

West Central Region Office

1707 Cole Boulevard, Suite 100

Golden, Colorado 80401

Telephone: (303) 985-1070

Facsimile: (303) 716-5318

To Order: 303.744.2378



Project Mix Designs

Date: 1/13/2021

Contractor: PIERSON'S CONCRETE RMC FT COL

Attention: Luke Bernhardt

Project: Linden St Rehab

Mix	Usage	Mix Number	f 'c	w/c+p	Slump	Air
1	EXT Site	6450100.	4500	0.43	3.00 - 5.00"	4.5 - 7.5%

**IF FIBERS OR COLOR ARE REQUIRED IN THE MIX,
IT MUST BE SPECIFIED WHEN ORDERING!**

Sales Representative: Mike Grega

Main Plant: 923

ACI 301-10 1.6.4.1.c: Testing agency will report all tests and inspection results to Architect/Engineer, Contractor, and Concrete supplier within seven days after tests and inspections are performed.

Please forward results to:

Aggregate Industries

Attention: Michael Grega

1705 S. Acoma St

Denver, Colorado 80223

CONCRETE MIX DESIGN SUBMITTAL

Contractor: PIERSON'S CONCRETE RMC FT COL
Project Name Linden St Rehab
Mix I.D.: 6450100.
Qualification: ACI 301-10 4.2.3.2.a
Intended Use: EXT Site

PROPORTIONS

	1 cu.yd. (SSD)	
ASTM C150 Type I-II	655 LBS.	
ASTM C33 Coarse Aggregate	1715 LBS.	
ASTM C33 Fine Aggregate	1160 LBS.	
ASTM Potable Water	284 LBS.	34.04 gal/cy
ASTM C260 Air Entrainer	0.45 oz/cwt C+P	2.92 oz/cy
ASTM C494 Type A Water Reducer	4.0 oz/cwt C+P	26.20 oz/cy

PHYSICAL PROPERTIES

Slump: 3.00 - 5.00"
Air Content: 4.5 - 7.5%
w/c + p ratio: 0.43

COMPRESSIVE STRENGTH

f'_c = 4,500 psi @ 28 days

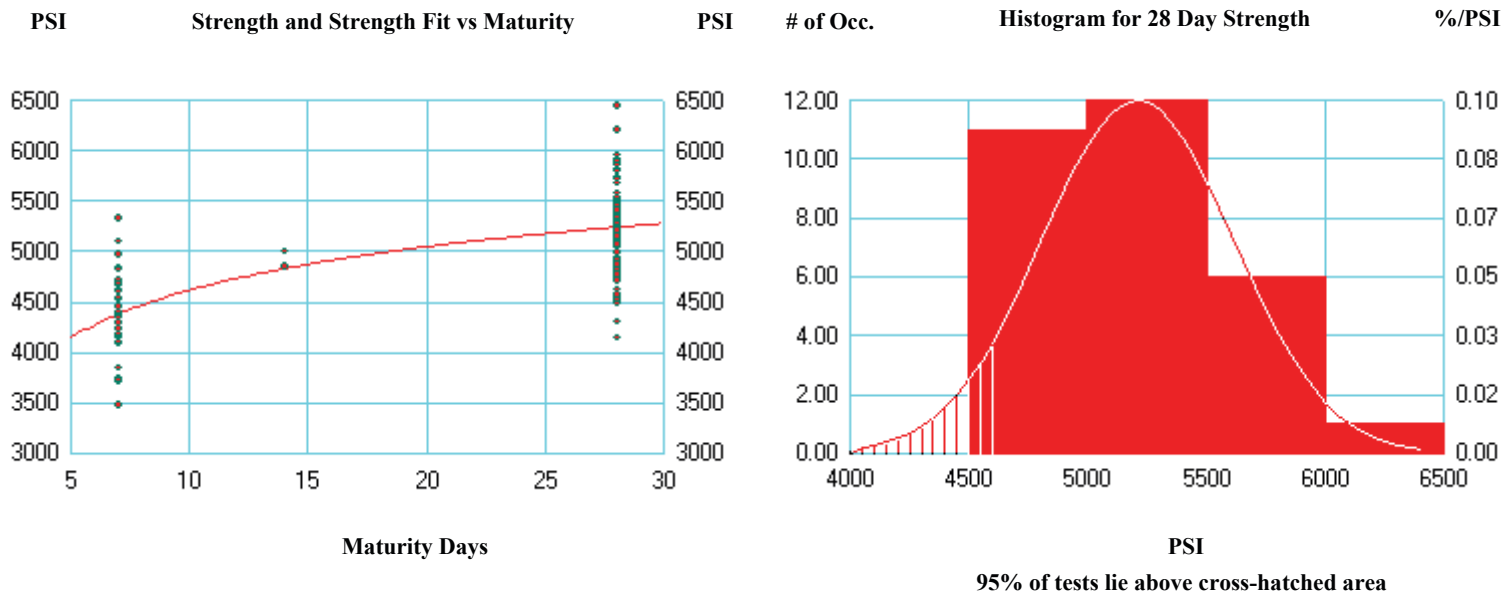
Production and delivery in accordance with ASTM C 94 Standard Specification for Ready-Mixed Concrete. Compressive strength performance is conditional with strict adherence to the current ASTM Standards relating to concrete, and the latest revisions of ACI 301 and 318.

Please direct inquiries to:
Michael Grega
Sales Representative Ready Mix
Phone: 303-570-8984
Fax: 303-744-2062
mike.grega@aggregate-us.com

Date: 1/13/2021



Units : US



Mix Name: 6450100.

Mix Strength: 4,500 PSI at 28.0 Days

STRENGTH SUMMARY, Compression 4" x 8"								
No. Of Tests	Avg Slump	Avg Air	Avg 7 Day	Avg 28 Day	Avg Acc Age	Accept Age	Std Dev	ACI318 Req'd
30	4.06	5.95	4360	5210	5210	28	400	5040

DETAILED STRENGTH, Compression 4" x 8"							
Batch Number	Date	Slump	Air	Strengths 7 Day	Strengths 28 Day	Acc Age	Age
83447570	8/16/2018	5.00	5.60	4300	5400	5400	28
61968012	10/3/2018	4.50	6.10	4250	5230	5230	28
82225300	11/7/2018	5.50	6.80	3930	4800	4800	28
64975988	8/20/2019	4.75	6.40	4110	4870	4870	28
64975971	8/20/2019	4.25	6.70	4400	4980	4980	28
83455778	8/26/2019	2.50	5.20	4460	5100	5100	28
83457033	10/4/2019	3.75	5.00	4230	5420	5420	28
64978865	11/4/2019	3.75	5.00	5110	5820	5820	28
64978895	11/5/2019	4.50	5.20	4160	5240	5240	28
74017735	1/31/2020	4.50	5.50	4850	5660	5660	28
74017854	2/17/2020	4.50	7.20	4720	5730	5730	28
74017962	2/25/2020	4.50	6.25	5340	6130	6130	28
88307164	3/9/2020	3.00	6.10	3850	4840	4840	28
74018387	3/18/2020	5.00	6.20	4610	5600	5600	28
83462484	5/8/2020	3.75	5.40	4630	5630	5630	28
83463027	6/1/2020	4.25	5.00	4980	5400	5400	28

