12)** and **Sample No. 66 is a Type IP(25)**.

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 6,000 g sample.

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

Blended Hydraulic Cements	ASTM C595-08
Normal Consistency	ASTM C187-04
Time of Setting, Vicat	ASTM C191-08
Soundness, Autoclave	ASTM C151-09
Air Content of Mortar	ASTM C185-08
Specific Gravity	ASTM C188-95
Compressive Strength (nine cube batch)	ASTM C109-08
Fineness, Air Permeability	ASTM C204-07
Fineness, by the 45 µm (No. 325) Sieve	ASTM C430-08
Heat of Hydration	ASTM C186-05

CHEMICAL TESTS

Perform the following chemical tests in accordance with ASTM C114-09on each sample.

Silicon dioxide,	SiO_2	Potassium oxide,	K_2O
Aluminum oxide,	$A1_2O_3$	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,	SO_3	Manganic oxide,	Mn_2O_3
Loss on ignition		Chloride,	Cl
Insoluble residue		Chromium oxide,	Cr_2O_3

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: http://www.ccrl.us/. The closing date for test results submitted through our website will be April 16, 2010 The results for 28-day tests will be accepted until April 23, 2010

CCRL PROFICIENCY SAMPLE PROGRAM
BLENDED CEMENT SAMPLES NO. 65 AND NO. 66
CHEMICAL ANALYSIS REPORT FORM

RETURN TO: R.K. Haupt, Supervisor, PSP
Cement and Concrete Reference Laboratory
National Institute of Standards and Technology
100 Bureau Drive, Stop 8618
Gaithersburg, Maryland 20899-8618
FAX: 301-975-2243

FROM: _____

e-mail: _____

Check here if name or address has changed _____

☐ check here if test results also submitted at CCRL data entry web site

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. 65	Sample No. 66	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, $A1_2O_3$			21	☐	☐	☐	☐	☐
Ferric oxide, Fe_2O_3			30	☐	☐	☐	☐	☐
Calcium oxide, CaO			40	☐	☐	☐	☐	☐
Magnesium oxide, MgO			50	☐	☐	☐	☐	☐
Sulfur trioxide, SO_3			60	☐	☐	☐	☐	☐
Loss on ignition			70	☐	☐	☐	☐	☐
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. 65 AND NO. 66
CHEMICAL ANALYSIS REPORT FORM

RETURN TO: R.K. Haupt, Supervisor, PSP
Cement and Concrete Reference Laboratory
National Institute of Standards and Technology
100 Bureau Drive, Stop 8618
Gaithersburg, Maryland 20899-8618
FAX: 301-975-2243

FROM: _____

e-mail: _____

Check here if name or address has changed _____

	Sample No. 65	Sample No. 66	Test ID	X-ray ✳	ASTM Reference 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	☐	☐	☐	☐	☐
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. 65 AND NO. 66
PHYSICAL TESTS REPORT FORM

RETURN TO: R. K. Haupt, Supervisor, PSP
Cement and Concrete Reference Laboratory
National Institute of Standards and Technology
100 Bureau Drive, Stop 8618
Gaithersburg, Maryland 20899-8618
FAX: 301-975-2243

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

☐ check here if test results also submitted at CCRL data entry web site

TEST RESULTS

Report as Indicated in ( )

	Sample No. 65	Sample No. 66	
NORMAL CONSISTENCY:			
Water *(nearest 0.1 percent by weight of cement)*			[110]
VICAT TIME OF SETTING:	**Minutes**	**Minutes**	
Initial Set, Report in **minutes** *(nearest 5 minutes)*			[120]
Final Set, Report in **minutes** *(nearest 5 minutes)*			[121]

AUTOCLAVE EXPANSION:	**No. 65**	**No. 66**			
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]
Specific Gravity *(nearest 0.01)*					[310]

COMPRESSIVE STRENGTH:	**No. 65**	**No. 66**			
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. 65 AND NO. 66
PHYSICAL TESTS REPORT FORM

