

CEMENTITIOUS



Certified to
NSF/ANSI CAN 61
& NSF/ANSI 372

Brand: OneCem®
Material: Blended Cement
Type: IL (8)

Material Certification Report

Test Period: 01-Jul-2023 to 31-Jul-2023

Date Issued: 30-Aug-2023

Certification

This cement meets the specifications of ASTM C595 and AASHTO M 240 for Type IL cement.

General Information

Supplier:	Holcim (US) Inc.	Source Location:	Ste. Genevieve Plant
Address:	8700 West Bryn Mawr Ave Chicago, IL 60631		2942 US Highway 61 Bloomsdale, MO 63627
Contact:		Contact:	Ben Kist / (636) 524-8197

The following is based on average test data during the test period. The data is typical of product shipped from this source; individual shipments may vary.

Test Data on ASTM Standard Requirements

Chemical			Physical		
Item	Limit ¹	Result	Item	Limit ¹	Result
Sulfate as SO ₃ (%) ²	3.0 max	3.2	+45 um (No. 325) Sieve (%)	-	1.7
Loss on Ignition (%)	10.0 max	5.5	Blaine Fineness (m ² /kg)	-	468
			Density (g/cm ³) (Specific Gravity)	-	3.10
CaCO ₃ in Limestone (%)	70.0 min	89.5	Initial Vicat (minutes)	45-420	91
Equivalent Alkalies (%)	-	0.55	Air Content (%)	12 max	6
			Compressive Strength MPa (psi)		
			3 day	13.0 (1890) min	32.6 (4730)
			7 day	20.0 (2900) min	38.2 (5540)
			28 day (previous month's data)	25.0 (3630) min	45.5 (6600)
			Mortar Bar Expansion (%) (C1038)	0.020 max	0.007

Test Data on ASTM Optional Requirements

Chemical			Physical		
Item	Limit ¹	Result	Item	Limit ¹	Result

Notes (*1-9)

¹ Dashes in the Limit/Result columns mean Not Applicable

² It is permissible to exceed the specification limit provided that ASTM C1038 Mortar Bar Expansion does not exceed 0.020% at 14 days.

³ This data may have been reported on previous mill certificates. It is typical of the cement being currently shipped.

Benjamin Kist,
Quality Manager

Valued Specifiers

Joseph Clendenen, PE, LEED AP
Phone: (734) 347-6072
Joseph.Clendenen@holcim.com

August 31, 2023

Certification Statement for Ste. Genevieve Type IL

Valued Specifier,

Holcim is committed to providing sustainable products to meet the business needs of our customers while maintaining the high quality requirements and performance expectations of our industry. It is for this reason that we are writing this letter today.

As you are aware, PLC has had favorable use in Minnesota for over 15 years including exterior concrete applications such as MnDOT paving projects. Through its favorable performance in the past 50 years in Europe and 20 years in US/Canada, it is now allowed for use in up-to-date industry specifications such as ACI, AASHTO, CSI MasterSpec, FAA, ICC, CSA and state and federal agencies, including MnDOT.

In addition to the previous information submitted, here is some additional performance information on the Ste. Genevieve (GV) Type IL in comparison to the Type I/II:

	GV Type I/II	GV Type 10% Limestone	GV Type I/II (20% ash)	GV Type 10% Limestone (20% Ash)	GV Type I/II (30% Slag)	GV Type 10% Limestone (30% Slag)	GV Type I/II (15% Ash, 20% Slag)	GV Type 10% Limestone (15% Ash, 20% Slag)
Slump, inches	4.50	4.00	7.00	6.75	5.75	4.50	5.75	5.75
Air Content, %	2.1	2.1	1.7	1.7	2.0	1.9	2.2	1.9
Initial Setting, hr:mn	3:44	3:36	5:07	4:51	4:04	4:03	4:43	4:54
1-day compressive strength, psi	2590	2880	2050	2200	1650	1900	1700	1780
7-day compressive strength, psi	5000	5120	4940	5030	4230	4620	4730	4670
28-day compressive strength, psi	6320	6250	6600	6600	6070	6230	6610	6640