DETAILED STRENGTH, Compression 4" x 8"							
Batch	Date	Slump	Air	Strengths		Acc	
Number				7 Day	28 Day	Acc Age	Age

64986040	7/29/2020	4.00	5.50	4700	5440	5440	28
83465733	8/21/2020	4.50	5.80	3500	4530	4530	28
64987995	10/14/2020	3.25	7.40	3720	4800	4800	28
83467842	10/15/2020	3.50	5.50	4730	5810	5810	28
83467894	10/16/2020	3.75	5.50	4610	5410	5410	28
83468202	10/28/2020	3.00	5.10	4550	5040	5040	28
64988472	10/29/2020	4.00	6.80	4550	5150	5150	28
64988485	10/29/2020	4.25	6.40	3740	4740	4740	28
64988527	10/30/2020	4.25	6.50	4240	4940	4940	28
64988516	10/30/2020	3.75	6.20	4180	4710	4710	28
64988577	11/2/2020	3.25	5.90	3490	4660	4660	28
64988634	11/3/2020	4.50	6.40	4370	5030	5030	28
64988609	11/3/2020	4.00	6.70	4190	4940	4940	28
83468896	11/17/2020	3.75	5.20	4350	5290	5290	28



Material: Portland Cement
Type: I-II

Material Certification Report

Test Period: 01-Oct-2020 to 31-Oct-2020
Date Issued: 13-Nov-2020

Certification

This cement meets the specifications of ASTM C150 and AASHTO M85 for Type I-II cement.

General Information

Supplier: Holcim (US) Inc. d/b/a LafargeHolcim US
Address: 8700 West Bryn Mawr Ave
 Chicago, IL 60631

Source Location: Portland Plant
 3500 Highway 120
 Florence, CO 81226

Contact: Kevin Tate / (719) 371-4615

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
SiO ₂ (%)	-	20.0	Air Content (%)	12 max	7
Al ₂ O ₃ (%)	6.0 max	4.5	Blaine Fineness (m ² /kg)	260 min	425
Fe ₂ O ₃ (%)	6.0 max	3.3	Autoclave Expansion (%) (C151)	0.80 max	0.00
CaO (%)	-	64.1	Compressive Strength MPa (psi)		
MgO (%)	6.0 max	1.3	1 day	-	22.2 (3220)
SO ₃ (%) ²	3.0 max	3.6	3 day	10.0 (1450) min	33.9 (4920)
Loss on Ignition (%) ⁵	3.5 max	2.6	7 day	17.0 (2470) min	39.1 (5670)
Insoluble Residue (%)	1.50 max	0.80	28 day (previous month's data)	-	47.5 (6890)
CO ₂ (%)	-	1.6	Initial Vicat (minutes)	45-375	106
CaCO ₃ in Limestone (%)	70 min	84	Mortar Bar Expansion (%) (C1038)	0.020 max	0.013
Potential Phase Compositions ³ :					
C ₃ S (%)	-	60			
C ₂ S (%)	-	11			
C ₃ A (%)	8 max	6			
C ₄ AF (%)	-	10			
C ₃ S + 4.75C ₃ A (%)	-	89			

Test Data on ASTM Optional Requirements

Chemical			Physical		
Item	Limit ¹	Result	Item	Limit ¹	Result
Cl (%)	-	0.02	False Set, Final Penetration (%)	50 min	76
Equivalent Alkalies (%)	-	0.73	Heat of Hydration kJ/kg (cal/g)	-	297 (71)
			(ASTM C1702) 3 Days ⁴		

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 - Adjusted per Annex A1.6 of ASTM C150 and AASHTO M85.
- 4 - Test results represent the most recent value and is provided for information only.
- 5 - Limit = 3.0 when limestone is not an ingredient in the final cement product

Additional Data

Item	Limestone	Inorganic Processing Addition	Base Cement Phase Composition	Result
Amount (%)	4.2	-	C ₃ S (%)	63
SiO ₂ (%)	11.0	-	C ₂ S (%)	11
Al ₂ O ₃ (%)	3.7	-	C ₃ A (%)	6
Fe ₂ O ₃ (%)	1.3	-	C ₄ AF (%)	10
CaO (%)	46.1	-		
SO ₃ (%)	0.5	-		

Tessa McCreight,
Quality Manager

March 27, 2020

Aggregate Industries
1705 S. Acoma Street
Denver, CO 80223

Attention: Mr. John Cheever

Subject: Laboratory Test Results
Greeley Pit Aggregate Tests
ASTM & AASHTO Size No. 67 Coarse Aggregate
WesTest Project No. 680819

Gentlemen:

Enclosed on Table 1 are the results of aggregate physical property and quality tests, done in general accordance with ASTM and AASHTO criteria, on aggregate sampled from the above-referenced source on January 3, 2020.

The test results indicate the material meets ASTM C33, *Standard Specification for Concrete Aggregates*, AASHTO M 80, *Standard Specification for Coarse Aggregate for Hydraulic Cement Concrete*, and Colorado Department of Transportation requirements for the properties tested.

If you have any questions on the data presented, please contact us at your convenience.

Sincerely,
WesTest

Dylan A. Hullinger, P.E.