RETURN TO: R. K. Haupt, Supervisor, PSP
Cement and Concrete Reference Laboratory
National Institute of Standards and Technology
100 Bureau Drive, Stop 8618
Gaithersburg, Maryland 20899-8618
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FROM: _____
_____
_____
_____
_____
e-mail: _____
Check here if name or address has changed _____

☐ check here if test results also submitted at CCRL data entry web site

		Sample No. 65	Sample No. 66	
COMPRESSIVE STRENGTH (CONTINUED): No. 65	**No. 66**			
7-day, total load, lbs.. 1)				
2)				
3)				
Average 7-day (nearest 10 psi)				[210]
No. 65	**No. 66**			
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, *(nearest 10 cm^2/g)*				[270]
45µm Sieve, Corrected percent passing *(nearest 0.01 percent)*				[281]

	No. 65	**No. 66**
Correction Factor for 45 µm sieve *(nearest 0.01 percent)*		

Comments:

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

CCRL PROFICIENCY SAMPLE PROGRAM
BLENDED CEMENT SAMPLES NO. 65 AND NO. 66
PHYSICAL TESTS REPORT FORM

RETURN TO: R. K. Haupt, Supervisor, PSP
Cement and Concrete Reference Laboratory
National Institute of Standards and Technology
100 Bureau Drive, Stop 8618
Gaithersburg, Maryland 20899-8618
FAX: 301-975-2243

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

☐ check here if test results also submitted at CCRL data entry web site

TEST RESULTS

Report as Indicated in ( )

	Sample No. 65	Sample No. 66	
NORMAL CONSISTENCY:			
Water *(nearest 0.1 percent by weight of cement)*			[110]
VICAT TIME OF SETTING:	**Minutes**	**Minutes**	
Initial Set, Report in **minutes** *(nearest 5 minutes)*			[120]
Final Set, Report in **minutes** *(nearest 5 minutes)*			[121]

AUTOCLAVE EXPANSION:	**No. 65**	**No. 66**			
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]
Specific Gravity *(nearest 0.01)*					[310]

COMPRESSIVE STRENGTH:	**No. 65**	**No. 66**			
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. 65 AND NO. 66
PHYSICAL TESTS REPORT FORM

RETURN TO: R. K. Haupt, Supervisor, PSP
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FROM: _____
_____
_____
_____
_____
e-mail: _____
Check here if name or address has changed _____

☐ check here if test results also submitted at CCRL data entry web site

		Sample No. 65	Sample No. 66	
COMPRESSIVE STRENGTH (CONTINUED): No. 65	**No. 66**			
7-day, total load, lbs.. 1)				
2)				
3)				
Average 7-day (nearest 10 psi)				[210]
No. 65	**No. 66**			
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, *(nearest 10 cm^2/g)*				[270]
45µm Sieve, Corrected percent passing *(nearest 0.01 percent)*				[281]

	No. 65	**No. 66**
Correction Factor for 45 µm sieve *(nearest 0.01 percent)*		

Comments:

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

CCRL PROFICIENCY SAMPLE PROGRAM
BLENDED CEMENT SAMPLES NO. 65 AND NO. 66
HEAT OF SOLUTION & HEAT OF HYDRATION REPORT FORM

RETURN TO: R. K. Haupt, Supervisor, PSP
Cement and Concrete Reference Laboratory
National Institute of Standards and Technology
100 Bureau Drive, Stop 8618
Gaithersburg, Maryland 20899-8618
FAX: 301-975-2243

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

☐ check here if test results also submitted at CCRL data entry web site

C186 HEAT OF HYDRATION
TEST RESULTS
Report as Indicated in ( )

	Sample No. 65	Sample No. 66	
HEAT OF SOLUTION:			
Dry Cement, cal/g *(nearest 0.1 cal/g)*	_____	_____	[291]
Partially hydrated, 7-day cal/g *(nearest 0.1 cal/g)*	_____	_____	[292]
Partially hydrated, 28-day cal/g *(nearest 0.1 cal/g)*	_____	_____	[301]
HEAT OF HYDRATION:			
7-day, cal/g *(nearest 0.1 cal/g)*	_____	_____	[290]
28-day, cal/g *(nearest 0.1 cal/g)*	_____	_____	[300]

Comments:

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