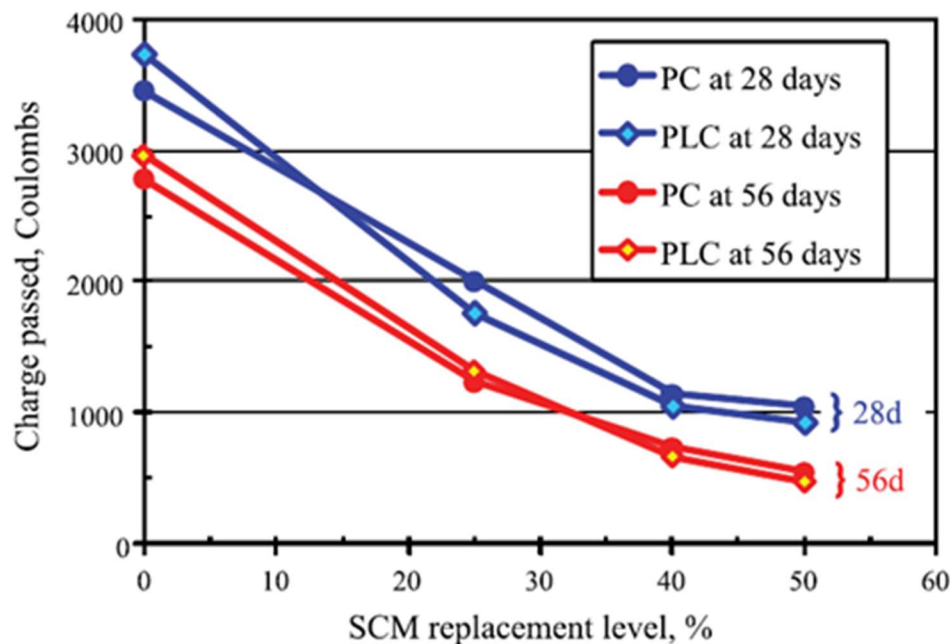
Additionally, you had requested some information on durability expectations of Type IL cement vs. I/II. In short, IL cement has been evaluated in numerous studies in the past 20 years and shown equivalent performance, which is why it is broadly accepted in industry standards today. Here are a few examples (1):

Freeze-Thaw Resistance:

AIR VOID PARAMETERS PER ASTM C457 AND DURABILITY FACTOR (RESISTANCE TO FREEZING AND THAWING) PER ASTM C666

SCM replacement level, %	Cement type	Air void parameters		Durability factor, %
		Air content, %	Spacing factor, μm	
0	PC	5.3	173	101
	PLC	5.6	187	100
25	PC	4.9	148	101
	PLC	5.4	149	104
40	PC	5.6	164	101
	PLC	5.3	165	103
50	PC	5.6	150	102
	PLC	6.6	147	100

Permeability:



For more information on the industry-wide movement towards allowance of Type IL and other hydraulic cements, please visit www.onecement.com and www.greencement.org or contact me directly using the information below, I would be happy to assist. Thank you for your consideration.

Yours sincerely,



Joseph Clendenen, PE, LEED AP



Material: Fly Ash
Class: C

Material Certification Report

Test Period: 7/27/22 to 8/11/22
Date Issued: 16-Sep-22

Certification

This fly ash meets the specifications of ASTM C618 and AASHTO M 295 for Class C Fly Ash.

General Information

Supplier:	Holcim (US) Inc.	Source Location:	COLUMBIA unit 2
Address:	8700 West Bryn Mawr Ave Chicago, IL 60631		W8375 Murray Road Pardeeville, WI 53954
		Contact:	Brian Borowski (630) 561-1198

This report is based on test results of a composite sample as defined by ASTM C311. The data are typical of product shipped from this source; individual shipments may vary.

Test Data on ASTM Standard Requirements for Class C Fly Ash

Chemical			Physical		
Item	Limit ¹	Result	Item	Limit ¹	Result
Silicon Dioxide (SiO ₂) (%)	-	36.82	Fineness		
Aluminum Oxide (Al ₂ O ₃) (%)	-	19.09	Amount Retained 45 µm Sieve (%)	34 max	16.7
Iron Oxide (Fe ₂ O ₃) (%)	-	5.61	Variation, % Points from Average	5 max	-1.0
SUM (SiO ₂ + Al ₂ O ₃ + Fe ₂ O ₃) (%)	50.0 min	61.5	Strength Activity Index with Portland Cement ²		
Calcium Oxide (CaO) (%)	>18.0	26.32	7 day (% of cement control)	75 min	102
Magnesium Oxide (MgO) (%)	-	5.52	Water Requirement		
Sulfur Trioxide (SO ₃) (%)	5.0 max	1.86	(% of cement control)	105 max	94
Sodium Oxide (Na ₂ O) (%)	-	1.76	Soundness		
Potassium Oxide (K ₂ O) (%)	-	0.56	Autoclave Expansion or Contraction (%)	0.8 max	0.04
Equivalent Alkalies (Na ₂ O Eq) (%)	-	2.13	Density (g/cm ³) ⁵		2.67
Moisture Content (%)	3.0 max	0.11	Variation, % from Average	5 max	-3.3
Loss on Ignition (%) ³	6.0 max ⁴	0.12			

Notes (*1-9)

1 - Dashes in the Limit / Result column means Not Applicable

2 - Holcim Ste. Genevieve Type I/II cement.

3 - Finely divided materials may tend to reduce the entrained air content of concrete. Hence, if a fly ash or natural pozzolan is added to any concrete for which entrainment of air is specified, provision should be made to ensure that the specified air content is maintained by air content tests and by use of additional air-entraining admixture or use of an air-entraining admixture in combination with air-entraining hydraulic cement.

4 - The limit under ASTM C618 is 6.0 max; the limit under AASHTO M 295 is 5.0 max.

5 - Determined according to ASTM C604.

Testing performed at Holcim US MPC, Renwick Lab, 20408 Renwick Road, Lockport, IL 60441.

Brian Borowski
Quality Manager, US MPC