627 Sheridan Boulevard • Lakewood, CO 80214
303.975.9959 • office@westest.net

CLIENT: Aggregate Industries
SOURCE: Greeley Pit
SAMPLED BY: Client
PROJECT: Greeley Pit Aggregate Testing

WesTest PROJECT NO.: 680819
REPORT DATE: March 27, 2020

LABORATORY TEST REPORT

MATERIAL DESCRIPTION		ASTM & AASHTO Size No. 67 Coarse Aggregate										
DATE SAMPLED		January 3, 2020										
SAMPLE LOCATION		Stockpile										
Aggregate Physical Property and Quality Tests (ASTM C33 & AASHTO M 80 Specifications)												
ASTM C117 & C136, AASHTO T 11 & T 27			ASTM C127, AASHTO T 85, Bulk Specific Gravity = 2.605, Bulk Specific Gravity (SSD) = 2.630, Apparent Specific Gravity = 2.672, Absorption = 1.0%			ASTM C88, AASHTO T 104, Sodium Sulfate Soundness, 5 Cycles						
SIEVE SIZE		% Passing	Size No. 67 Specification	ASTM C131, AASHTO T 96, L.A. Abrasion Grading B, Loss = 37% Specification: 45% Max.			SIEVE SIZE	GRADING OF ORIGINAL SAMPLE	WEIGHT BEFORE TEST, g	PERCENT PASSING AFTER TEST	WEIGHTED PERCENT LOSS	
1-1/2"							1-1/2" to 1"	7				
1"		100	100				1" to 3/4"		514.3	0.2	0.0	
3/4"		93	90 - 100				3/4" to 1/2"	61	674.2	2.0	1.2	
1/2"		58					1/2" to 3/8"		331.5			
3/8"		33	20 - 55				3/8" to No.4	32	303.7	2.1	0.7	
# 4		2	0 - 10				TOTAL	100	COARSE AGG. TOTAL 98%		2	
# 8		1	0 - 5				SPECIFICATION:					12 Max.
# 16		1		SAMPLE WT. (g)	LIQUID TYPE / SPECIFIC GRAVITY	LIGHTWEIGHT PARTICLES	ASTM C29, AASHTO T 19, Bulk Density and Voids in Aggregate					
# 30		1		5010.0	ZnCl ₂ /2.0	0.0%	Bulk Density = 100 pcf					
# 50		1		5010.0	ZnBr ₂ /2.4	0.9%	Rodding Method; Bulk Density = 100 pcf					
# 100		1					Voids in Aggregate = 38%					
# 200		0.7	0 - 1.5									
COMMENTS:		Sum of Clay Lumps, Friable Particles, Chert = 1.0% Specification: 3.0% Max.										

TABLE 1

January 23, 2020

Aggregate Industries
1705 S. Acoma Street
Denver, CO 80223

Attention: Mr. John Cheever

Subject: Laboratory Test Results
ASTM C1260
Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM & AASHTO Size No. 9 Coarse Aggregate, Squeegee
ASTM & AASHTO Size No. 8 Coarse Aggregate
ASTM & AASHTO Size No. 67 Coarse Aggregate
ASTM & AASHTO Size No. 4 Coarse Aggregate
Greeley Pit
WesTest Project No. 680819

Gentlemen:

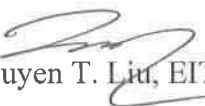
Included as Figure 1 is the result of potential alkali reactivity testing (mortar bar method), performed on aggregate sampled from the above-referenced source on January 3, 2020. The aggregate was prepared and tested in general accordance with ASTM Procedures. ASTM C1260 defines the potential of an aggregate for deleterious expansion as follows:

<u>Test Expansion</u>	<u>Classification</u>	<u>Potential for Deleterious ASR</u>
< 0.10%	Innocuous	Low
0.10% to 0.20%	Inconclusive	Not Predictable
> 0.20%	Deleterious	High

Based on the test result of 0.06% expansion at 14 days in solution, 16 days after casting, the potential for deleterious alkali-silica behavior of this aggregate in concrete is considered Low.

If you have any questions on the data presented, please contact us at your convenience.

Sincerely,
WesTest


Quyen T. Liu, EIT



Reviewed by:

Dylan A. Hullinger, P.E.



627 Sheridan Boulevard • Lakewood, CO 80214
303.975.9959 • office@westest.net

LABORATORY TEST REPORT
POTENTIAL ALKALI REACTIVITY OF AGGREGATES
(MORTAR-BAR METHOD)
ASTM C1260

REPORT DATE: January 23, 2020

CLIENT: Aggregate Industries
PROJECT NO.: 680819

SAMPLE DATE: January 3, 2020
SAMPLE ID: 6808E92

AGGREGATE:

SOURCE: Greeley Pit
SIZE: ASTM & AASHTO Size No. 9 Coarse Aggregate, Squeegee
SIZE: ASTM & AASHTO Size No. 8 Coarse Aggregate
SIZE: ASTM & AASHTO Size No. 67 Coarse Aggregate
SIZE: ASTM & AASHTO Size No. 4 Coarse Aggregate
COMMENTS: Aggregate graded as per Section 8.2, Table 1

CEMENT:

SOURCE: Holcim
TYPE: I/II
AUTOCLAVE EXPANSION: -0.02%
ALKALIS CONTENT: 0.78%
COMMENTS: Cement data provided by Holcim

MIX WATER:

W/C RATIO: 0.47

EFFECTIVE GAUGE LENGTH = 250 mm

Specimen	1/8/20	1/9/20	1/13/20		1/16/20		1/20/20		1/23/20	
	Initial	Zero	4 Days		7 Days		11 Days		14 Days	
	Comparator Reading	Comparator Reading	Comparator Reading	Length Change	Comparator Reading	Length Change	Comparator Reading	Length Change	Comparator Reading	Length Change
A	2.384	2.496	2.532	0.01%	2.564	0.03%	2.582	0.03%	2.650	0.06%
B	0.104	0.218	0.250	0.01%	0.284	0.03%	0.298	0.03%	0.370	0.06%
C	-0.194	-0.076	-0.042	0.01%	-0.006	0.03%	0.012	0.04%	0.082	0.06%
AVERAGE		0.879	0.913	0.01%	0.947	0.03%	0.964	0.03%	1.034	0.06%

MORTAR BAR EXPANSION

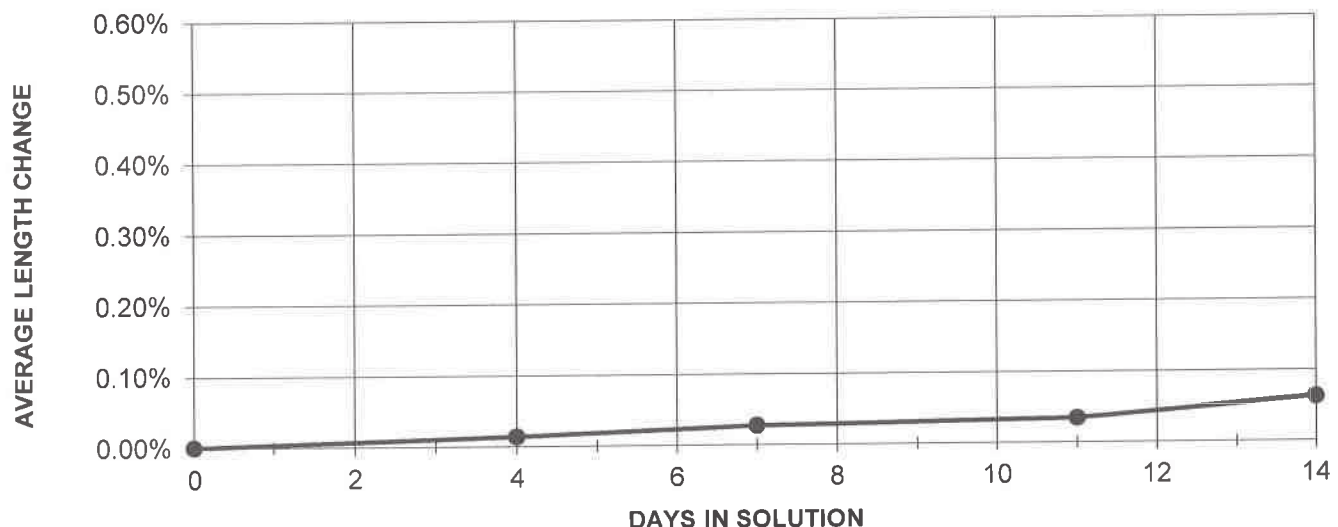


FIGURE 1

February 21, 2020

Aggregate Industries
1705 S. Acoma Street
Denver, CO 80223

Attention: Mr. John Cheever

Subject: Laboratory Test Results
Greeley Pit Aggregate Tests
ASTM & AASHTO Fine Aggregate
WesTest Project No. 680819

Gentlemen:

Enclosed on Table 1 are the results of aggregate physical property and quality tests, done in general accordance with ASTM and AASHTO criteria, on aggregate sampled from the above-referenced source on January 3, 2020.

The test results indicate the material meets ASTM C33, *Standard Specification for Concrete Aggregates*, AASHTO M 6, *Standard Specification for Fine Aggregate for Hydraulic Cement Concrete* and Colorado Department of Transportation requirements for the properties tested.

If you have any questions on the data presented, please contact us at your convenience.

Sincerely,
WesTest


Quyen T. Liu, EIT



Reviewed by:

Dylan A. Hullinger, P.E.



627 Sheridan Boulevard • Lakewood, CO 80214
303 975 9959 • office@westtest.net

LABORATORY TEST REPORT

CLIENT: Aggregate Industries
SOURCE: Greeley Pit
SAMPLED BY: Client
PROJECT: Greeley Pit Aggregate Testing

WestTest PROJECT NO.: 680819
REPORT DATE: February 21, 2020

MATERIAL DESCRIPTION		ASTM & AASHTO Fine Aggregate															
DATE SAMPLED		January 3, 2020															
SAMPLE LOCATION		Stockpile															
Aggregate Physical Property and Quality Tests (ASTM C33 & AASHTO M 6 Specifications)																	
ASTM C117 & C136, AASHTO T 11 & T 27				ASTM C128, AASHTO T 84, Bulk Specific Gravity = 2.620, Bulk Specific Gravity (SSD) = 2.645, Apparent Specific Gravity = 2.691, Absorption = 1.0%				ASTM C88, AASHTO T 104, Sodium Sulfate Soundness, 5 Cycles									
SIEVE SIZE		% Passing		ASTM C33 Spec.		AASHTO M 6 Spec.		SIEVE SIZE		GRADING OF ORIGINAL SAMPLE		WEIGHT BEFORE TEST, g		PERCENT PASSING AFTER TEST		WEIGHTED PERCENT LOSS	
1"								Minus #100		6							
3/4"								# 50 to # 100		9							
1/2"																	
3/8"		100		100		100		# 30 to # 50		18		100.0		5.0		0.9	
# 4		100		95 - 100		95 - 100		# 16 to # 30		29		100.1		3.6		1.0	
# 8		93		80 - 100		80 - 100		FINE AGG. = 0.0%, Specification: 3.0% Max.		31		100.0		5.6		1.7	
# 16		62		50 - 85		50 - 85		ASTM C123, AASHTO T 113, Lightweight Particles in Aggregate		7		100.0		4.7		0.3	
# 30		33		25 - 60		25 - 60				0							
# 50		15		5 - 30		10 - 30		TOTAL		100		FINE AGG. TOTAL 100%		4			
# 100		6		0 - 10		2 - 10		SPECIFICATION:								10 Max.	
# 200		1.8		0 - 3.0		0 - 2.0		ASTM C40, AASHTO T 21, Organic Impurities: Less than Organic Plate No. 1									
Fineness Modulus		2.92		2.3 - 3.1		2.3 - 3.1		Specification: Organic Plate No. 3 or Less									
COMMENTS:		ASTM C29, AASHTO T 19, Bulk Density and Voids in Aggregate Rodding Method: Bulk Density = 102 pcf Voids in Aggregate = 38%															

TABLE 1

January 31, 2020

Aggregate Industries
1705 S. Acoma Street
Denver, CO 80223

Attention: Mr. John Cheever

Subject: Laboratory Test Results
ASTM C1260
Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM & AASHTO Fine Aggregate
Greeley Pit
WesTest Project No. 680819

Gentlemen:


Included as Figure 1 is the result of potential alkali reactivity testing (mortar bar method), performed on aggregate sampled from the above-referenced source on January 3, 2020. The aggregate was prepared and tested in general accordance with ASTM Procedures. ASTM C1260 defines the potential of an aggregate for deleterious expansion as follows:

<u>Test Expansion</u>	<u>Classification</u>	<u>Potential for Deleterious ASR</u>
< 0.10%	Innocuous	Low
0.10% to 0.20%	Inconclusive	Not Predictable
> 0.20%	Deleterious	High

Based on the test result of 0.05% expansion at 14 days in solution, 16 days after casting, the potential for deleterious alkali-silica behavior of this aggregate in concrete is considered Low.

If you have any questions on the data presented, please contact us at your convenience.

Sincerely,
WesTest


Quyen T. Liu, EIT



Reviewed by:

Dylan A. Hullinger, P.E.



627 Sheridan Boulevard • Lakewood, CO 80214
303.975.9959 • office@westest.net

LABORATORY TEST REPORT
POTENTIAL ALKALI REACTIVITY OF AGGREGATES
(MORTAR-BAR METHOD)

ASTM C1260

REPORT DATE: January 31, 2020

CLIENT: Aggregate Industries
PROJECT NO.: 680819

SAMPLE DATE: January 3, 2020
SAMPLE ID: 6808CC

AGGREGATE:

SOURCE: Greeley Pit
SIZE: ASTM & AASHTO Fine Aggregate
COMMENTS: Aggregate graded as per Section 8.2, Table 1

CEMENT:

SOURCE: Holcim
TYPE: I/II
AUTOCLAVE EXPANSION: -0.02%
ALKALIS CONTENT: 0.78%
COMMENTS: Cement data provided by Holcim

MIX WATER:

W/C RATIO: 0.47

EFFECTIVE GAUGE LENGTH = 250 mm

Specimen	1/15/20	1/16/20	1/20/20		1/23/20		1/27/20		1/30/20	
	Initial	Zero	4 Days		7 Days		11 Days		14 Days	
	Comparator Reading	Comparator Reading	Comparator Reading	Length Change	Comparator Reading	Length Change	Comparator Reading	Length Change	Comparator Reading	Length Change
A	-0.108	0.038	0.040	0.00%	0.054	0.01%	0.098	0.02%	0.156	0.05%
B	-0.718	-0.574	-0.568	0.00%	-0.548	0.01%	-0.520	0.02%	-0.462	0.04%
C	-0.172	-0.024	-0.016	0.00%	-0.006	0.01%	0.026	0.02%	0.096	0.05%
AVERAGE		-0.187	-0.181	0.00%	-0.167	0.01%	-0.132	0.02%	-0.070	0.05%

MORTAR BAR EXPANSION

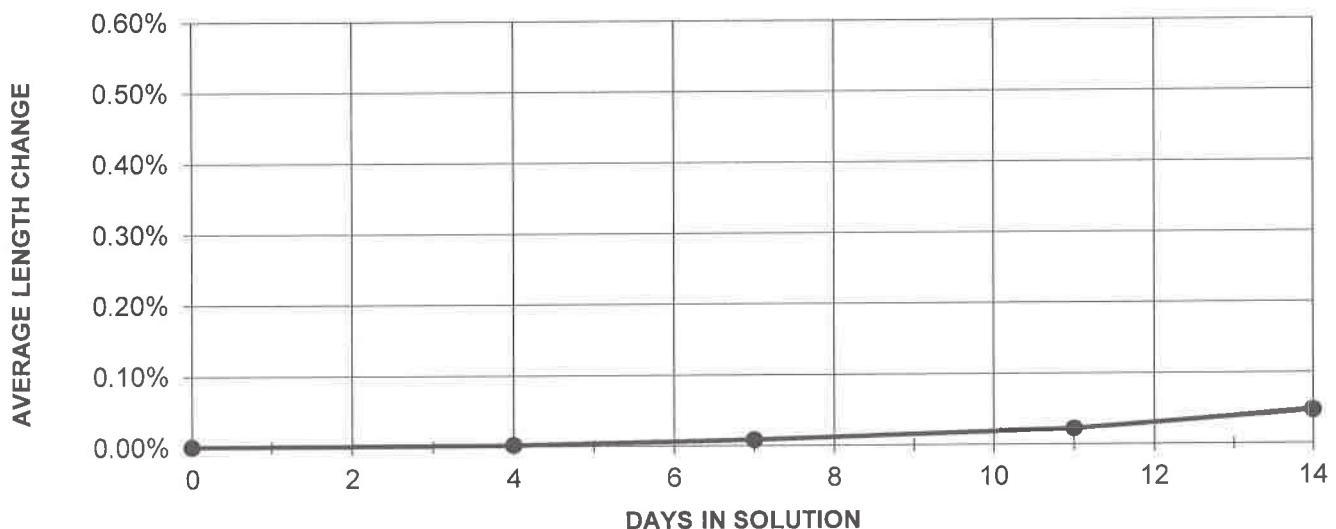


FIGURE 1



Sika Corporation · 201 Polito Avenue · Lyndhurst, NJ 07071 · USA

Mr. Stephen Herald
Quality Control Manager
Aggregate Industries
Denver, CO

CONTACT

Nathaniel Artman
Concrete Specialist
Phone: +1.330.495.0109
Mobile: +1.330.495.0109
artman.nathaniel@us.sika.com

RE: CERTIFICATE OF COMPLIANCE - SIKa AIR

March 5, 2020

This is to confirm that Sika AIR, air entraining admixture, conforms to the requirements of ASTM C 260/AASHTO M 154. This is also to confirm that Sika AIR is non-chloride based and does not contain any intentionally added chlorides during manufacturing. The measured chloride content is 30 ppm (0.0030%).

Sika AIR is manufactured under quality control conditions by Sika Corporation. Sika AIR exhibits the typical physical properties as stated in the current data sheet for the product found at Sika's website www.usa.sika.com when used as directed within the product's shelf life for one year from the date of installation. **Always read the current applicable product data sheet, safety data sheet and label prior to use.**

Results may differ based upon statistical variations depending upon mix design, mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

NO OTHER WARRANTIES, EXPRESS OR IMPLIED, SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKa SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND. SIKa SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.

Sincerely,

Nathaniel Artman, El
Concrete Specialist

SIKA CORPORATION

201 Polito Avenue · Lyndhurst · NJ 07071 · USA
Phone: +1 201 933 8800 · Fax: +1 201 933 6225 · www.usa.sika.com

Sika Corporation · 201 Polito Avenue · Lyndhurst, NJ 07071 · USA

Mr. Stephen Herald
Quality Control Manager
Aggregate Industries
Denver, CO

CONTACT

Nathaniel Artman
Concrete Specialist
Phone: +1.330.495.0109
Mobile: +1.330.495.0109
artman.nathaniel@us.sika.com

RE: CERTIFICATE OF COMPLIANCE - PLASTOCRETE 161

March 5, 2020

This is to confirm that Plastocrete 161, water reducing admixture, conforms to the requirements of ASTM C 494/AASHTO M 194, Type A, B & D. This is also to confirm that Plastocrete 161 is non-chloride based and does not contain any intentionally added chlorides during manufacturing. The measured chloride content is 175 ppm (0.0175%).

Plastocrete 161 is manufactured under quality control conditions by Sika Corporation. Plastocrete 161 exhibits the typical physical properties as stated in the current data sheet for the product found at Sika's website www.usa.sika.com when used as directed within the product's shelf life for one year from the date of installation. **Always read the current applicable product data sheet, safety data sheet and label prior to use.**

Results may differ based upon statistical variations depending upon mix design, mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

NO OTHER WARRANTIES, EXPRESS OR IMPLIED, SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.

Sincerely,

A handwritten signature in black ink, appearing to read "Nathaniel Artman".

Nathaniel Artman, El
Concrete Specialist

SIKA CORPORATION

201 Polito Avenue · Lyndhurst · NJ 07071 · USA
Phone: +1 201 933 8800 · Fax: +1 201 933 6225 · www.usa.sika.com

Sika Corporation · 201 Polito Avenue · Lyndhurst, NJ 07071 · USA

Mr. Stephen Herald
Aggregate Industries

CONTACT

Nathaniel Artman
Concrete Specialist
Phone: +1.330.495.0109
Mobile: +1.330.495.0109
artman.nathaniel@us.sika.com

RE: COMPATIBILITY OF SIKA ADMIXTURES

March 10, 2017

This is to confirm the below admixtures are compatible.

Product	Description	ASTM Designation
Sika AIR	Air Entraining	ASTM C 260
Plastocrete-161	Water Reducing	ASTM C 494, Type A, B & D
Sika ViscoCrete-2100	High Range Water Reducing	ASTM C 494, Type A & F
SikaTard 440	Hydration Stabilizing	ASTM C 494, Type B & D
SikaSet NC	Set Accelerating	ASTM C 494, Type C & E
Sika Control 40	Shrinkage Reducing	ASTM C 494, Type S
Sika Control 75	Shrinkage Reducing	ASTM C 494, Type S
Sika ViscoFlow-2020	Slump Retaining	ASTM C 494, Type S
Sika Watertight Concrete Powder	Permeability Reducing	ASTM C 494, Type F & S
Sika Stabilizer 300 SCC	Viscosity Modifying	ASTM C 494, Type S
Sika-CNI	Corrosion Inhibitor	ASTM C 1582
Sikacrete-950DP	Silica Fume	ASTM C 1240
Sika Lightcrete Powder	Flowable Fill Admixture	n/a

All admixtures must be batched according to the manufacturer recommendations. For more information please refer to the Technical Data Sheets available at www.usa.sika.com.

In case of any further questions, please feel free to contact me.

NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.

Respectfully,



Nathaniel Artman, EI
Concrete Specialist

SIKA CORPORATION

201 Polito Avenue · Lyndhurst · NJ 07071 · USA
Phone: +1 201 933 8800 · Fax: +1 201 933 6225 · www.usa.sika.com



SAFETY DATA SHEET

MATERIAL: READY MIX CONCRETE

Section 1 – Product Identification

Product Identifier

Product Name: Ready Mix Concrete**Product Codes:** Ready mix, RMX

(This SDS covers many products. Individual constituents will vary.)

Synonyms: Ready mix, Concrete mix, Poured concrete**Product Form:** Solid blend**Intended Use of Product:** Typically used as a structural construction component or adjunct

Name, Address and Telephone of Responsible Party

Aggregate Industries (US)
24 Crosby Drive
Bedford, MA 01730
(888) 646-5246

Emergency Contact Information:

CHEMTREC: 1-800-424-9300

Section 2 – Hazards Identification

Classification of the Substance or Mixture

Classification (GHS-US)

Skin Corrosion 1B
Eye Damage 1
Skin Sensitizer 1B
Carcinogen 1A
Specific Target Organ Toxicity: Single Exposure (Lungs) 3
Specific Target Organ Toxicity: Repeat Exposure (Lungs) 3

Label Elements

Hazard Pictograms



Signal Word

Danger

Hazard Statements

Causes severe skin burns and eye damage
May cause an allergic skin reaction
May cause respiratory irritation
May cause cancer (inhalation)

Precautionary Statements

- | | |
|-------------------|--|
| Prevention | Do not breathe dust.
Wear protective gloves/protective clothing/eye protection/face protection
Wash thoroughly after handling.
Do not handle until all safety precautions have been read and understood. |
| Response | If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center/doctor.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a doctor.
If on skin: Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse.
If swallowed: Rinse mouth. Do NOT induce vomiting. Immediately call a poison center/doctor. |
| Storage | Store locked up. |
| Disposal | Dispose of contents/container in accordance with local/state/national regulations. |

Other Hazards

Exposure may aggravate those with pre-existing eye, skin or respiratory conditions or illness.
Contact with wet material may cause irritation and chemical (caustic) burns on exposed skin (see Section 16 for additional information).

Section 3 – Composition/Information on Ingredients

Component/Ingredient	CAS #	Percent Present (Range)
Portland cement	65997-15-1	10 - 30
Calcium hydroxide	1305-62-0	15 - 25
Fly Ash*	68131-74-8	0 - 20
Sand (may be composed of varying granitic and silicate materials)	None	0 - 90
Limestone	1317-65-3	25 - 65
Calcium oxide	1305-78-8	0 - 5
Magnesium oxide	1309-48-4	0 - 4
Nuisance Dusts (Particulates not otherwise regulated)	None	< 1 - 5
Crystalline Silica (quartz – respirable)	68131-74-8	0 < 1

Other Components

Ready mix concrete is made primarily from materials mined from the earth. A chemical analysis of the material may reveal trace amounts of naturally occurring but potentially harmful chemical compounds such as organic compounds, potassium and sodium compounds, and heavy metals including cadmium, chromium (including hexavalent chromium), nickel and lead. See Section 16 for additional information.

* Fly ash is a by-product of coal combustion and is primarily composed of silicates and metallic oxides. The exact composition will vary depending on the source of the coal.

Section 4 – First Aid Measures

Description of First Aid Measures

- Eyes** Rinse eyes and under lids cautiously with clean water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.
- Skin** Remove contaminated clothing. Remove dry material from skin, but avoid creating dust. Wash with plenty of water. If skin irritation occurs, get immediate medical advice/attention.
- Inhalation** Remove person to fresh air away from dust and keep comfortable for breathing. If coughing persists, obtain medical attention.
- Ingestion** Do not induce vomiting. If subject is conscious, rinse the mouth with water to remove any material and drink plenty of water to dilute any swallowed material. Do not give drink or attempt to force water to an unconscious person. Get medical advice/attention.

Important Symptoms and Effects (Acute and Delayed)

- Eyes** Causes serious eye irritation and may scratch eye surface due to particle abrasion. May cause chemical burns resulting in corneal damage.
- Skin** Causes skin irritation if exposed to moisture on skin creating redness, dryness and itching. Extended exposure to wet material will result in chemical burns to skin, possibly severe.
- Inhalation** May irritate nose and throat if dust is inhaled. Prolonged or repeated inhalation of respirable dust may lead to respiratory tract or lung damage.
- Ingestion** May cause irritation and burns of mouth, throat, stomach and digestive tract if swallowed.

Recommendations for Immediate Medical Care or Special Treatment

Seek immediate medical attention for inhalation of large quantities of dust or exposure of wet material over large areas of skin.
Seek immediate medical attention if material comes into contact with eyes and cannot be immediately removed.

Section 5 – Fire Fighting Measures

- General Fire Hazards** None. Material is not considered flammable or combustible.
- Extinguishing Media** Use water or water spray to extinguish any fires involving this material.
- Extinguishing Media to Avoid** None.
- Hazards of Combustion** None.
- Fire Fighting Recommendations** Firefighters should always wear full protective gear to fight any fire.
Refer to Section 9 for flammability information.

Section 6 – Accidental Release Measures

- Precautions** Avoid creating dust. Prevent material from entering sewers, drains, ditches or waterways.
- Personal Protection** Wear respiratory protection and protective eyewear/clothing to avoid eye or skin contact.

Emergency Procedures

Ventilate area and avoid creating dust. Remove unnecessary persons from area.

Containment Procedures

Barricade solid material to prevent additional spillage.

Clean Up Procedures

Scoop or vacuum up spilled material while avoiding dust creation. Scoop up wet material and place in approved container. Allow wet material to harden before disposal.

Section 7 – Handling and Storage**Safe Handling Practices**

Avoid contact with skin or eyes. Avoid breathing dust. Use only in well ventilated areas. Wear appropriate personal protective equipment to prevent eye or skin contact and use respiratory protection equipment if dusty or in poorly ventilated areas.

Safe Storage Measures

Store in well-ventilated areas away from moisture and incompatible materials. If stored in containers, keep containers closed when not in use.

Incompatible Materials

Water/moisture exposure will cause material to generate heat. Keep away from fluoride compounds, strong acids, aluminum, and oxidizers. Cement dissolves in hydrofluoric acid, producing corrosive silicon tetrafluoride gas.

Section 8 – Exposure Controls & Personal Protection**Exposure Limits for Individual Components** (T= Total Respirable, R=Respirable fraction, I=Inhalable-aerosol)

Component	OSHA PEL	ACGIH TLV	NIOSH REL
Portland cement	15 mg/m ³ (T); 5 mg/m ³ (R)	1 mg/m ³ (R)	10 mg/m ³ (T); 5 mg/m ³ (R)
Calcium hydroxide	5 mg/m ³	5 mg/m ³	5 mg/m ³
Fly ash	15 mg/m ³ (T); 5 mg/m ³ (R)	10 mg/m ³ (T); 3 mg/m ³ (R)	Not established
Limestone	15 mg/m ³ (T); 5 mg/m ³ (R)	Not established	10 mg/m ³ (T); 5 mg/m ³ (R)
Calcium oxide	5 mg/m ³	2 mg/m ³	2 mg/m ³
Magnesium oxide	15 mg/m ³ (T); 5 mg/m ³ (R)	10 mg/m ³	Not established
Nuisance Dusts (PNOR)	15 mg/m ³ (T); 5 mg/m ³ (R)	10 mg/m ³	Not established
Crystalline Silica (Quartz)	10 mg/m ³ (R) / (% SiO ₂ + 2) 30 mg/m ³ (T) / (% SiO ₂ + 2)	0.025 mg/m ³ (R)	0.05 mg/m ³ (R)

Exposure Controls**Engineering Controls**

Use outdoors in well-ventilated areas; otherwise employ natural or mechanical ventilation to maintain exposure within applicable limits.

Personal Protection**Face and Eyes**

Avoid contact with skin or eyes. Avoid creating or breathing dust.

Safety glasses with side shields or protective goggles should be worn while using this product. For extremely dusty conditions, non-vented goggles or goggles with indirect venting are recommended. Avoid contact lens wear when using this product.

Body

Long sleeved shirts and trousers should be worn while using this material. Wear water-proof boots. If working in dusty conditions, impervious over garments are recommended.

Respiratory

If exposure levels cannot be maintained below acceptable limits, suitable particulate-filtering facemasks or respirators approved by MSHA/NIOSH should be worn in accordance with the user's respiratory protection program and OSHA/MSHA guidelines.

Hands

Protective gloves with wrist/arm cuffs should be worn to avoid direct contact with skin.

Section 9 – Physical and Chemical Properties

Physical State	Gray, flowable semi-fluid	Specific Gravity	1.9 – 2.4
Appearance & Color	Grey/off-white paste	Flash Point/Method	None. Not flammable.
Odor	None	Auto Ignition Temperature	Not determined
pH	>12	Lower Flammability Limit	Not applicable
Boiling Point	> 1000 °C (> 1832 °F)	Upper Flammability Limit	Not applicable
Solubility (Water)	Slight (<5%)	Octanol/H ₂ O Coefficient	Not determined
Evaporation Rate	Not applicable	Viscosity	Varies accord to mixture
Melting Point	Not determined	Freezing Point	Not determined
Vapor Density	Not applicable	Explosion Risk: Static	Not considered a hazard
Vapor Pressure	Not applicable	Explosion Risk: Shock	Not considered a hazard

Section 10 – Stability and Reactivity**Reactivity**

Dry powder reacts with water to create heat and calcium hydroxide.

Chemical Stability

Stable at standard temperature and pressures.

Hazardous Reactions	None. Hazardous polymerization will not occur.
Conditions to Avoid	Moisture or wetting powder will cause exothermic heating as product cures.
Incompatible Materials	Avoid contact with strong acids, oxidizers, aluminum and ammonium salts.
Decomposition Hazards	Reacts with water to form calcium hydroxide which can irritate/damage skin. Cement dissolves in hydrofluoric acid, producing corrosive silicon tetrafluoride gas.

Section 11 – Toxicological Information

Product: Ready mix concrete

Acute Toxicity	Not classified.
LD50/LC50 Data	Not classified.
Skin Corrosion/Irritation	Causes irritation or chemical burns if exposed to skin.
Critical Eye Damage/Irritation	Causes serious eye injury due to chemical burns or mechanical irritation.
Respiratory or Skin Sensitization	May cause an allergic skin reaction in some individuals.
Germ Cell Mutagenicity	Not reported/no data available.
Teratogenicity	Not reported/no data available.
Carcinogenicity	Material contains trace amounts of respirable crystalline silica, which may cause lung cancer through repeated or prolonged exposure to dust.
Specific Organ Toxicity (Single Exposure)	May cause respiratory irritation.
Specific Organ Toxicity (Repeated Exposure)	May cause damage/disease to lungs through repeated or prolonged exposure.
Reproductive Toxicity	Not reported/no data available.
Aspiration Respiratory Hazard	Not reported/no data available.
Symptoms: Inhalation	Coughing, sneezing, mucous discharge and dyspnea. Extended contact may lead to chemical burns to mucous membranes.
Symptoms: Skin Contact	Redness and itching. Extended contact may lead to chemical burns.
Symptoms: Eye Contact	Redness and itching. Extended contact may lead to corneal ulceration and burns.
Symptoms: Ingestion	Irritation and chemical burns of mouth and throat.
Other Toxicological Information	No additional data available.

Components	Toxicity	Carc: IARC	Carc: NTP	Carc: OSHA
Portland cement (refer to Section 16 for more information)	No data	Not listed	Not listed	Not listed
Calcium hydroxide	Oral LD50 Rat 7340 mg/kg	Not listed	Not listed	Not listed
Fly ash	Oral LD50 Rat > 2000 mg/kg	Not listed	Not listed	Not listed
Limestone	No data	Not listed	Not listed	Not listed
Calcium oxide	LC50 (Fish) 1070 mg/l	Not listed	Not listed	Not listed
Magnesium oxide	No data	Not listed	Not listed	Not listed
Nuisance dusts (PNOR)	No data	Not listed	Not listed	Not listed
Crystalline Silica (Quartz) (refer to Section 16 for more information)	Oral LD50 Rat >22,500 mg/kg LC50 Carp >10,000 mg/L (72 hr)	Group 1	Known	Not listed

Section 12 – Ecological Information

General Ecotoxicity	Not classified.
Persistence and Degradability	Not reported/no data available.
Bioaccumulation Potential	Not reported/no data available.
Mobility in Soil to Groundwater	Not reported/no data available.
Environmental Fate	Not reported/no data available.
Other Environmental Precautions or Information	Avoid release to the environment. Prevent material from entering sewers, drains, ditches or waterways.

Section 13 – Disposal Considerations

Disposal Methods	Dispose as an inert, non-metallic mineral in accordance with applicable federal, state, and local regulations. Allow wet material to harden before disposal.
Special Considerations	Avoid creation or breathing dust during disposal. Avoid contact with skin and eyes. Refer to Section 8 for personal protection measures.
Other Disposal Information	Prevent material from entering sewers, drains, ditches or waterways.

Section 14 – Transport Information

Proper Shipping Name	N/A – not regulated.
Hazard Class	N/A – not regulated.
UN Shipping ID Number	N/A – not regulated.
Packing Group	N/A – not regulated.
Environmental/IMDG Codes	N/A – not regulated.

Section 15 – Regulatory Information

Federal

This product contains one or more chemical components or ingredients that may require identification and/or reporting under SARA Section 302, SARA Section 311/312/313, CERCLA and/or TSCA. An examination of the components of this product should be conducted by a qualified environmental professional to determine if such identification or reporting is required by federal law.

- Components: Portland cement, Silica (Crystalline), Calcium hydroxide, Calcium oxide, Magnesium oxide, Limestone

State

This product contains one or more chemical components or ingredients that are included or listed on the hazardous substances lists for one or more of the following states: California, Maine, Massachusetts, Minnesota, New Jersey, Pennsylvania and Rhode Island. An examination of the components of this product should be conducted by a qualified environmental or safety and health professional to determine the specific requirements for those states.

- Components: Portland cement, Silica (Crystalline), Calcium hydroxide, Calcium oxide, Magnesium oxide, Limestone

The state of California requires the following statement (Proposition 65) in regards to this material:

- WARNING! This product contains chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

Section 16 – Other Information

Date of last revision: September 18, 2015

Prepared and reviewed by: Holcim (US) Inc. Occupational Safety & Health

Additional information regarding portland cement:

Wet portland cement can cause caustic burns to unprotected skin, sometimes referred to as cement burns. Cement burns may result in blisters, dead or hardened skin, or black or green skin. In severe cases, these burns may extend to the bone and cause disfiguring scars or disability.

Employees cannot rely on pain or discomfort to alert them to cement burns because cement burns may not cause immediate pain or discomfort. By the time an employee becomes aware of a cement burn, much damage has already been done. Accordingly, the safest method to use portland cement is to avoid contact with exposed skin completely. Cement burns can get worse even after skin contact with cement has ended. Any employee experiencing a cement burn is advised to see a health care professional immediately.

Skin contact with wet portland cement can also cause inflammation of the skin, referred to as dermatitis. Signs and symptoms of dermatitis can include itching, redness, swelling, blisters, scaling, and other changes in the normal condition of the skin. Contact with wet portland cement can cause a non-allergic form of dermatitis (called irritant contact dermatitis) which is related to the caustic, abrasive, and drying properties of portland cement.

In addition, hexavalent chromium [Cr(VI)] which may be found in portland cement in trace amounts, can cause an allergic form of dermatitis (allergic contact dermatitis, or ACD) in sensitized employees who work with wet portland cement. When an employee is sensitized, that person's immune system overreacts to small amounts of Cr(VI), which can lead to severe inflammatory reactions upon subsequent exposures. Sensitization may result from a single Cr(VI) exposure, from repeated exposures over the course of months or years, or it may not occur at all. After an employee becomes sensitized, brief skin contact with very small amounts of Cr(VI) can trigger ACD. ACD is long-lasting and employees can remain sensitized to Cr(VI) years after their exposure to portland cement has ended. Medical tests (e.g. skin patch tests) are available that can confirm whether an employee has become dermally sensitized to Cr(VI).

Employees who work with wet portland cement and experience skin problems, including seemingly minor ones, are advised to see a health care professional for evaluation and treatment. In cement-related dermatitis, early diagnosis and treatment can help prevent chronic skin problems.

Additional information regarding crystalline silica:

The major concern is silicosis, caused by the inhalation and retention of respirable (extremely small) crystalline silica dust particles. Silicosis can exist in several forms. Chronic or ordinary silicosis (often referred to as simple silicosis) is the most common form of silicosis, and can occur after many years of exposure to relatively low concentrations of airborne respirable crystalline silica dust. Complicated silicosis or progressive massive fibrosis (PMF) may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease secondary to the lung disease. Acute silicosis can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough and weight loss. Acute silicosis can be fatal.

IARC: The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1)." The IARC evaluation noted that "carcinogenicity was not detected in all industrial circumstances studies. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs."

NTP: The National Toxicology Program (NTP), in its Thirteenth Annual Report on Carcinogens, classified "silica, crystalline (respirable)" as a known human carcinogen.

OSHA: Crystalline silica (quartz) is not regulated as a human carcinogen by the Occupational Safety and Health Administration.

Other important information:

While the information provided in this document is believed to provide a useful summary of the hazards of portland cement, the information in this document cannot anticipate and provide all of the information that might be needed in every situation. Inexperienced product users should obtain proper training before using this product.

The data furnished in this document do not address hazards that may be posed by other materials when mixed with portland cement. Users should review other relevant safety data sheets before working with this product.

The information presented in the Safety Data Sheet is based on current knowledge and publications and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not be interpreted as guaranteeing any specific property of the product.

SELLER MAKES NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY HOLCIM (US) INC., EXCEPT THAT THE PRODUCT SHALL CONFORM TO CONTRACTED SPECIFICATIONS.

--END OF SAFETY DATA SHEET--